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Acute Cardiovascular Care 2016 Abstract Reviewers

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Moderated Posters Session I: STEMI - Saturday, 15 October 2016 - 10:00 - 11:00

9

Monocyte count to high-density lipoprotein ratio predicts occlusion of the infarct-related artery in STEMI

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Introduction: Patency of infarct-related artery (IRA) in patients with ST-segment elevation myocardial infarction (STEMI) before primary percutaneous coronary intervention (pPCI) is associated with better clinical outcomes. However, there were limited data regarding the predictors of IRA patency before pPCI in the setting of STEMI.

Purpose: We intended to evaluate the association of monocyte count to high-density lipoprotein ratio (MHR) with IRA patency in STEMI.

Methods: A total of 726 patients were recruited. IRA patency was determined by the thrombolysis in myocardial infarction (TIMI) flow grade. According to TIMI flow grade in the IRA before PCI, the study population was divided into two groups as TIMI 0,1 or 2 group (occluded IRA, n=624) and TIMI 3 group (patent IRA, n=102). Blood samples were collected on admission to calculate MHR. Of all patients, 92 (20.4%) patients revealed pre-pPCI TIMI 3 flow in IRA.

Results: The MHR was significantly higher in occluded IRA group (22.4 ± 5.4 vs 17.8 ± 6.9 , $P < .001$). Glucose, troponin I, and platelet to lymphocyte ratio (PLR) levels were also higher in occluded IRA group ($P < .05$). Multivariate regression analysis demonstrated the MHR on admission (odds ratio [OR]: 1.191; 95% confidence interval [CI]: 1.116-1.272, $P < .001$) and pre-hospital use of prasugrel or ticagrelor (OR: 7.045; CI: 1.687-29.414, $P = .007$) as independent predictors of IRA patency.

Conclusion: IRA patency is more frequently found in patients having received fast acting antiplatelet therapy before pPCI and a higher MHR value independently predicts it.

10

Left bundle branch block in patients with acute coronary syndrome: presentation, treatment and outcome in routine clinical practice

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Background: Whether patients with acute coronary syndrome (ACS) presenting with new left bundle branch block (LBBB) should be treated in the same manner as those presenting with ST-elevation (STE) on the initial ECG is still under discussion.

Purpose: To evaluate differences in presentation, treatment and outcome between patients with new LBBB and those with STE on initial ECG in routine clinical practice in Switzerland.

Methods: Using the data of the AMIS Plus Registry, we analyzed the baseline characteristics, treatment and outcome of patients presenting with ACS and a new or presumably

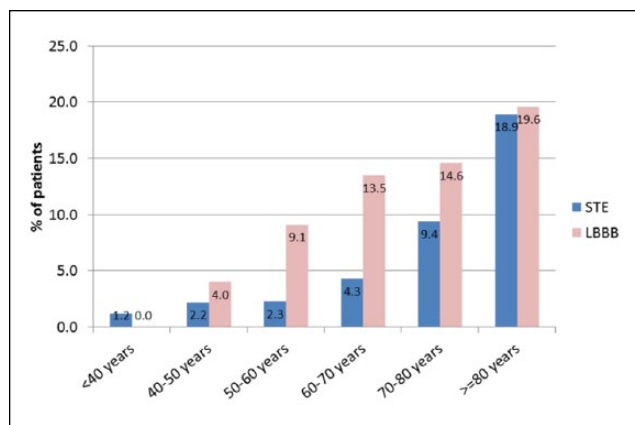


Figure 1

Table 1. results

| | <55 yrs (n=6874) | 55-64 yrs (n=7242) | 65-74 yrs (n=9223) | 75-84 yrs. (n=7197) | >=85 yrs. (n=2817) |
|------------------------------|------------------|--------------------|--------------------|---------------------|--------------------|
| Women (%) | 17.6 | 22.3 | 30.3 | 47.1 | 65.3 |
| STEMI (%) | 64.2 | 57.7 | 48.0 | 42.0 | 40.2 |
| Hypercholesterolemia (%) | 48.9 | 51.8 | 54.6 | 50.3 | 39.6 |
| Hypertension (%) | 55.9 | 70.0 | 81.9 | 85.7 | 86.7 |
| smoker | 75.7 | 54.1 | 31.2 | 15.3 | 5.9 |
| Renal failure (%) | 3.4 | 6.6 | 16.0 | 26.0 | 37.9 |
| Diab. mell. (%) | 14.9 | 25.8 | 42.2 | 39.0 | 35.3 |
| CHF (%) | 4.3 | 8.3 | 15.0 | 22.4 | 32.5 |
| former ACS (%) | 12.2 | 17.9 | 23.7 | 26.6 | 26.9 |
| Card. shock on admission (%) | 5.9 | 6.8 | 7.1 | 7.5 | 8.2 |

Baseline characteristics of ACS patients

new LBBB compared to those with STE on initial ECG, using descriptive statistics and multivariate logistic regression.

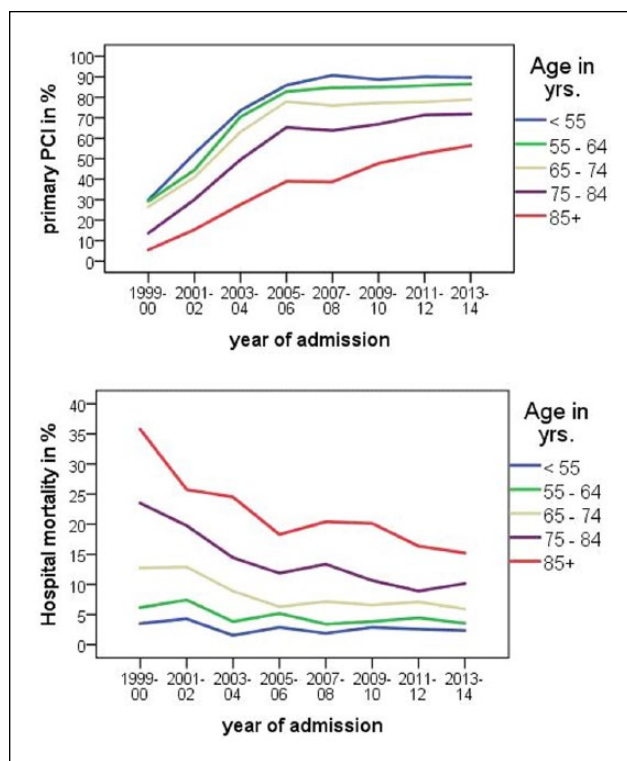
Results: Among 27,855 patients, 1765 (6.3%) presented with LBBB. Compared with the STE patients, LBBB patients were significantly older (75.6y vs 64.3y), had a greater burden of cardiovascular risk factors such as hypertension (78% vs 54%), dyslipidemia (61% vs 64%) and comorbidities such as diabetes (33% vs 18%), known coronary artery disease (57% vs 27%), heart failure (13% vs 2%) as well as cerebrovascular (11% vs 4%) and renal diseases (11% vs 5%), and were admitted with longer delays after symptom onset (270 min vs 185 min). According to the maximum CK level, they had smaller myocardial infarction sizes (median 361 (IQR 159, 886) vs 1207 (IQR 475, 2558)). Even after adjustment for age and gender, patients with LBBB were less likely to receive aspirin (OR 0.36, 95% CI 0.31-4.30), P2Y12 inhibitors (OR 0.52, 95% CI 0.47-0.57), beta blocker (OR 0.79, 95% CI 0.72-0.88) and statins (OR 0.60, 95% CI 0.59-0.74) or undergo percutaneous coronary intervention (OR 0.38, 95% CI 0.35-0.42). Crude in-hospital mortality of patients with LBBB was 15.8% vs 6.5% in patients with STE and this was age dependent (Figure 1).

However, in multivariate regression analysis using STE as a reference, the OR for in-hospital mortality for LBBB was 0.94 (95% CI 0.80-1.11).

Conclusions: In routine clinical practice, ACS patients presenting with new or presumably new LBBB are high risk patients with high morbidity and mortality but have the same adjusted risk as patients presenting with STE ACS. Therefore, our data suggest that patients with LBBB should be treated just like those with STEMI.

11

Older patients with acute coronary syndrome have benefited most from changes in therapy over time: data from a longterm city wide registry



PCI and hospital mortality of ACS pts.

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Background: Over the last 15 years treatment for patients with ACS has changed fundamentally. Whether this change has affected older ACS patients more than younger ones was our question.

Method: The BMIR collects data on hospital care of ACS patients prospectively since 1999. In our analysis we included data of 33353 patients from 1999 to 2014 and studied changes over time for 5 different age groups: <55 yrs. (n=6874), 55-64 yrs. (n=7242), 65-74 yrs. (n=9223), 75-84 yrs. (n=7197) and ≥85 yrs. (n=2817).

Results: see table and figure

Conclusion: Despite of having more comorbidities older ACS patients benefited more from changes in therapy than younger patients over time.

12

The impact of door-to-balloon time less than 30 minutes on the prognosis of the patients with STEMI

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Purpose: Door-to-balloon (DTB) time during primary percutaneous coronary intervention is one of the important predictors of mortality in patients with ST-segment elevation acute myocardial infarction (STEMI), and the clinical practice guidelines recommend that it should be under 90 minutes. We intended to assess the clinical impact of much shorter DTB time as less than 30 minutes on the prognosis of the patients with STEMI.

Methods: Patients with STEMI were classified into four groups according to DTB time, and we investigated the relationship between DTB time and in-hospital mortality.

Results: Five hundred and twenty seven patients with STEMI who underwent a primary coronary intervention between 2007 and 2015 were included in this study. The mean age was 68.0 ± 12.7 years, and the mean DTB time was 28.4 ± 28.1 minutes. The DTB time was ≤ 30 minutes in 146 patients, 31 to 60 minutes in 297 patients, 61 to 90 minutes in 60 patients, and > 90 minutes in 24 patients. Peak CPK levels were 2218 ± 2119, 2578 ± 2237, 2997 ± 2833, and 1273 ± 1115 IU/L, respectively. Even though we achieved a DTB time of 90 minutes or less in 95.4% of cases, a much shorter DTB time was associated with lower in-hospital mortality. The in-hospital mortality rate was 0.7%, 5.1%, 11.7%, and 12.5% for DTB times ≤ 30, 31 to 60, 61 to 90, and > 90 minutes, respectively (p=0.001). On multivariate analysis, blood transfusion (OR 49.60; 95% CI 11.30-218.00; p < 0.001), DTB time (31 to 60 minutes; OR 10.50; 95% CI 1.05-104.00; p = 0.045, 61 to 90 minutes; OR 15.00; 95% CI 1.26-179.00; p = 0.032, > 90 minutes; OR 25.00; 95% CI 1.64-381.00; p = 0.021, compared to ≤ 30 minutes), previous myocardial infarction (OR 8.84; 95% CI 1.97-39.70; p = 0.005), the use of intra-aortic balloon pumping (OR 5.13;

95% CI 1.61-16.30; p = 0.006), and female gender (OR 4.00; 95% CI 1.30-12.40; p = 0.016) were the independent predictors of in-hospital mortality.

Conclusions: Much earlier reperfusion contributed to lower in-hospital mortality in the patients with STEMI, even when the DTB time was less than 90 minutes.

13

The combination of shock index and Killip-Kimball class is a strong predictor of outcome in acute coronary syndrome

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Background: Shock index (SI), defined by the ratio of heart rate to systolic blood pressure, is a reliable and easy to use tool at hospital admission. Killip-Kimball class (KK) is a well validated classification for risk stratification in acute coronary syndrome (ACS).

Purpose: The aim is to evaluate the association between SI and KK and outcome in ACS.

Methods: Retrospective analysis of ACS patients admitted between 2005 and 2015 at a tertiary centre. SI and KK were assessed at admission and their association with and in-hospital and one-year mortality was calculated by multivariate logistic regression.

Results: This study included 4137 patients, mean age 64.1 years, 70% males. In a multivariate logistic regression, higher SI was associated with hospital mortality (Odds ratio (OR) 2.759; p<0.001, Confidence interval (CI) [1.662; 4.694]). Using KK I as reference patients with KKII or KKIII presented 4 fold higher possibility of hospital mortality (OR 3.694 and 3.946, respectively; p<0.001), KK IV presented an OR of 10.282 ([CI 5.708; 18,520]; p<0.001). This model had an area under ROC curve of 0.717. The combination of SI>0.6 and KK>I was associated with a significant probability of in hospital death (OR 7.160; p<0.001). SI and KK during index hospitalization were also associated with mortality at one year follow up (SI OR 1.724, p=0.024; KKIII OR 2.9494, p=0.017; KK IV OR 2.815; p=0.022). The combination of SI>0.6 and KK>I were associated with more than two fold probability of mortality during follow up (OR 2.564; IC [1.602; 4.102]; p<0.001.)

Conclusion: SI>0.6 and KK>I are strong predictors of outcome particularly when combined, being associated with OR 7.16 for hospital mortality and OR 2.564 for one year mortality. Both should be used for risk stratification of ACS patients at hospital admission.

14

Characteristics of STEMI patients in a metropolitan area of a developing country: an initial report of the extended jakarta acute coronary syndrome registry

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Background: ST-elevation myocardial infarction (STEMI) registry is used as a source of data for measuring the performance of an existing STEMI network.

Purpose: We studied the characteristics of STEMI patients after expansion of a STEMI registry as part of the STEMI network program in the metropolitan city and the surrounding area covering 26 million inhabitants.

Methods: 56 health centers (N=3015) participate in the Jakarta Acute Coronary Syndrome (JAC) registry. Three PCI centers are located outside the metropolitan area. We analyzed 1024 STEMI patients admitted October 2014-July 2015.

Results: The majority of STEMI patients (81%; N=826) were admitted to 6 academic PCI centers. PCI centers received patients predominantly (56%; N=514) from a transfer process. The proportion of patients receiving acute reperfusion therapy was higher than non-reperused patients (54% vs. 46%, $p<0.001$), and primary PCI was the most common method of reperfusion (86%). Compared with non-academic PCI centers, STEMI patients admitted to academic PCI centers who underwent primary PCI had shorter door-to-device (DTD) time (96 ± 44 minutes vs. 140 ± 151 minutes, $p<0.001$), higher use of manual thrombectomy (60.2% vs. 13.8%, $p<0.001$) and drug-eluting stent implantation (87% vs. 69%, $p=0.001$), but had similar use of radial approach and intra-aortic balloon pump (55.7% vs. 67.2%, and 2.2% vs. 3.4%, respectively). In patients transferred for primary PCI, TIMI risk score ≥ 4

Table I. Table I

| | Odds ratio | 95% confidence interval | P-Value |
|---------------------|------------|-------------------------|---------|
| Female | 1.41 | 0.62-3.16 | 0.41 |
| Age >65 years | 0.90 | 0.42-1.94 | 0.79 |
| Diabetes mellitus | 1.70 | 0.90-3.21 | 0.09 |
| Hypertension | 0.82 | 0.46-1.46 | 0.51 |
| Killip class 2-4 | 1.36 | 0.72-2.58 | 0.34 |
| TIMI score ≥ 4 | 2.08 | 1.09-3.95 | 0.02 |

Multivariate predictor of prolonged DI-DO (>180 minutes) in STEMI patients transferred for primary PCI (N=238).

on presentation was associated with a prolonged door-in to door-out (DI-DO) time (adjusted odds ratio 2.08; 95% confidence interval 1.09-3.95, $p=0.02$).

Conclusion: In the expanded JAC registry, a higher proportion of STEMI patients received reperfusion therapy, but 46% still did not. In developing countries, focusing the pre-hospital care in the network should be a major focus of care to improve the DI-DO time along with improvement of DTD time at PCI centers.

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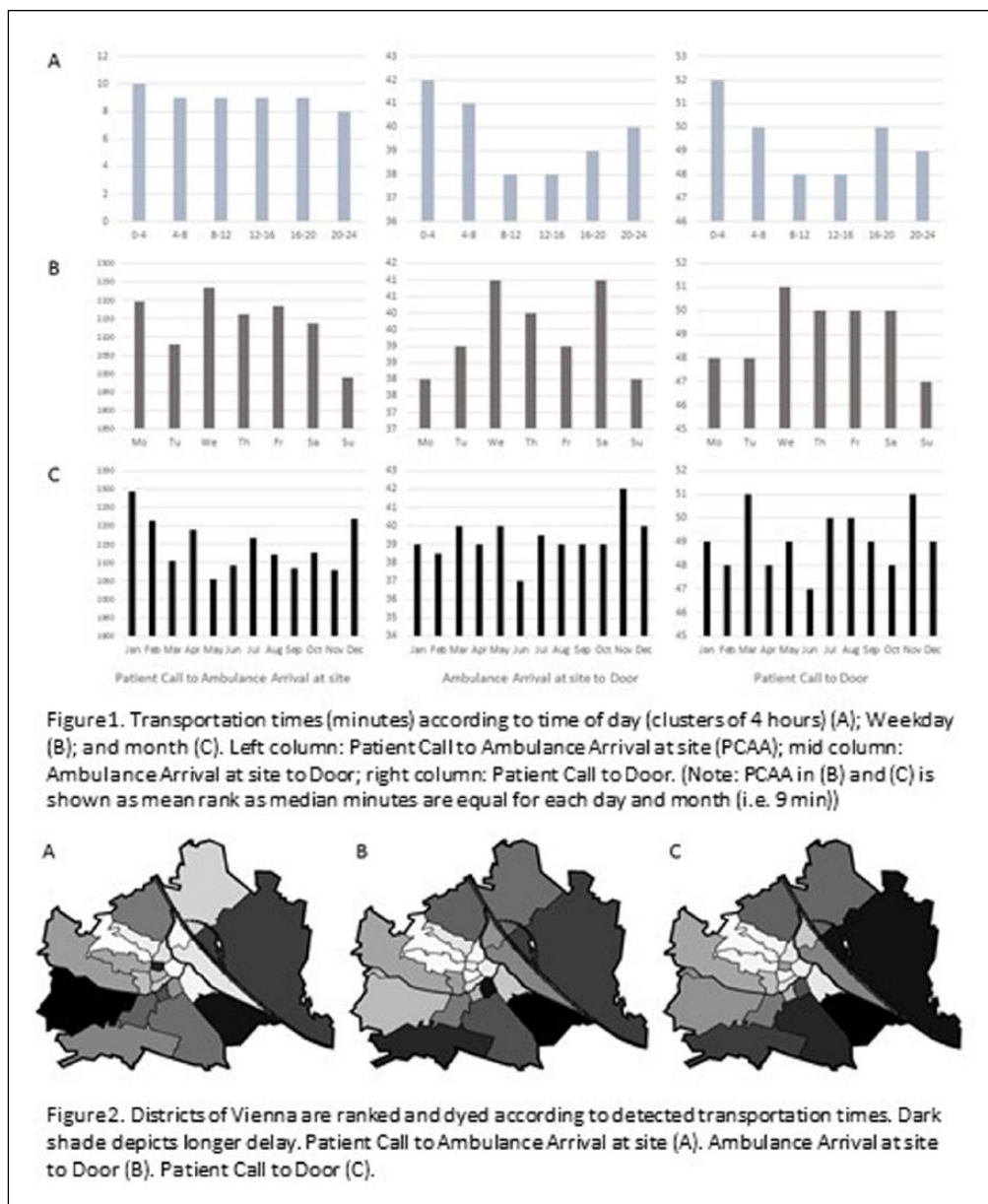
Prehospital delay is affected by daytime and operation site in a metropolitan STEMI-network

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Background: The emergency call service is one of the key components in ST-elevation myocardial infarction (STEMI) networks. Ideally, it offers constantly short delay times 24hours/7days to all patients. Aim of the study was to assess seasonal, circadian and regional characteristics of prehospital delay times in a metropolitan STEMI-network.

Methods and Results: Patient call-to-ambulance arrival at site (PCAA), ambulance arrival at site-to-door (AAD), patient call-to-door (PCD), month, weekday, hour, and operation site (defined as the city district where the emergency call was set) were recorded in 4.751 patients who were admitted with the suspicion of STEMI. Median PCAA, AAD and PCD times were 9 (7-12), 39 (31-48) and 49 (41-59) minutes, respectively. Women had similar PCAA times ($p=0.114$), but significantly longer AAD ($p<0.001$) and PCD delay ($p<0.001$) compared to men. Older patients (>75 years) had slightly but significantly shorter PCAA times ($p=0.005$) but significantly longer



Figures

AAD ($p < 0.001$) and PCD ($p = 0.001$) delay compared to their younger counterparts. The shortest transportation times were noted between 08:00 a.m. and 04:00 p.m. and on Sundays, while they were significantly prolonged between midnight and 04:00 a.m. ($p < 0.001$; figure 1). We did not observe an obvious seasonal trend, however the shortest PCD was detected in June, while March and November were months with a significantly prolonged transportation delay ($p = 0.034$, between-group-difference). Operation site (defined as city district) had a major impact on transportation times which were shorter in central and western districts as compared to southern and eastern areas ($p < 0.001$, between-group-difference

for PCAA, AAD and PCD, figure 2). Moreover, after multivariable adjustment, operation site was the strongest predictor of PCAA delay, and a significant predictor of PCD. Age was a significant independent predictor of PCAA, AAD and PCD time ($p < 0.05$), while sex was only predictive for PCD delay (Males: OR -1.306; 95% CI: -2,389 to -0.224; $p = 0.018$).

Conclusion: In our metropolitan STEMI-network, operation site and age were the strongest determinants of pre-hospital delay times after an emergency call. Concerning circadian variance, the shortest transportation times were noted during daytime, while they were significantly prolonged at night.

16

Impact of on- and off-hour admission on short- and long-term mortality in a STEMI-registry

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Introduction: Several studies have shown contradictory findings regarding mortality and hospital admission-time in patients presenting with ST-elevation myocardial infarction (STEMI) undergoing primary percutaneous intervention (pPCI).

Purpose: The aim of this study was to assess the impact of on- or off-hour-admission on short- and long-term mortality of patients referred for pPCI in the advanced Vienna-STEMI network between 2003-2009.

Methods: The study population consisted of 4587 patients. Exact admission and delay times as well as treatment modalities were recorded in 2488 patients, who finally were included into this analysis. In the Vienna-STEMI network, 6 tertiary hospitals are on duty offering pPCI from 07:30 until 15:00 on weekdays (Mon-Fri; ‘on-hours’) thus providing shortest distances from the patients’ site to door of a tertiary hospital. Off-hours are organized on a rotational basis: two tertiary hospitals are on-duty during ‘off-hours’ on weekdays (15.00-07:30) and 1 for 48 hours during the weekend. In the Vienna STEMI system catheter teams are usually on-site and not on-call (exception: the second tertiary hospital during off-hours on weekdays is occasionally on-call). Outcome analysis between on- and off-hours was performed using univariate and multivariate Cox proportional hazard analysis. As endpoint all-cause mortality was investigated after 30 days and 3 years of follow-up (for all patients and in a Landmark analysis for survivors of the index event).

Results: Mean age was 60.5 ± 13.3 years, 72.6% were male and 44.6% presented with anterior wall infarction. All-cause death occurred in 5.5% of patients after a follow-up of 30 days and in 11.3% of patients after 3-years (all patients). Survivors of the index event exhibited a 3-years mortality of 6%. In total, 641 (25.8%) patients were admitted during on-hours, whereas 1847 (74.2%) patients were admitted during off-hours. Hyperlipidemia and familiar history of myocardial infarction or stroke were significantly more prominent in patients admitted during on-hours.

With respect to patient-related time and total-ischemic time (tendency for prolongation in on-hour presenters) and system-related time (tendency for prolongation in off-hour presenters) no significant differences were found between on- and off-hour-admission in the students t-test (Table).

For short- and long-term mortalities (all patients and Landmark analysis for survivors of the index event) no significant differences could be detected between on- and off-hour-admission in univariate and multivariate Cox proportional hazard analyses.

Discussion: In the Vienna STEMI network, on- or off-hour admissions had no impact on short- and long-term mortality for patients with acute STEMI admitted to for primary PCI despite a higher risk profile and a slightly prolonged total-ischemic time in on-hour presenters.

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Arterial lactate level is associated with 30-day mortality in patients admitted with ST-elevation myocardial infarction

The Danish Heart Foundation, OUH/RH Research Fund, Rigshospitalets Research Fund, The Heart Centre (Rigshospitalet) Research Fund

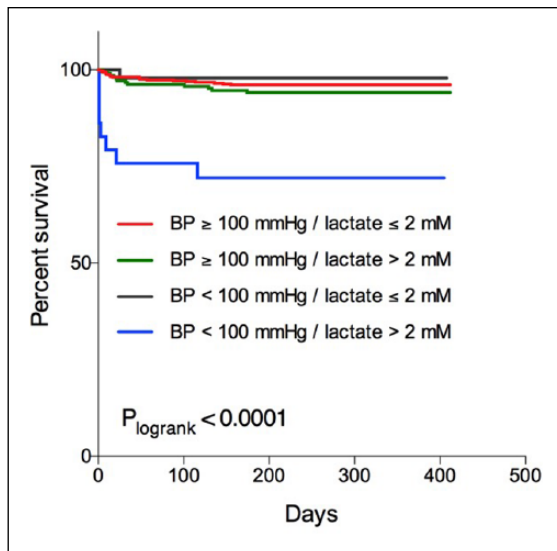
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Background: Arterial lactate level on admission is associated with mortality in patients with ST-elevation myocardial infarction (STEMI), but the vast majority of STEMI patients have normal lactate levels. Screening in all patients may therefore be cumbersome. Blood pressure may be a simple parameter that can increase the usefulness of lactate measurements as a prognostic tool.

Purpose: To assess the association between admission lactate level and mortality in STEMI-patients stratified by systolic blood pressure (sBP) above or below 100 mmHg.

Methods: Eight-hundred-and-sixty-nine consecutive patients admitted with STEMI but without cardiac arrest were included and divided into four groups (sBP \geq or $<$ 100mmHg + lactate \leq 2.0 or $>$ 2.0 mM). Kaplan Meier Plots and log-rank tests were used for survival analysis in patients in the four groups. A multivariable cox proportional hazard model adjusting for multiple vessel disease, left ventricular ejection fraction, age, and sex, was used when assessing the association of increasing levels of lactate on mortality. We analyzed lactate levels as a continuous variable after logarithmic transformation (log₂) to normalize the distribution.



Patient survival

Results: Lactate was available in 810 (93%) patients. Of these, 69 patients (8.5%) had sBP < 100mmHg. Patients with sBP < 100mmHg had higher admission lactate levels (mean (SD) 2.3 (1.5) mM) compared to patients with sBP \geq 100mmHg (1.9 (1.0) mM), $p=0.001$, with a significant interaction between lactate and sBP ($p=0.003$).

In 29 patients (3.5%), sBP was below 100mmHg and lactate above 2 mM. Kaplan-Meier curves showed that the probability of survival was significantly lower solely in these patients ($P(\text{logrank}) < 0.0001$) (FIGURE).

When used as a continuous variable, a twofold increase in lactate level on admission was independently associated with 30-day mortality in STEMI-patients with sBP < 100mmHg (HR (CI95) 4.5 (1.4 – 14.3), $p=0.01$) but not in patients with sBP \geq 100mmHg (1.0 (0.6 – 1.8) $p=0.92$).

Conclusion: Admission lactate level is independently associated with 30-day mortality in hypotensive patients with STEMI. Lactate assessment should be considered especially in patients with sBP < 100mmHg for risk assessment.

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Public campaign is associated with long-term shortening of pre-hospital delay in a metropolitan STEMI network

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Background and Aim: The major priority of managing patients with acute STEMI is to offer mechanical reperfusion therapy as soon as possible. Our metropolitan STEMI-network is a cooperation of 6 tertiary hospitals and the local ambulance services with the aim of offering a 24-hour primary PCI (pPCI) service and the shortest possible total ischemic time in patients with acute STEMI. Whether campaigning via public media (TV, radio, public posters) might help to improve fast recognition of symptoms (patient related delay) and to reduce the pre-hospital systemic delay times in acute STEMI is an ongoing matter of debate and has shown controversial results. Aim of this study was to investigate different delay times in patients with acute STEMI and to test whether these times changed after launching a public campaign in our metropolitan STEMI network.

Methods: Patient call-to-ambulance arrival at site time (PCAA), ambulance arrival at site-to-door time (AAD; door = emergency room of a tertiary hospital with catheter facilities), as well as patient call-to-door time (PCD) were collected in 4.751 patients with acute STEMI by the local ambulance services from January 2003 until December 2009. A public multimedia campaign was launched in summer 2006 (from 24th July until 19th August) with the aim to raise the patients' awareness of symptoms and need for prompt reaction by calling the ambulance as well as offering rapid pPCI. For statistical calculation, each year was divided into four quarters. PCAA, AAD and PCD are given as median (interquartiles range – IQR), trend analysis was performed via linear-by-linear-association. Pre-specified subgroups of gender and age (< 75 vs. \geq 75 years) were specifically analyzed.

Results: Median PCAA, AAD and PCD times when the public campaign was launched were 9 (7 – 11), 43 (35 – 51) and 53 (44 – 62) minutes, respectively. While AAD ($p < 0.001$) and PCD ($p < 0.001$) significantly decreased immediately after the campaign, only a trend for decrease was detected for PCAA after the public campaign ($p=0.262$). Similar results were obtained after stratification for sex and for patients below or above the age of 75 years. This trend in AAD and PCD times persisted up to 3 years until the end of our records in 2009.

Conclusion: System-related delay time decreased significantly in our metropolitan STEMI network after launching a public campaigning. This also applied for the prespecified subgroup analyses of sex and age. Most importantly, the public campaign-induced improvement of delay times persisted for many years, which is in contrast to most international prior publications that were only able to show a temporary benefit of public campaigns on delay times if at all.

Poster Session I - Saturday, 15 October 2016 - 08:30 - 12:30

Clinical Cases Area

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Myocardial infarction during nilotinib treatment in a low-risk patient for cardiovascular events: underrecognized cardiotoxicity of tyrosine kinase inhibitors?

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This is the case report of a 45-year-old patient with Chronic Myeloid Leukemia diagnosed in 2009, in remission/chronic phase at present. In 2009, the patient was treated with imatinib for one year. In 2010, due to intolerance (eyelid oedema) and suspected resistance, imatinib was switched to dasatinib 70mg daily. In January 2014, due to dasatinib resistance, medication was again switched to nilotinib 300mg twice daily; there were no concomitant medications. In November 2014, the patient was admitted to our department with the diagnosis of ST elevation myocardial infarction. Apart from obesity (body mass index 31.0kg/m²), the patient did not have other comorbidities or cardiovascular risk factors. He was submitted to emergent coronariography, which revealed multivessel disease with 99% stenosis in distal Left Main (LM), 90% stenosis in Left Anterior Descending Artery (LAD) ostium, 50% stenosis in LAD middle segment and 90% stenosis in Left Circumflex Coronary Artery. The patient underwent successful percutaneous coronary intervention of the LM/

LAD ostium stenosis, with implantation of a drug eluting stent (Xience Xpedition 4.0x23mm); balloon post dilation was performed for optimal results. The patient had an unremarkable clinical course after percutaneous coronary revascularization and was safely discharged after 5 days of hospital admission.

Hemato-Oncology treatments have improved in the last years with the availability of nouvelle promising pharmacological therapeutics. Cardiovascular safety profile of Tyrosine Kinase Inhibitors (TKI) is still debated. This the first case report of ST segment elevation myocardial infarction during nilotinib treatment in low-risk patient for cardiovascular events. This case report emphasizes the importance of cardiac monitoring of patients under treatment with TKI until the cardiovascular safety profile of these pharmacologic agents is clarified. Further research concerning the cardiotoxicity of each TKI is warranted.

P90

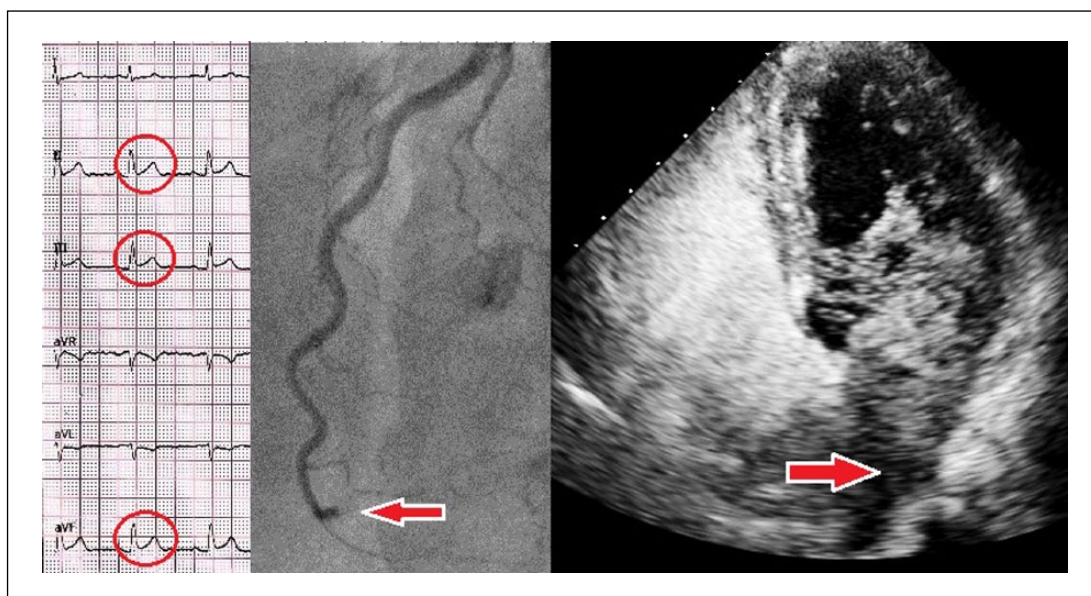
An unusual case of early myocardial infarction: paradoxical coronary embolism in patient with patent foramen ovale

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Case Report: A 40 years old male patient was admitted to our CCU after acute onset of chest pain. The diagnostic EKG showed a sinus rhythm with a transient ST-segment



Patient survival

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elevation in the inferior leads. Markers of cardiac injury were elevated (Troponin-I 9.6 ng/mL at peak).

Patient underwent emergency coronary angiogram with evidence of complete, embolic occlusion of left anterior descending artery at the level of the apical recurrent branch. Given the small dimension of this very distal vessel, no percutaneous intervention was performed.

Echocardiography showed a mild left ventricular systolic dysfunction (EF 45%) with inferior wall and apical akinesia.

The patient was completely free from cardiovascular risk factors. He had a history of migraine and a minor stroke 30 years before with a brain CT-scan showing multiple ischemic areas.

In order to investigate the possible etiology of the thrombotic event, we searched for a ovale foramen patency and thrombophilia. A contrast echocardiography confirmed the clinical suspicion of patent foramen ovale (PFO) with massive right to left shunt, while screening for thrombophilia was negative.

Initially the patient was pharmacologically treated with a triple antithrombotic therapy (aspirin, clopidogrel and enoxaparin), then he underwent percutaneous closure of PFO with Amplatzer® septal occluder 27mm. Procedure was uneventful and the patient completely recovered. Dual antiplatelet therapy was prolonged for 1 year after the index event.

At 12 months of follow-up the patient was completely asymptomatic with contrast echocardiography showing no evidence of residual interatrial shunt.

Discussion: Paradoxical coronary artery embolism is a rare but under-diagnosed cause of acute myocardial infarction and requires a high level of clinical suspicion to make an early diagnosis. PFO is a common congenital cardiac anomaly that has been shown to be an independent risk factor for cerebrovascular events, particularly among young adults with cryptogenic stroke. Embolic events occurring through the PFO can also affect other vascular districts, including coronary and peripheral arteries.

Here we report a case of an acute myocardial infarction in a young man with a PFO. In our opinion this case highlights the importance of searching for the presence of a PFO in young patients with thrombotic coronary events.

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Severe hypocalcemia and dyselectrolytemia mimicking STEMI

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Purpose: Electrolyte disturbances lead to ECG changes. This is a clinical case of severe hypocalcemia, hypomagnesemia, hypokalemia in a patient with

malnutrition due to malabsorption and ECG manifestation of acute ST elevation myocardial infarction.

Methods: 45 years old female was admitted in the hospital for diffuse ST elevation reaching 30 mm in the precordial leads V1-V4, T waves inversion, reduction of the R wave, QTc prolongation (535 msec). Sinus tachycardia – 120 beats per minute. The patient was somnolent and Chvostek's and Trousseau's signs were present, as well as tetany in the lower extremities. Two years ago she was operated for carcinoma colli uteri with partial resection of the ileum. Signs of malnutrition and malabsorption were present. No chest pain. The patient was afebrile.

Results: Slightly elevated CPK 535; MB 36 and hsTn 0,279. Serum electrolytes were as follows: Ca 0,5 mmol/l; K 2,6 mmol/l; Mg 0,63 mmol/l; hsCRP was 68.2 mg/l. The ejection fraction was normal with no regional wall-motion abnormalities. Coronary angiography excluded coronary heart disease. Repletion of Ca-, Mg- and K- deficit lead to clinical and ECG improvement: QTc, R wave and the ST segment returned to normal. The tetany was relieved and the patient gained consciousness.

Conclusion: A rare case of severe dyselectrolytemia, simulating ST elevation myocardial infarction. The ECG and clinical findings normalized with normalization of the electrolytes.

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Treatment of ventricular thrombosis complicated by embolic stroke: pushing the limit forward

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A 50-year-old man presented to the emergency room of our hospital with left hemisindrome, arisen 2 hours earlier. He immediately underwent a head computed tomography (CT) scan with contrast, which documented a right thalamic hypodensity with occlusion of right carotid siphon. Patient suffered chest pain in the previous days: ECG showed sinus rhythm with absent R wave in V1-V3 and negative T waves in precordial leads. At subsequent urgent echocardiography left ventriculapical akinesia with a large, pedunculated thrombus.

Acute treatment: Thrombolytic therapy, which would be the first choice for stroke treatment, was excluded due to the potential high risk of embolization, although literature data are conflicting and anecdotal. So, emergency endovascular treatment of acute ischemic stroke was selected. Angiography showed the occlusion of right carotid siphon, with contrast stain the extracranial segment of the vessel. Successful thrombectomy was performed, with subsequent complete recanalization of

right internal carotid artery and restoration of intracranial circulation, despite a slow flow in the right occipital artery. At control CT scan a soft right occipital and thalamic hypodensity was showed. After few hours, a progressive clinical improvement was observed.

Medical treatment with acetylsalicylic acid 100 mg daily, enoxaparin 100 IU/Kg b.i.d and bisoprolol 1.25 mg daily. Chemistry panel showed elevation of high-sensitivity Troponin T (peak of 1233 ng/dl) and normal CK-MB: this finding confirmed that the myocardial infarction was subacute, and that it did not need an urgent interventional treatment.

Treatment after acute phase: After 3 days, neurological symptoms were resolved, while ventricular thrombosis was unchanged, despite enoxaparin administration. Rather, the recovery of contractility of myocardial segments around akinetic area increased the risk of embolization. The clinical case was discussed by the Heart Team, with the presence of neurologists: urgent cardiac surgery was decided, as neurological risk was considered low. Coronary angiography showed a thrombotic subocclusion of mid left anterior descending (LAD) artery. Right after, surgical thrombectomy and single coronary artery by-pass grafting with left internal mammary artery to LAD were performed. Patient was discharged in good general conditions, with prescription of acetylsalicylic acid 100 mg daily and 3 months warfarin therapy.

Conclusions: The optimal treatment of left ventricular thrombosis after myocardial infarction, complicated by cerebral embolization, is uncertain.

An early invasive approach may be sometimes selected. However, consultation and decision-making forum by Heart Team is advised.

P93

Acute anterior ST-elevation myocardial infarction after consumption of synthetic cannabinoid mr. nice guy in addition to marijuana

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Background: Marijuana is known to cause cardiac effects, with rare cases of myocardial infarction (MI). The synthetic cannabinoid Mr. Nice Guy affects the body in the same manner as cannabis but may be considerably more potent. The drug is very dangerous and potentially fatal. We report a case of a young man who smoked marijuana regularly and arrived at the Cardiology Department with acute MI after consumption of synthetic cannabinoid in addition to marijuana the first time in his life.

Case: A 35-year-old man arrived at the Cardiology Department with an episode of sharp left-side chest

pain, radiating to left shoulder. He admitted smoking marijuana and taking Mr. Nice Guy firstly one hour before the onset of pain that persisted. He was smoked marijuana regularly. He was also a cigarette smoker and abused alcohol, and had no past medical history. He did not take medication. On admission the patient was restless, his heart rate was regular 71/min and blood pressure was 86/51, saturation was normal. Physical examination was unremarkable. The electrocardiography (ECG) showed normal sinus rhythm and ST-segment elevation in precordial leads. The patient was treated with aspirin, clopidogrel and heparin.

Emergency coronary angiography revealed a total occlusion of the ostial left anterior descending coronary artery (LAD). Primary angioplasty of infarct related artery was performed with placement of a bare metal stent. The clinical condition and hemodynamic state of the patient's significantly improved after the LAD was opened.

An echocardiography four days later demonstrated moderate dysfunction of the left ventricular systolic function with an ejection fraction of 40%, apical akinesis and a large thrombus in the apex.

An anticoagulant treatment was started in addition to dual antiplatelet therapy. During hospitalization his condition was stable, without signs of heart failure and he was discharged home on day 13. He was strongly advised to refrain from all forms of smoking and alcohol use.

Conclusion: From our case report we can assume an association between the use of marijuana and the onset of acute ST-elevation MI. The additional use of the synthetic cannabinoid Mr. Nice Guy to the regular use of marijuana can be a trigger in developing MI.

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ST-segment elevation myocardial infarction - difficult decisions in an ordinary entity (case report)

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Introduction: Treatment for ST-segment elevation myocardial infarction (STEMI) is based on emergent revascularization, preferably through percutaneous coronary intervention (PCI). However, some patients present with refractory arrhythmias that difficult primary PCI. Clear guidance for such situations is lacking.

Case Report: We present the case of a 58 year-old male patient, with a history of smoking and previous heroin consumption, on methadone maintenance treatment, but no known cardiac disease. On Saturday, September 13th, 2014 he was evaluated by emergency medical services for recurrent constrictive chest pain. An ECG was obtained which showed

sinus bradycardia, with ST segment depression and T wave inversion in the anterior leads; bradycardia resolved after atropine administration. Worsening pain during transportation prompted a new ECG, showing ST-segment elevation in the inferior leads, and he received aspirin and clopidogrel loading doses. Upon arrival at our emergency room the patient entered into cardiac arrest in ventricular fibrillation (VF) and, despite fast implementation of cardiopulmonary resuscitation, VF persisted after multiple defibrillation attempts. He couldn't be stabilised for transportation to the cath lab and timely cannulation for extracorporeal circulatory membrane oxygenation (ECMO) support wasn't possible. After multidisciplinary discussion, a decision was made to start thrombolysis with alteplase and enoxaparin; a few minutes later return of spontaneous circulation was documented. Despite under orotracheal intubation, the patient remained haemodynamically stable and showed signs of good neurologic prognosis. Reperfusion criteria were met on ECG and echocardiographic evaluation showed mildly compromised left ventricular systolic function with inferior wall segmental changes. After 3 hours, however, new successfully defibrillated VF warranted emergent coronary angiogram, which showed 3 vessel disease with a right coronary occlusion encompassing the posterior descending and posterolateral arteries as culprit. Considering the full picture, including concerns regarding adherence to medical therapy, balloon angioplasty of the culprit lesion alone was performed with satisfactory angiographic result. The patient had a favourable evolution, with successful weaning from ventilator support, no neurologic deficits and neither pain nor arrhythmia recurrence; he was discharged 16 days after admission. A myocardial perfusion scan at 6 months showed no significant ischaemia and, at 12 months follow up, the patient remains alive and with good functional capacity.

Discussion: Thrombolysis is recommended for STEMI patients who can't be timely transferred to primary PCI centres. In the setting of cardiac arrest, advanced life support algorithms do not support its use. Still, we believe it is a valid alternative and could prove lifesaving in carefully selected patients in whom upstream therapies have failed, as illustrated by our report.

P95

Left main coronary artery occlusion - a nearly fatal event stopped in time

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Introduction: Acute myocardial infarction (AMI) resulting from left main coronary artery (LMCA) occlusion is frequently fatal and a significant proportion of patients succumb to sudden cardiac death. There are some reports of survival in patients with right dominant coronary artery,

well established collateral circulation, as well as early percutaneous coronary intervention (PCI) or coronary artery bypass graft surgery (CABG).

Clinical Case: We present the case of a 55-year-old male patient with a past medical history of hypertension, hyperlipidemia, obesity, hyperuricemia, previous smoking, cerebellar ataxia and stage 3 chronic kidney disease. The patient complained of tiredness and chest pain for moderate efforts in the past year, and self-limited chest pain at rest for the past two weeks. On admission's day, he woke up at 5am with chest pain radiating to the back and profuse sweating. He went to work and the pain relieved after 2 hours. At 10am, he felt chest pain again and went to a private hospital, where an electrocardiogram was performed showing sinus rhythm, ventricular extrasystoles and ST segment elevation in anterior precordial leads. Our center was contacted and the patient was transferred directly to the catheterization laboratory.

On arrival, at 11.11am, he was in cardiogenic shock. The coronarography revealed distal LMCA occlusion and coronary angioplasty with a drug eluting stent was performed. A temporary pacemaker was placed prophylactically due to changes in QRS morphology and electrical axis. The patient was then admitted to the cardiac care unit needing inotropic support. The echocardiogram (echo) revealed non-dilated chambers, left ventricular ejection fraction (LVEF) of 50% with significant segmental motility changes, normal right ventricular function and no significant valvular dysfunction or pericardial effusion. After 24 hours the temporary pacemaker was removed, which was followed by an abrupt decrease in blood pressure. An echo was performed revealing a pericardial effusion mainly adjacent to the right ventricular free wall, with partial diastolic collapse of the right chambers. It was necessary to increase intravenous fluids and inotropic support. After 72 hours the patient was hemodynamically stable and no inotropic drugs were required. Renal function was stable. The patient was discharged after 14 days from the event. At discharge, the echo revealed a LVEF of 33% and a slight pericardial effusion.

At 1-month follow-up, the patient reported fatigue and dyspnoea for moderate efforts. He had no chest pain or other complaints. There was a slight improvement in LVEF (45%).

Conclusion: Survival after an AMI due to LMCA occlusion is a rare event and frequently results in significant morbidity and poor long term survival. However, since the introduction of early PCI, a larger amount of myocardium can be salvaged and patients can expect better in-hospital and long-term prognosis associated with better LVEF.

P96

Acute myocardial Infarction following a direct intravenous bite of Bothrops Jararaca (Bothrops Neuwiedi)

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Introduction: In 2013 in Brazil there were 28,392 registered cases of snakebites.

The majority of these accidents are caused by the genus Bothrops (72.3%) with a lethality rate of 0.38%.

The properties of the venom are predominantly proteolytic and coagulant and can manifest as bleeding or thrombotic events. Systemic complications are rare and have a multifactorial pathogenesis, most often manifesting with shock, acute renal failure, sepsis and disseminated intravascular coagulation (DIC).

Cardiac involvement is rare and there are only a few cases described in the literature with acute myocardial infarction (AMI), mainly in Asia. In Brazil, there are no reports.

Methods: Case Report of a patient victim of bothropic accident who developed AMI

Report: 59 year old man, hypertensive, presented at the emergency department due to bothropic accident 60 minutes ago. The symptoms began with pain and swelling in the right forearm in addition to chest pain at rest. The patient was conscious and oriented, eupneic, hypertensive and complaining of moderate chest pain. Electrocardiogram (ECG) was normal. It was administered 6 ampoules of antivenom, morphine and sublingual nitrate with transient pain relief. Due to the recurrence of angina and new ECG changes (new left bundle branch block) he was transferred to the Heart Institute. The patient developed respiratory insufficiency, shock, and was transferred to the Coronary Unit, where he was intubated and vasoactive drugs were started. He was immediately referred to coronary angiography that showed high thrombotic burden and occlusion of diagonal and marginal arteries. The arteries were not amenable to angioplasty and it was deployed a intra-aortic balloon.

After 24 hours the patient developed hemorrhagic stroke, refractory shock and death.

He was sent to the pathology, which demonstrated recent AMI only 12 to 24 hours of evolution, with fibrin thrombi and platelets in microcirculation. Hemorrhages were also present, such as alveolar hemorrhage, multifocal intestinal bleeding and recent hemorrhage of the brain.

The pathologist diagnoses was AMI and DIC.

Conclusion: We can thus state that cardiac involvement associated with bothropic accident is rare, but has serious potential involvement with fulminant evolution and possible association with disseminated intravascular coagulation.

Cases like these, with fulminant evolution and diffuse thrombosis in coronary arteries associated with bothropic accident had not yet been described.

P97

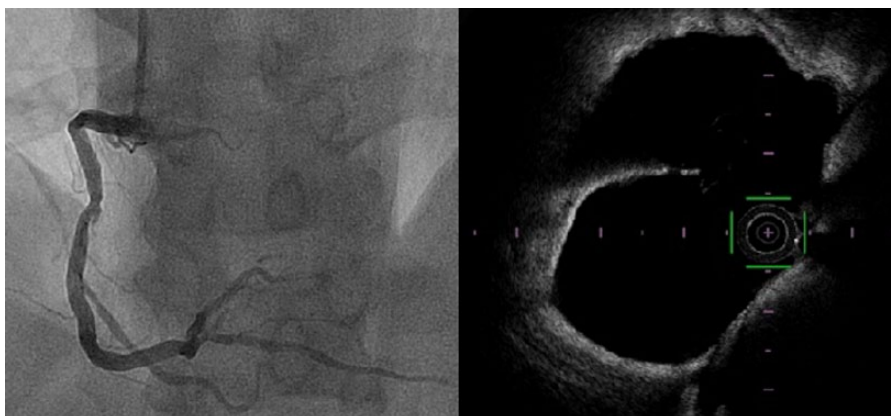
Right coronary artery ulceration in a patient presenting with unstable angina

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A 50-year-old male was admitted to our Institution due to chest pain. Relevant medical background included cigarette smoking habit, alcohol consumption, high blood pressure and dyslipidemia. He had been diagnosed three years before with a non-ischemic dilated cardiomyopathy. A coronary angiogram was performed back then, demonstrating normal coronary arteries. The diagnosis was attributed to alcohol abuse. Recovery of normal left ventricle systolic function was confirmed after withdrawal of alcohol intake.

Currently, he complained of episodes of typical chest pain related to moderate effort during the previous month. The day of admission, he suffered a more severe and prolonged episode at rest. An electrocardiogram showed negative T-waves in infero-lateral leads. He was therefore admitted under the diagnosis of unstable angina.



RCA angiogram & OFDI: ulceration

He underwent cardiac catheterization. Although severe stenosis of the coronary arteries were ruled out, a dye stain in the mid-segment right coronary artery (RCA) was evident. An OFDI analysis was deemed suitable. A complicated active ulceration regarding the mid-segment of the RCA was demonstrated.

Considering the typical symptoms of the patient together with the electrocardiographic changes and this angiographic finding, he was intended for a percutaneous coronary intervention. A drug-eluting stent was deployed, covering the ulceration area. Dual antiplatelet therapy was prescribed for a minimum period of six months. The patient was discharged. He remained asymptomatic. No angina episode appeared during follow-up.

Acute coronary syndromes can occur in the absence of significant coronary artery stenosis, more frequently in women.

Coronary artery ulceration is one of the mechanisms described. It appears after a coronary plaque disruption resulting in emptying of the atheromatous core and distal embolization of debris, without occlusive thrombus formation. Gold-standard treatment in these cases is not well established. An exhaustive clinical characterization is paramount in these scenarios, so we are sure that our patient does present an acute coronary syndrome before performing a revascularization.

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When the electrolytes are swept away... and the consequences

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The clinical picture of an acute cardiac failure is often worsened by severe arrhythmias.

These arrhythmias have a diverse aetiology, commonly ischaemic, but also metabolic, due to electrolytes disturbances.

The latter situation, depending on the severity of the arrhythmias, is able per se to induce an acute cardiac failure.

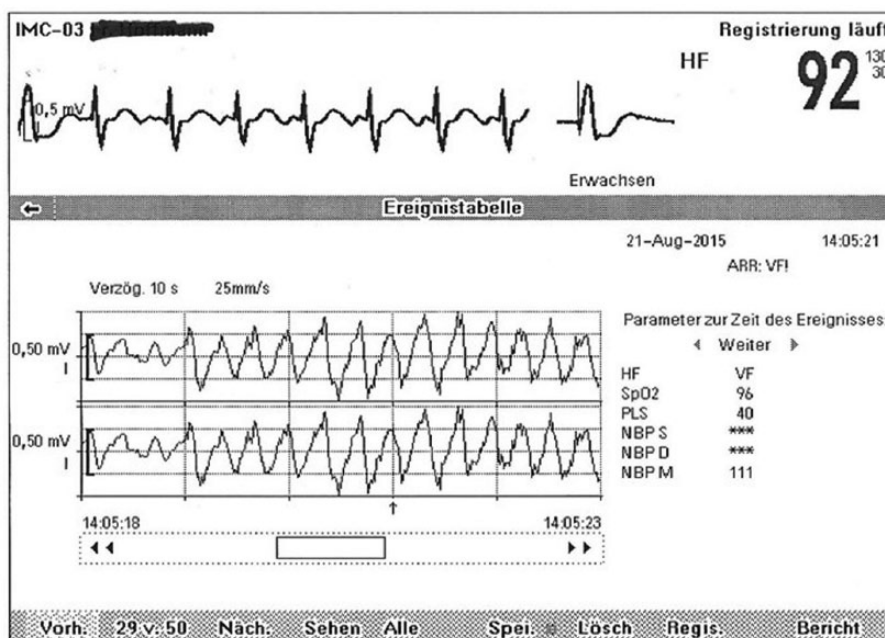
The neoplastic diseases are able to induce severe arrhythmias and subsequently an acute cardiac failure as presented in this clinical case of Schwartz-Bartter Syndrome.

Definition: The Schwartz-Bartter Syndrome is defined as an abnormal secretion of an antidiuretic hormone linked to a neoplastic process mainly in the lungs (80%) but practically able to turn up everywhere in the body.

It shows a hypotonic hyperhydration with hyponatremia and hypokalemia, accompanied by nausea, fatigue, loss of appetite and irascibility.

In our case, the 83 years old lady was admitted in hospital because of symptomatic sustained ventricular tachycardia with torsade de pointes.

She was in a very poor condition, presenting low blood pressure, highly psychically distressed, without chest pain. On admission to hospital, the serum sodium was 126 mval/l and potassium 2,60 mmol/l with an normal creatinin- and GFR levels. The troponin T level (high sensitive) was elevated.



Torsade de pointes

A chronic hyponatraemia was attributed to a diuretic therapy. Due to a persistent atrial fibrillation, she was on Rivaroxaban and a pacemaker was implanted a year ago due to bradycardia.

To make the situation more complicated, among the medication was also digitoxin (the level was some weeks before found to be too high also...).

Potassium and magnesium have been administered, orally and intravenously and amiodarone had to be added to the therapy in order to stabilize her heart rhythm.

Facing the ongoing ventricular tachycardia and elevated troponin T levels, a coronary catheterization was performed:

-it showed normal coronary arteries and a middle grade deterioration of the left ventricular function (EF 35%) mainly due to a hypokinesia of the anterior wall. The cause is probably a tachycardiomyopathy or/and related with the electrolyte disturbances.

Having achieved a normal electrolyte level, the patient was thereafter stable.

The pacemaker function was normal.

But the patient showed a continuous hypochromic, microcytic anaemia, despite the absence of bleeding signs, who needed repeated blood transfusions.

A gastroscopy was negative, but a colonoscopy revealed a colon neoplasm (adenocarcinoma).

Subsequently the analysis of the 24 h urine test revealed hyponatraemia and a normal to high osmolality, leading to the assumption of a Schwartz-Bartter Syndrome related to the colon neoplasm.

Therapy: A colectomy and an ICD upgrading were performed without complications excepting a transient delirium post-surgery.

P99

A neurologic problem with a cardiac resolution

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Introduction: Ventricular tachyarrhythmia can precipitate syncope or sudden cardiac death. However, patients may be misdiagnosed with epilepsy with life-threatening risks.

Case report: A 61-year-old female presented with a year of generalized seizures. Neurologic evaluation was unremarkable. Electroencephalography and cranial MRI were normal. Epileptic seizures were presumed and levetiracetam was started. A cardiologist assessment was requested to rule out a cardiac source for loss of consciousness. She reported prodromal symptoms in some of those events. Concerning to personal background for cardiac diseases, she mentioned a

sister who died in childhood for cardiac causes and she had a niece with congenital heart condition. ECG, echocardiography (echo) and 24-hours holter recorder were normal and tilt test was positive with reproduction of symptoms. The diagnosis of neurocardiogenic syncope was assumed and antiepileptic medication suspended. Two years later, the patient presented recurrent syncope, and most of episodes were not preceded by prodromal symptoms. Prehospital emergency team detected torsades de pointes (TdP) with seizure. Intravenous magnesium sulphate was administered and the patient was admitted in a cardiac intensive care unit. ECG showed sinus rhythm and prolonged corrected QT (cQT) interval. Lab analysis was normal. There was no history of drugs related with QT prolongation. In the first 24 hours of monitoring, she had 2 nonsustained TdP and experienced cardiorespiratory arrest with pulseless TdP with quickly recovered after initiation of advanced life support. She started isoprenol and stabilized. The TdPs were preceded by ventricular premature complexes with a short-long-short sequence. The echo showed preserved biventricular systolic function. Cardiac catheterization documented normal coronary arteries. The clinical case was reviewed and beta blocker was initiated. She had no more tachyarrhythmia event during 1 week of hospitalization. The patient received an implantable cardioverter defibrillator (ICD) and was discharged with bisoprolol. In the same day at home, the patient received an appropriate ICD therapy with syncope. ICD recorder showed a TdP with successful shock. The ICD parameters were adjusted and beta blocker dose was intensified according with haemodynamic tolerance. Genetic test founded a mutation in KCNE1 gene (D85N) related to some cases of congenital long QT syndrome (cLQTS). After 6 months of follow-up, the patient was asymptomatic and had no other ICD therapies. Family screening was advised.

Conclusions: cLQTS is frequently confounded by seizure disorder. In our patient, concomitant vasovagal syncope made the diagnosis even harder. This case highlights the importance for careful exclusion of LQTS with TdP in patients with recurrent seizure-like attacks, since proper management can reduce mortality and morbidity of these patients.

PI00

Twiddler syndrome presenting as torsades des pointes

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Background: Twiddler syndrome occurs when the patient manipulates the pacemaker with subsequent torsion and coiling of pacemaker lead resulting in dislodgement and often fracture of the lead. Twiddler syndrome usually presents with bradycardia-related symptoms. Torsades des pointes (TdP) is usually associated with QT prolongation

and dispersion of ventricular repolarization. Bradycardias, including complete atrio-ventricular block (CAVB), may predispose to abnormal QT prolongation and TdP.

Methods: To present a rare case of twiddler syndrome presenting as torsades des pointes.

Results: A 70 years old obese female patient with Alzheimer disease was admitted with general weakness and CAVB. A ventricular-demand pacemaker was implanted in the left delto-pectoral region with the screw-in electrode inserted through the left axillary vein and positioned in the right ventricular apex. Three weeks later the patient experienced an episode of syncope. On admission the patient had two episodes of TdP with loss of consciousness that were successfully treated with DC cardioversion. The electrocardiogram revealed CAVB with marked QT prolongation; pacemaker spikes were present on her electrocardiogram, however there was no capture. On X-ray examination, the pacemaker lead was coiled around the pulse generator with its tip in the left axillary vein. Her blood electrolytes were normal. Under assumption that TdP had been triggered by bradycardia-induced QT prolongation the patient underwent emergency reposition of the lead. Both the pulse generator and the lead were fixed to the pectoral fascia with the non-absorbable polymer suture. There was no recurrence of ventricular arrhythmia or syncope during 48 hours of monitoring and the patient was discharged home in stable condition.

Conclusions: Twiddler syndrome can present not only as bradycardia but also with life-threatening ventricular tachyarrhythmia through bradycardia-induced QT prolongation. It should be considered in the differential diagnosis of TdP in patients with implanted pacemaker.

PI01

Bradycardia, a rare find in legionella pneumophila infection

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Introduction: In most cases, Legionella pneumophila (LP) infection causes a systemic disorder. Cardiac involvement is rare and it may present as endocarditis, myocarditis, pericarditis and pericardial effusion. Its association with conduction disorders is rare. There are four cases of cardiac conduction abnormalities associated with LP infection available in the literature. However, none of them is associated with binodal dysfunction.

Case report: The authors present a case of a fifty-five years old male patient, admitted to an intensive care unit for LP pneumonia associated with septic shock and severe acute respiratory distress syndrome, with need of veno-venous extracorporeal membrane oxygenation. During the period of active infection and under antibiotic therapy with azithromycin, sinus pauses and complete heart block associated with hemodynamic instability were documented and the patient was submitted to temporary transvenous pacemaker implantation. After treatment of the infection, there was complete reversal of the rhythm disturbance and there is no documented recurrence during the six months follow-up after hospital discharge.

Conclusion: LP infection is a rare but reversible cause of bradyarrhythmia, which is associated with a favorable outcome after resolution of the systemic infection.

PI02

Primary hyperparathyroidism: cause of an unusual electrical storm

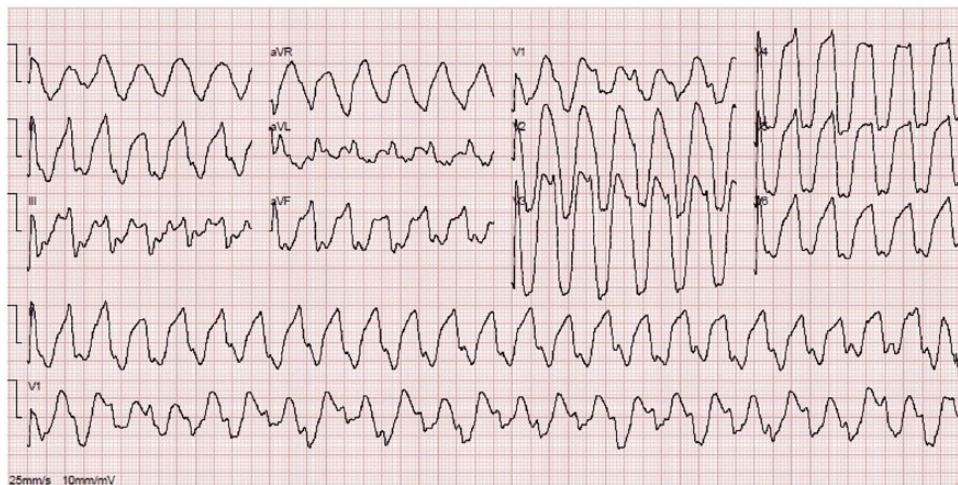
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Introduction: Hypercalcemia is a known cause of heart rhythm disorders, however its association with ventricular arrhythmias is rare.

Case report: The authors present a case of a fifty-three years old male patient with ischemic cardiomyopathy and severely reduced ejection fraction, carrier of cardiac resynchronization therapy with automatic cardioverter defibrillator (CRT-ICD), admitted in the urgency department with electrical storm, with multiple appropriated ICD shocks, refractory to antiarrhythmic therapy. In the etiological investigation was documented severe hypercalcemia secondary to primary hyperparathyroidism in context of parathyroid adenoma, undiagnosed until then. Only after calcium levels normalization, with drug therapy and hemodiafiltration, ventricular tachycardia stopped. During hospitalization the patient was submitted to a left inferior parathyroidectomy, and since then he maintained normocalcemia without drugs. After hospital discharge, there weren't recurrences.

Conclusion: Primary hyperparathyroidism is a potential cause of ventricular tachycardia. Recent studies demonstrated that in this context not only hypercalcemia but also parathormone itself seems to have arrhythmic potential.



PI03

An unusual cause of severe cardiac arrhythmia

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The authors report a case of incessant arrhythmia due to a volunteer intoxication with an uncommon substance, refractory to different measures.

A 23 years old woman was admitted to the emergency room hypotensive and bradycardic after a volunteer ingestion of a plant 'Taxus Baccata' with suicidal intention 6 hours ago. 1 mg of atropine was administered and aminergic support was initiated. Then ventricular tachycardia (VT) with pulse (see figure) occurred. Mechanical ventilation was required and magnesium sulphate, potassium and lidocaine were administered. At that time, asystole occurred and after 1 cycle of advanced life support (ALS), pulse was recovered in VT. Extreme bradycardia occurred again and external pacemaker support was initiated, followed by asystole with requirement of another cycle of ALS. Rhythm was recovered in VT and after a direct current cardioversion (DCC) with a 200 J biphasic shock, cardiac arrest occurred in ventricular fibrillation, recovered after 2 ADS cycles and 2 DCC. The recovered rhythm was again VT with pulse and amiodarone perfusion and calcium gluconate were initiated. After 4 hours in VT with pulse we verified a progressive rhythm organization to sinus rhythm. Given the fact that this toxin has an alkaloid compound and can have some chemical properties similar to digoxin, we started antibody's anti-digoxin, as has already been described in other case reports. Hemodynamic stabilization ensued. Echocardiogram evaluation in emergency room revealed a preserved biventricular function. The patient was extubated

after 18 hours and discharged to a psychiatric unit after seven days, without significant sequels.

The use of Taxus Baccata as suicide intention is infrequent. The potent effect of this toxin is primarily cardiac leading to severe rhythm disturbances. Classic antiarrhythmic therapy has proven to be ineffective. There is no known antidote, therefore a prompt diagnosis and supportive care are the only available options so far. With this case we describe the arrhythmic effects of this substance and the difficulty of treatment in this situation.

PI04

Tachycardiomyopathy: an old modality of treatment revisited

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Background: Tachycardiomyopathy (TCM) should be considered in all patients whose systolic dysfunction is diagnosed subsequent to or concomitant with chronic tachyarrhythmia. Heart rate normalization is the cornerstone of therapy.

Purpose: to prove the validity of old technique of AVN ablation and permanent pacing as simple curative treatment option.

Methods and Results: M.A. is a 25 year-old male working as a farmer in upper Egypt, not diabetic or hypertensive; and has no FH of heart diseases. Since 2009 he was hospitalized for LV failure several times; and have been told that he had idiopathic dilated cardiomyopathy. He had dyspnea NYHA classification III. On October 2013, he was admitted in ICU because of dyspnea and rapid palpitation. His HR was 160 BMN, BP 90/60, and heart exam showed displaced LV apex and S3. EKG showed accelerated Junctional Tachycardia. He received I.V. Amiodarone infusion, I.V. Digoxin; i.v. Adenosine in different days but only slowed rate to 140 BMN. Also I.V. Potassium and Magnesium infusion failed

to terminate Tachycardia. Echocardiography confirmed dilated cardiomyopathy diagnosis with LVEF 32%. He was discharged on classic antiarrhythmic therapy. He presented to me few months later with same LVEF NYHA class III and incessant junctional tachycardia with AV dissociation documented in many ECGs. I decided to try Catheter RF Ablation for this Tachyarrhythmia; and it successfully converted him into sinus Rhythm. He was symptoms free for few weeks, but same junctional Tachycardia recurred. Considering that patient may have had Tachycardiomyopathy, I decided to do RF catheter Ablation of AVN to induce complete AVB; and implant permanent pacemaker using single chamber VVIR PM. Patient markedly improved within few weeks; and now after more than 2 year follow up, he is back to full activity, and Echo showed regression of LV dimensions, and EF increased from 32% at time of RF ablation to 55% now.

In conclusion: A tachycardiomyopathy should be always considered in patients with Idiopathic dilated Cardiomyopathy and heart failure who suffer from chronic or frequently recurring tachyarrhythmias. Control of the heart rate can often result in a significant improvement of the ventricular function and both symptoms and exercise tolerance. This can be achieved by RF ablation of AVN and pacing by simple cheap VVIR PM.

PI05

Dengue fever as the cause of complex ventricular arrhythmia in an elderly patient with known coronary artery disease - a case report

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Background: Dengue is an endemic arboviral disease in Brazil. Common symptoms include fever, myalgias, arthralgias, malaise, nausea, vomiting. Cardiac involvement, poorly reported in the literature, ranges from oligosymptomatic forms to fatal myocarditis. Rhythm disturbances occur, but complex ventricular arrhythmias are uncommon. We report the case of a patient known to have coronary artery disease, with Dengue, complex ventricular arrhythmia and syncope.

Case report: Male, 82 years old, past myocardial infarction 20 years before, with type 2 diabetes mellitus, hypertensive and dyslipidemic, in regular clinical conditions and proper treatment, physically active and previously asymptomatic. Presented with intense myalgia, asthenia, fever, nausea and vomiting without cardiovascular complaints. Rapid test for Dengue antigen and Dengue serology were positive. Severe thrombocytopenia (30,000) led to hospitalization. During the same, he presented some episodes of syncope, while sitting, without previous symptoms. Clinical examination: normally hydrated, anicteric, without postural hypotension, normal cardiac palpation and auscultation, normal pulmonary sounds.

Electrocardiogram (ECG) showed regular sinus rhythm, some isolated ventricular premature beats. 24-hours Holter monitoring showed episodes of non-sustained ventricular tachycardia (NSVT) and accelerated idioventricular rhythm. Troponins and BNP were normal. Doppler Echocardiogram revealed normal systolic function, akinesia of the basal portion of the lower wall. Cardiac catheterization, performed in the convalescent phase of dengue (10 days after diagnosis) showed occlusion of the right coronary artery (probably chronic) and severe and extensive lesion in the proximal 1/3 of the circumflex artery. Patient underwent elective angioplasty of this artery, with pharmacological stent implantation, with excellent angiographic result. Persisted with frequent NSVT and syncope, while seated. On the 10th day after angioplasty (D20 after the diagnosis of dengue), with already normal laboratory tests, we conducted transcatheter electrophysiological study, which was completely normal, with no inducible arrhythmias. The patient was discharged from hospital. After discharge, he has been followed at our outpatient clinic and no longer presented syncope or records of ventricular arrhythmias in two 24-hour Holter series.

Conclusions: Although with anatomical substrate, this patient never developed arrhythmias and was asymptomatic before infection by Dengue virus. The complete resolution of the arrhythmias after complete recovery of the arboviral infection favors the hypothesis that Dengue was responsible for the outbreak of NSVT and, probably, for the syncope. Dengue patients should be evaluated more carefully regarding cardiac involvement.

PI06

Antegrade-only anteroseptal accessory pathway

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Manifest accessory pathways that conduct antegrade-only account for less than 5% of all bypass tracts. We present a case of a 25-year-old patient presented with manifest accessory pathway. During electrophysiological study, there was no retrograde conduction over the accessory pathway that was successfully ablated through a subclavian venous access.

The Case: A 25-year-old male patient presented to us with recurrent palpitations and syncope.

On Examination; the patient was pale, sweaty, his blood pressure was 85/60 mmHg, pulse rate was 180 beat per minute (bpm) irregular, and his ECG showed manifest pre-excited Atrial fibrillation for which he received a synchronized DC shock. Further ECG in sinus rhythm showed manifest ventricular preexcitation.

During electrophysiological study, we found an anteroseptal accessory pathway, non-decremental with

people with ACS who received the SMEP had improved quality of life (QOL) when measured using the Seattle Angina Questionnaire.

Results: There were 169 participants. The intervention group's knowledge improved significantly more than the control group's ($p<0.001$). No significant differences were evident between the two groups for knowledge of SLGTN use or QOL.

Conclusion: A targeted SMEP shows promise in improving symptom management knowledge of SLGTN for people with ACS. Recommendations are that the SMEP be implemented into clinical practice in the in-hospital setting to optimise patient self-management of SLGTN early in their illness.

PI08

Acute coronary syndrome - a new reality?

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Background and Aim: Despite of scientific advances, not only in therapeutic strategies, but also in medical knowledge, Acute Coronary Syndrome (ACS) is still associated a significant morbidity and mortality. There seems to be a residual risk that remains difficult to resolve. The aim of this study was to determine whether there are differences in clinical characteristics and intrahospital mortality in patients with ACS among 2004-2008 and 2009-2012.

Population and Methods: We evaluated 4336 patients with ACS who were treated in a single unit care intensive between May 2004 - September 2012. Patients were divided in two groups according to date of admission: group 1 (May 2004 - December 2008, $n=2409$) and group 2 (January 2009 - September 2012, $n=1927$). Demographic and laboratories parameters and risk factors for cardiovascular disease were examined.

Results: There was no significant difference in age (67.31 ± 12.7 vs. 67.34 ± 13.1 , $p=0.927$). In group 2 was significantly more likely to be hypertensive (77.6% vs. 71.5%, $p<0.001$), dyslipidemic (76.7% vs. 67.3%, $p<0.001$) and diabetic (29.6% vs. 26.6%, $p<0.035$). Regarding the previous medication, the group 2 was more treated with beta-blocker (28.1% vs. 24.4%, $p=0.029$) and statins (47.1% vs. 35.1%, $p<0.001$). We haven't found any differences in Killip class. Group 1 was significantly more likely to have ST-segment elevation myocardial infarction (24.0% vs. 20.2%, $p<0.001$) and significant coronary lesions (80.5% vs. 79.2%, $p<0.001$). Group 1 presented higher

Grace score (136.7433 vs. 134.2571, $p=0.029$). Regarding the laboratories parameters, group 2 had better values of creatinine (1.1581 vs. 1.2333, $p=0.023$) and higher INR (2.1463 vs. 1.1729, $p<0.001$) on admission. There was no significant difference in atrial fibrillation (8.4% vs. 8.2%, $p=0.868$). Intrahospital mortality was exactly the same (5.8% vs. 5.8%, $p=0.989$).

Conclusion: Actually, the patients with ACS who are treated in unit care intensive have more risk factors for cardiovascular disease and therapeutics more extensive. Nevertheless these patients benefit from technological and therapeutics advances there were no significant difference in intrahospital mortality.

PI09

Transient new-onset atrial fibrillation is associated with poor clinical outcomes in patients with acute myocardial infarction

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Background: Atrial fibrillation (AF) is considered to be associated with poor clinical outcomes in patients with acute myocardial infarction (AMI). However, it remains uncertain whether transient new-onset AF (NOAF) during AMI have an increased risk of clinical outcomes. We investigated the short-, mid-, and long-term prognostic implications of transient NOAF in AMI patients.

Methods: The study population included 2,105 consecutive AMI patients. Transient NOAF was defined as AF that developed during AMI without the prior history and was not documented after hospital discharge. The primary endpoint, major adverse cardiac events (MACE), was defined as death, AMI, target vessel revascularization, heart failure requiring admission, and cerebrovascular events.

Results: Overall, AF was observed in 209 (9.9%). Chronic AF and NOAF occurred in 59 (2.8%) and 150 patients (7.1%), respectively. Among patients with NOAF, transient NOAF was observed in 102 patients (4.8%) and 48 patients remained AF after hospital discharge. Patients with transient NOAF were older (68 ± 13 vs. 63 ± 13 yrs, $p<0.001$) and more likely to be female (36 vs. 26%, $P=0.024$) than those without AF. Cardiogenic shock (31 vs. 14%, $p<0.001$), higher Killip class (≥ 2 , 51 vs. 30%, $p<0.001$), cardiac arrest (17 vs. 4%, $p<0.001$), systolic (EF $<40\%$, 46 vs. 25%, $p<0.001$) and diastolic LV dysfunction (E/E' >15 , 56 vs. 35%, $p<0.001$), and baseline renal dysfunction (eGFR <60 , 57 vs. 26%, $p<0.001$) were observed more frequently in the transient NOAF group.

Patients with transient NOAF presented markedly higher short-, mid-, and long-term MACE and mortality rate

compared to those without AF. The 1-month (21.6 vs. 7.4%, $p<0.001$), 2-year (36.3 vs. 20.5%, $p<0.001$), and 5-year MACE rates (45.1 vs. 25.7%, $p<0.001$) were higher in the transient NOAF group compared to the group without AF. In-hospital (16.7 vs. 5.2%, $p<0.001$), 1-month (17.6 vs. 6.0%, $p<0.001$), 2-year (28.4 vs. 11.3%, $p<0.001$), 5-year mortality rates (32.4 vs. 13.2%, $p<0.001$) were also significantly higher in patients with transient NOAF. Multivariate Cox regression analysis revealed that transient NOAF was a significant independent predictor of both MACE (HR 1.55, 95% CI 1.10-2.18, $p=0.013$) and mortality (HR 1.87, 95% CI 1.22-2.85, $p=0.004$) after adjusting for confounding variables such as gender, age, hemodynamic status, LV systolic and diastolic function, baseline renal function, and comorbidities. Age >75 yrs, LV systolic dysfunction, cardiogenic shock, baseline renal dysfunction, multivessel disease, and anemia were other independent predictors for MACE and mortality.

Conclusions: Transient NOAF is a significant independent predictor of poor clinical outcomes in patients with AMI.

PI10

The predictive value of left bundle branch block in the settings of acute coronary syndrome

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Background: Patients with LBBB comprise around 5% of all patients with STEMI. They represent a much more heterogeneous population than STEMI without LBBB and present unique diagnostic and therapeutic challenges to the clinician. Although these patients have generally been considered to be at higher risk, it is uncertain if LBBB predicts an adverse outcome independently of other prognostic factors.

Objective: To assess the predictive value of new or presumably new LBBB on ECG for in-hospital mortality and long-term prognosis (1 year) in patients with STEMI.

Methods: We performed retrospective register-based study. All patients (≥ 18 years) with STEMI and new or presumably new LBBB on the prehospital (ambulance) or admission ECG admitted to both hospitals were enrolled into the study (LBBB group). The control group consisted of patients with STEMI without LBBB matching (1:2) with age and sex to each case. Urgent coronary angiography, followed by PCI was performed in all patients. There were no exclusion criteria (all-comers design) for both groups.

Results. During 01.01.-31.12.2013 consecutive 72 patients were enrolled into LBBB group (mean age $68,0\pm 12,1$ years; $M73,6\%$) and 144 patients into the control group (mean

age $68,0\pm 12,1$ years; $M72,2\%$). There were no differences between the groups due to the history of PCI, CABG, CHF, diabetes, stroke, hypertension, as well as prehospital treatment. Patients with STEMI and LBBB showed higher HR ($87,0\pm 24,0$ vs $73,6\pm 19,6$ bpm, $p=0,0005$), Killip class ($1,67\pm 0,94$ vs $1,23\pm 0,74$, $p=0,002$), creatinine level ($108,0\pm 110,2$ vs $85,7\pm 43,5$ mmol/l; $p=0,03$) at admission. Time from the symptom onset to balloon was $324,3\pm 287,7$ vs $443,5\pm 580,9$ min; $p=0,4$. There were no differences in culprit lesions, among both groups. In-hospital mortality was significantly higher among patients with LBBB 18,1% vs 8,3%; $p=0,04$. During one year of follow-up 1 patient was lost in LBBB group and two in the control group. Mortality after 1 year of FU was significantly higher among patients with LBBB 28,2% vs 10,6%; $p=0,026$. According to multivariate analysis only two variables were related to in-hospital and 1-year mortality, namely history of MI (HR 2.38, 95%CI 1.13-5.03, $p=0.023$) and presence of LBBB on prehospital/admission ECG (HR 2.17, 95%CI 1.04-4.55, $p=0.04$). However, 1-year prognosis for those patients with LBBB, who were discharged alive from hospital, was related with a history of previous MI only ($p=0.0001$).

Conclusion: In a large non-selected population of STEMI patients with LBBB treated with primary PCI only history of previous MI and presence of LBBB were related to in-hospital and 1-year mortality.

PI11

Acute coronary syndrome in young women

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Introduction: Cardiovascular disease is prevalent in older patients, but in the last decade has witnessed an increasing incidence in younger patients (pts).

Acute coronary syndrome (ACS) in young women is relatively infrequent, being smoking the main risk factor.

Currently there is a growing clinical interest in younger pts in terms of etiology and the premature disability and social repercussions.

Aim: To compare cardiovascular risk factors and coronary disease severity in women with ACS, according to age group.

Methods: We evaluated consecutive female pts admitted to a coronary care unit with a diagnosis of ACS between June 2011 and June 2013. The population was due in two groups, women of childbearing age ≤ 55 years and women > 55 years. These were characterized according to baseline characteristics, cardiovascular risk factors and complications (in-hospital death, re-infarction, stroke and hemorrhage).

Results: We studied 186 women grouped according to age: women \leq 55 years - 17% (n = 31) and women > 55 years 83% (n = 155).

The main factor of cardiovascular risk in young women was smoking (69% vs 31%, $p < 0.001$), hypertension and diabetes mellitus were the main risk factors in older women (87% vs 13%, $p = 0.024$; 90% vs 10%, $p = 0.045$).

Coronary disease severity was higher in older women (heart disease 3 vessels: 95% vs 5%, $p = 0.011$).

No statistical difference in terms of clinical and in-hospital complications, namely, death and reinfarction.

The oral anti-contraceptives were not associated with the severity of coronary heart disease.

Conclusions: ACS is a reality in young women, being smoking is the main factor risk. Young women have a more favorable cardiovascular risk profile associated with coronary disease less severe.

P112

Prognostic impact of natremia in patients with acute coronary syndrome

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Introduction: Hyponatremia and hypernatremia are common electrolytes disorders associated with an increased risk of adverse events. In patients (pts) with heart failure (HF), low sodium levels have been associated with an increased risk of rehospitalization, morbidity and mortality. Its prognostic impact in patients with acute coronary syndrome (ACS) is not clarified.

Objective: To evaluate the prevalence and prognostic impact of serum sodium levels in patients admitted for ACS.

Methods: Consecutive pts admitted to a coronary care unit with ACS were evaluated. Pts were characterized according to their clinical and laboratorial characteristic and divided into serum sodium quartiles obtained on admission. Primary adverse events were death, reinfarction and in-hospital HF (Killip Class \geq 2 or BNP \geq 400) and at a year. We evaluated the predictive value of the sodium levels on the risk of occurrence of adverse events in-hospital and 1 year.

Results: We studied 615 pts (70% male; mean age 68 ± 13 years). Patients were divided in 4 groups according to sodium quartiles (quartile 1 \leq 136 mmol/L; $136 <$ quartile 2 \leq 138 mmol/L; $138 <$ quartile 3 \leq 140 mmol/L, quartile 4 $>$ 140 mmol / L). Lower sodium levels were associated with higher creatinine and BNP levels during hospitalization. Patients in the first and second quartiles had a higher prevalence of in-hospital and long-term HF and a higher rate of death at 1 year (See Chart 1). There was

Table 1. Adverse events according serum sodium

| | Serum sodium | | | | p |
|-------------------|--------------|------------|------------|------------|-------|
| | Quartile 1 | Quartile 2 | Quartile 3 | Quartile 4 | |
| In hospital death | 1 | 1 | 0,3 | 0,5 | ns |
| In hospital HF | 9 | 6 | 5 | 4 | 0,013 |
| Death in 1 year | 4 | 2 | 1 | 1 | 0,001 |
| HF in 1 year | 5 | 4 | 3 | 2 | 0,03 |

no statistically significant difference in the reinfarction rate for each group.

A sodium value \leq 137 mmol/L on admission was an independent predictor of death at 1 year (adjusted OR 3.39 95% CI 1.78-6.46), regardless of the BNP level obtained during hospitalization. A sodium value \leq 138 mmol/L on admission was also determined as an independent predictor of HF at a year (adjusted OR 2.55 95% CI 1.45 to 4.5).

Conclusion: In a population of patients with ACS the presence of lower levels of serum sodium were associated with an increase of adverse events in the short and long-term and constituted an independent predictor of mortality and HF at 1 year.

P113

Primary percutaneous coronary intervention vs conservative treatment for acute inferior STEMI: Is right ventricular involvement impacts on clinical outcomes?

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Purpose: We conducted a prospective study to compare short- and long-term clinical outcomes between primary percutaneous coronary intervention (PPCI) and conservative strategies in patients with acute inferior ST segment elevation myocardial infarction (STEMI) with and without right ventricular (RV) involvement.

Methods: The study population involved 596 consecutive patients with primary acute inferior STEMI (mean age 57.3 y.o., males 85.9%) admitted to the hospital within 12 hours after the onset of symptoms. Based on treatment type, all patients were categorized into two groups: PPCI (+) who underwent PPCI (n=162) and PPCI (-) who did not undergo PPCI and received only standard medical treatment (n=434). Depending of RV involvement, each of above groups were further divided into two subgroups: those with RV myocardial infarction (RVMI(+)) and without it (RVMI(-)). Thus, within PPCI (+) group, 66 patients

belong to RVMI(+) and the remaining 96 - RVMI(-), and within PPCI (-) group 192 patients belong to RVMI(+) and the remaining 242 - RVMI(-). We compared in-hospital and 1-year post-infarction cardiac mortality risks between PPCI (+) and PPCI (-) groups and their subgroups in terms of odds ratios (OR) adjusted to standard confounders (age, sex, diabetes, hypertension etc.).

Results: Both in-hospital and 1 year post-hospital mortality rates were significantly lower in PPCI (+) group than in PPCI (-) group (1.2% vs. 8.8%; OR 9.3; $p < 0.003$ and 3.1% vs. 12.3%; OR 4.3; $p < 0.003$ correspondingly). Regarding between-subgroup distribution of in-hospital and 1 year post-hospital cardiac death cases within each of above groups, we found significant differences of both rates between RVMI(-) and RVMI(+) subgroups of PPCI(-) group with higher in-hospital mortality rates in RVMI(+) subgroup (5.4% vs. 13.0%; OR 7.1; $p < 0.01$) yet higher 1 year post-hospital mortality rates in RVMI(-) subgroup (15.5% vs. 7.9%; OR 3.9; $p < 0.01$). Contrary to above, no significant differences were found between RVMI(-) and RVMI(+) subgroups of PPCI (+) group neither for in-hospital (0.0% vs. 3.0%; $p > 0.9$) nor for 1 year post-hospital mortality risks (4.2% vs. 1.6%; $p > 0.4$).

Conclusion: PPCI is associated with clinical benefits in preventing both in-hospital and 1-year post-hospital cardiac deaths in patients with primary acute inferior STEMI regardless of RV involvement. However, RVMI discloses its prognostic influence only for patients who receive only conservative treatment without PPCI.

PI 14

Impact of previous medication with statins in the occurrence of mechanical complications in patients with ST-elevation myocardial infarction

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Previous medication can have an impact in the outcome after an acute coronary event.

Objectives: We sought to evaluate the potential impact of the use of statin before ST-elevation acute myocardial infarction (STEMI) in the occurrence of mechanical complications.

Methods: Retrospective study of patients included in a multicenter national registry of acute coronary syndromes. Only STEMI patients were selected for the study. A comparison was made between patients with and without previous medication with statins and its influence in the occurrence of mechanical complications was studied by uni and multivariate logistic regression analysis.

Results: We selected 18035 STEMI patients, from which 16.5% were on statins at the time of admission. They were older, less frequently males and smokers, and more hypertensive, diabetics, with hyperlipidemia. They had more often a previous history of coronary artery disease or stroke. Patients on statins showed a trend for lower incidence of mechanical complications (1.7% vs. 2.2%, OR 0.76, 95% CI 0.57-1.03, $p = 0.073$) but not for hospital mortality (7.0% vs. 7.2%, $p = 0.774$). However, after multivariate analysis it is not an independent predictor for the occurrence of mechanical complications (OR 0.93, 95% CI 0.67-1.28, $p = 0.647$). Independent predictors of mechanical complications were age, male gender, diabetes and time symptoms - admission ≥ 360 minutes. Protective factors were previous coronary angioplasty and hospital use of angiotensin converting enzyme inhibitor, beta-blockers and statins.

Conclusions: Although there is a trend for lower incidence of mechanical complications in patients that were on statins at the time of admission, this association is strongly dependent of other variables.

PI 15

Trends in early acute phase mortality and complications of STEMI patients. What happened in the last 27 years?

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Background: Coronary Care Unit (CCU) were created in the sixties to reduce early mortality in acute myocardial infarction (AMI) patients by monitoring the hearth rhythm and treating ventricular fibrillation. However, therapies and AMI prognosis have changed over last decades.

Purpose: The aim is to analyze early complications and acute phase mortality of ST elevation AMI (STEMI) patients from 1989 to 2015.

Method: Between February 1989 and December 2015, 7169 patients were consecutively admitted in the Coronary Care Unit of a University Hospital. Depending on the year of admission, patients were classified in five groups: 1989-1994: n=1337, period 1; 1995-1999: n=960, period 2; 2000-2004: n=1059, period 3; 2005-2009: n=1540, period 4 and 2010-2015: n=2267, period 5. We analyze the trend of STEMI mortality in the CCU in these five periods, depending on the location of infarction. We compare CCU complications of all patients.

Results: Mean age was 62.1 (SD 12.9) years and 77.8% were men. The global STEMI mortality in the CCU in all periods was 5.7% and it was reduced from period 1 to 5 (9.0%, 8.1%,

5.8%, 3.8%, 3.9%, $p < 0.001$). The mortality decrease is mainly observed in anterior wall STEMI (11.2%, 11.0%, 6.1%, 4.3% and 4.3%, $p < 0.001$), although in inferior wall STEMI this early mortality were reduced more than 50% between period 1 and 5 (7.3%, 6.1%, 5.5%, 3.4% and 3.5%, $p < 0.001$). There is an important decreased in some STEMI complications between period 1 and 5: ventricular tachycardia (8.7% vs 5.3%), angina (7.9% vs 2.9%), right ventricle dysfunction (6.8% vs 3.0%), cardiac shock (6.8% vs 4.5%) complete atrioventricular block (7.3 % vs 5.0%), all $p < 0.001$, but ventricular fibrillation (6.7%) and mechanical complications (0.6-0.9%) remain in the same rates in the last 27 years.

Conclusions: STEMI mortality in the CCU have been reduced in the last 27 years from 9.0% to 3.9%. This improvement is mainly observed in anterior wall STEMI, with a reduction of 60% of early mortality. There is a decrease in most of STEMI complications, but ventricular fibrillation and mechanical complications remain in the same rates in the last 27 years.

P116

Impact of multi-vessel diseases on clinical outcomes in STEMI

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Introduction: There is a large subset of patients with ST elevation myocardial infarction (STEMI) with significant disease beside the culprit artery. Multivessel disease has been reported as one of the predictors of worse outcome. It is not clear if this related to incomplete revascularisation or due to increased disease burden per se.

Purpose: In this study we retrospectively reviewed 317 patients who were admitted with STEMI in our centre to estimate the effect of multivessel disease on clinical outcomes in terms of mortality, heart failure and length of stay. We tested whether incomplete revascularisation impacts MVD as predictor of clinical outcomes.

Methods: A retrospective review of 317 patients who attended our centre between January 2013 to December 2014. Medical records and angiographic reports were reviewed. Patients were divided into two groups, MVD group vs single artery group. Mortality rates between the two groups were compared using X2 test and binary logistic regression estimate Odd ratio using STAT14.0.

Results: Of 317 patients who presented with STEMI, 95.3% received PPCI with the remaining unsuitable for coronary angiography for various reasons.

The mean age of patients was 65 years. 27.13% were female. In hospital mortality was 8.2% and 1 year mortality

= 10.74% ($P=0.35$). 58.5% had two-vessel disease or more (33.7% two, 22.8% three-vessel disease, 2% 4-vessel disease)

Multi-vessel disease was associated with increased inhospital mortality of 9.44 % vs 3.15% up to 12.35% vs 5.0% 1-year mortality ($P=0.031$, 0.034) Odd ratio = 3.2. Patients with multivessel disease tend to be older (mean 66.8 vs 61) and have longer hospital stay (mean =5.6 vs 3.9 days). Female sex, ejection fraction, symptomatic heart failure, use of Intra-aortic balloon pump were similar between the two groups. Repeat revascularisation, myocardial infarction, repeat angiogram for chest pain and readmission rates were similar between the two groups.

With multivariate logistic regression, only age was independent predictor of mortality in this cohort.

Conclusion: MVD in patients with STEMI is associated with higher mortality and longer hospital stay. The increased mortality can be attributed to older age in patients with MVD and incomplete revascularisation.

P117

Comparison of early in-hospital outcomes in female patients with acute STEMI aged 65 and over versus younger women - a retrospective analysis of a single center

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Introduction: It has not yet been elucidated whether differences exist in short-term in-hospital outcomes between female patients of different age groups presenting with acute myocardial infarction with persistent ST elevation (STEMI).

Purpose: To determine the existence of differences in guideline-recommended therapy, early outcomes and in-hospital mortality in female patients with STEMI aged ≥ 65 years compared to younger women.

Methods: We performed a retrospective analysis of 138 consecutively admitted female patients presenting with STEMI.

Results: The female patients aged ≥ 65 years were 98 (71%, mean age 75.6 ± 7.2 years) and the younger patients were 40 (29%, mean age 56.4 ± 5.5 years). The elderly patients had higher rate of arterial hypertension (92.9 vs 77.5%, $p=0.017$) and lower rate of tobacco use (5.1 vs 50%, $p < 0.0001$) but there was no difference of the other major coronary heart disease risk factors (diabetes mellitus, dyslipidemia and obesity). There were no differences of the time from symptom onset to hospital presentation (12.7 ± 18.5 vs 12.1 ± 12.9

hours, $p=0.851$), baseline blood count, high-sensitive CRP and high-sensitive troponin I values (6.1 ± 14.3 vs 5.5 ± 13.6 , 99th percentile <0.04 ng/ml, $p=0.824$) whereas the elderly patients had worse renal function (GFR 54.0 ± 17.8 vs 64.2 ± 21.5 ml/min/1.73m², $p=0.006$). Use of the guideline-recommended drug therapy including the reperfusion therapy with percutaneous coronary intervention (PCI) were identical in both groups, but the in-hospital delay to PCI was longer in the elderly patients (85 ± 48 vs 63 ± 29 minutes, $p=0.012$). The in-hospital course between the two groups showed that significantly more elderly female patients had signs of heart failure on admission (42.9 vs 22.5% , $p=0.032$) or during the hospitalization for the index event (61.2 vs 40% , $p=0.025$) and necessity of IABP implantation (12.2 vs 0% , $p=0.019$) despite similar LVEF (47 ± 12 vs $51\pm 9\%$, $p=0.057$). There was no significant difference in the rate of conduction disorders, arrhythmias, need of mechanical ventilation or renal-replacement therapy and the bleeding events. The overall in-hospital mortality was higher in the elderly group: 23 (23.5%) vs 3 (7.5%) patients in the younger group ($p=0.032$). The multivariable logistic regression model including age ≥ 65 years, diabetes mellitus, in-hospital delay to PCI, lack of PCI, heart failure during hospitalization, bleeding, anemia and renal failure showed that heart failure was independently associated with in-hospital mortality (OR 18.868 , 95% CI: $1.978-179.975$, $p=0.011$), while age ≥ 65 years was a significant prognostic factor only when using the univariate analysis (OR 3.782 , 95% CI: $1.067-13.413$, $p=0.039$).

Conclusion: Our study revealed that elderly female patients compared to younger female patients with STEMI are at higher risk for in-hospital mortality and short-term cardiovascular complications despite the identical guideline-recommended drug and reperfusion therapies.

P118

Gender differences in patients with acute myocardial infarction (ST-segment elevation) undergoing PPCI: risk factors, clinical presentation, biomarkers and prognosis

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Purpose: Gender differences in patients with ST elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PPCI) have not yet fully characterized. We aim to assess gender-related differences in risk factors, clinical presentation, biomarkers and prognosis in STEMI patients.

Methods: This single-center retrospective cohort study included 1565 consecutive patients (73% Males, 27% Females), admitted from 2006 to 2014 at our Cardiology Division (Italy) for PPCI, with a complete clinical characterization. Twelve months overall mortality was considered as end-point.

Results: Women presenting with STEMI were older ($p<0.0001$), with less current smokers ($p<0.0001$) and lower prevalence of previous myocardial infarction (MI) ($p<0.0001$) than men. Women had higher door to balloon time ($p<0.0001$), and higher prevalence of pulmonary edema as clinical presentation ($p<0.025$). No differences was observed for post PCI TIMI flow and left ventricular ejection fraction. Considering biomarkers at admission, women had higher glucose ($P=0.005$) and total cholesterol ($p<0.0001$) with higher HDL/LDL ratio, as well as higher platelets number ($p<0.0001$) and b-type natriuretic peptide (BNP) ($p<0.0001$) than men. Conversely, women had lower serum creatinine ($p<0.0001$), gamma-glutamyltransferase (GGT) ($p<0.0001$), hemoglobin ($p<0.0001$), albumin ($p=0.049$) and ft3 ($p=0.018$) than men.

No differences in overall mortality were shown, also after adjusting for age. At multivariate analysis independent predictors of overall mortality were age ($p<0.0001$), previous MI ($p=0.007$), pulmonary edema ($p=0.032$), GGT ($p=0.05$), white blood cells ($p=0.073$), troponine-I ($p<0.0001$) and BNP ($p<0.0001$). Troponine-I was the only parameter that predicted mortality exclusively in women.

Conclusions: In STEMI patients undergoing PPCI, we detected gender related differences in terms of risk factors, clinical presentation, serum biomarkers at admission. Overall 12 months mortality appears similar in women and men, with similar clinical and biohumoral predictors, except for troponine-I.

P119

Acute coronary syndrome in the people under 50 in a tertiary hospital

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Background: The purpose of this research is to describe the acute coronary syndrome (ACS) in people under 50 years of age, and identify the most frequent risk factors in this group of patients.

Methods: Descriptive study of patients under 50 years of age admitted between January 2011 and December 2015 in a tertiary hospital with the diagnosis of ACS, to determine epidemiological characteristics, prevalence of cardiovascular risks factors, laboratory test and angiographic characteristics.

Table 1.

| Clinical/Angiographic characteristics | Prevalence(%) | Lab test | Mean value |
|---------------------------------------|---------------|----------------------|------------------|
| Hypertension | 27.9 | Hemoglobin | 14.03 g/dl |
| DM | 11.5 | RDWSD | 43.56 fL |
| Dyslipidemia | 34 | RDWCV | 13.58 % |
| Family history of CAD | 31.1 | Platelets | 258050 / μ l |
| Tobacco | 86.9 | PDW | 13.29 % |
| Alcohol | 29.5 | Creatinine | 1 mg/dl |
| BMI \geq 25 | 44.2 | Albumin | 3.95 g/dL |
| 1-vessel disease | 65.6 | Triglycerides | 143.4 mg/dl |
| 2-vessel disease | 21.3 | HDL | 39.82 mg/dL |
| 3-vessel disease | 13.1 | LDL | 104.68 mg/dL |
| Anterior descending artery | 70.5 | HbA1c | 5.59 % |
| Circumflex artery | 31.1 | hs troponin T (peak) | 3163.58 ng/L |
| Right coronary artery | 45.9 | CK-MB (peak) | 164 U/L |
| Readmission | 11.5 | | |

Results: During the study period, 61 patients under 50 years were admitted to our hospital with a diagnosis of ACS, the mean age 42.8 \pm 4.5 and 82% were men. 62.3% of admissions were due to STEMI. Single-vessel disease predominated (44.7%) and the coronary artery most frequently involved was the anterior descending artery (70.5%). The most prevalent risk factor in the study was smoking (86%) followed by overweight (44.2%), dyslipidemia (34%) and family history of coronary artery disease (31.1%). With respect to the laboratory test results, it must be highlighted the low mean value of HDL (39.8mg/dL) and albumin (3.9g/dL). 7 patients were readmitted (11.5%).

Conclusion: As we showed in our study, the prevalence of smoking, overweight and dyslipidemia are the main cardiovascular risk factors present in this group of patients and this results reinforce the need for primary preventive measures aimed at preventing young people from adopting unhealthy lifestyles.

P120

The pre-hospital ECG identifies patients with neurohormonal activation after ST elevation myocardial infarction

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Background: Elevated level of N-terminal pro brain natriuretic peptide (NT-proBNP) is associated with infarct size and cardiovascular outcome after ST elevation myocardial infarction (STEMI). We evaluated plasma NT-proBNP levels according to electrocardiogram (ECG) indexes of acuteness and severity of myocardial ischemia in patients with STEMI. We assessed the impact of the acuteness score, as an objective estimate of myocardial ischemia time, on NT-proBNP levels in STEMI patients.

Methods: In 186 STEMI patients treated with primary percutaneous coronary intervention (pPCI), the severity of ischemia (determined by the Sclarovsky-Birnbaum grades with the presence of QRS distortion) and the Anderson-Wilkins (AW) score (range 1 (least acute) to 4 (most acute)) were obtained from the pre-hospital ECG. Patients were classified according to severe ischemia (+SI) or non-severe ischemia (-SI) and acute ischemia (+AI) or late ischemia (-AI). Plasma NT-proBNP was obtained within 72 hour after pPCI and was correlated with the ECG measure of the acuteness of ischemia in patients with or without severe ischemia.

Results: NT-proBNP (median 123.5 μ mol/L (IQR 63.0-254.2)) levels were 111 μ mol/L (IQR 52-219) in patients with -SI (n=133, 71.5%) and 145 μ mol/L (79-338) in patients with +SI (n = 53, 28.5%) (p = 0.091). Thirty-five (19%) patients were classified with (+SI,-AI), 69 (37%) with (-SI,-AI), 65 (35%) with (-SI,+AI), and 17 (9%) with (+SI,+AI). NT-proBNP levels were highest in patients with

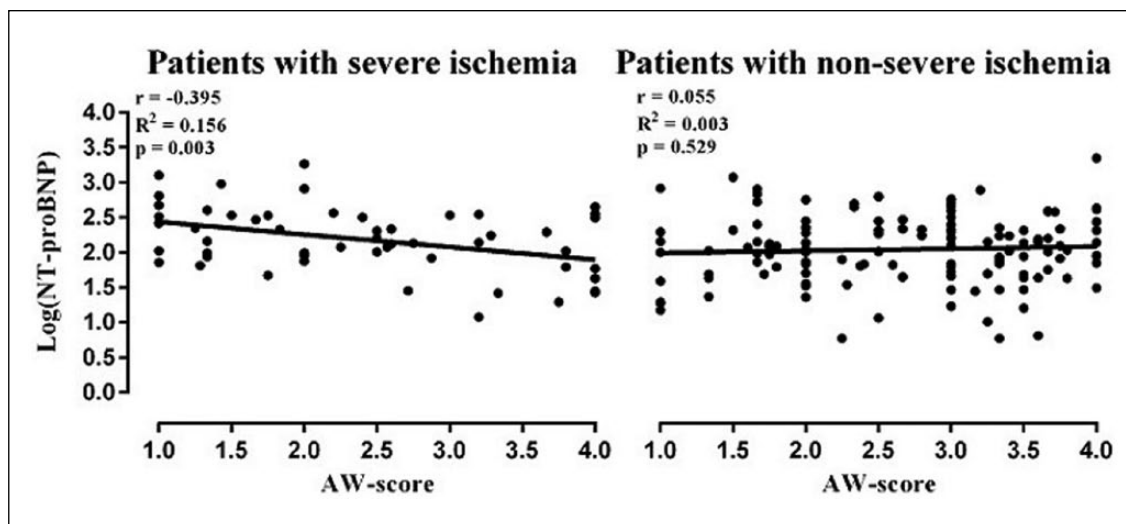


Figure 1

(+SI,-AI) compared to those with (+SI,+AI) (203 pmol/L (98.2-340.0) vs 105 pmol/L (27.3-325.5), $p = 0.048$). NT-proBNP levels were similar in patients with (-SI,+AI) compared to those with (-SI,-AI) ($p = 0.735$).

There was a negative correlation between AW-score and $\log(\text{NT-proBNP})$ in patients with +SI ($r = -0.395$, $R^2 = 0.156$, $p = 0.003$, Figure 1), which remained significant in a multilinear regression analysis ($\beta = -0.294$, $p = 0.046$). No correlation was observed between AW-score and $\log(\text{NT-proBNP})$ in the entire population ($r = -0.09$, $R^2 < 0.01$, $p = 0.187$) or in patients with -SI ($r = 0.06$, $R^2 < 0.01$, $p = 0.529$).

Conclusion: In STEMI patients with severe ischemia, neurohormonal activation was inversely associated with ECG patterns of acute myocardial ischemia. Optimizing reperfusion delays may be of particular benefit in STEMI patients with severe and acute ischemia. These patients can be identified by the pre-hospital ECG.

P121

Influence of coronary artery rethrombosis after efficient system TLT on long-term prognosis and quality of life in patients after STEMI

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Aim: To assess the effects of rethrombosis of infarct-related coronary artery after systemic thrombolysis on prognosis and quality of life.

Methods: The study included 101 patients. All patients in 2.5 (1.75; 4) hours underwent an effective thrombolytic therapy followed by selective coronarangiography and

angioplasty. The results of coronary angioplasty and its efficacy were comparable in both groups. After 11.5 ± 1.5 months the primary (mortality) and secondary (quality of life) endpoints were analyzed. Quality of life was assessed by the Seattle Angina Questionnaire (SAQ).

Results: Patients were divided into 2 groups. RT (-) group amounted to 72 patients with stable myocardial perfusion. RT (+) group consisted of 29 patients with rethrombosis of infarct-related coronary artery based on coronary angiography data. Comparative analysis found that the mortality rate in the RT (+) one year after the STEMI group was significantly higher than that of RT (-) group (13.8% ($n = 4$) vs 1.4% ($n = 1$); OR = 9.9; CI [1.2; 85.1], $p < 0.01$). Quality of life one year after STEMI in two groups were at the level of average and below average. Low satisfaction of patients with their treatment was detected (49.3% in the RT group (+) and 50.3% in the RT group (-)). There was a significant limitation of physical activity which most pronounced in the RT group (+) ($49.5 \pm 6.5\%$ vs $56.7 \pm 10.7\%$; $p = 0.02$).

Conclusions: Rethrombosis of coronary artery after an effective system thrombolytic therapy, despite the conducted further interventional procedures, is associated with the increase in one-year mortality and deterioration in the quality of life.

P122

Effect of intra-coronary (IC) tirofiban following aspiration thrombectomy on infarct size, in patients with large anterior ST-segment elevation myocardial infarction (STEMI) undergoing primary PCI

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Background: Thrombus embolization during percutaneous coronary intervention (PCI) in ST-segment elevation myocardial infarction (STEMI) is common and results in sub-optimal myocardial perfusion and increased infarct size. Two strategies proposed to reduce distal embolization and improve outcomes after primary PCI are bolus intra-coronary (IC) Tirofiban and manual Aspiration Thrombectomy.

Objective: To evaluate effect of Intra-coronary delivery of bolus Tirofiban following Aspiration Thrombectomy on reduction of infarct size using cardiac magnetic resonance imaging (cMRI) in patients with large anterior STEMI undergoing primary PCI.

Methods: A Prospective single-blind randomized controlled trial was conducted between August, 2014 and November, 2015. 50 patients with large anterior STEMI were screened at 2 sites in one country (Egypt). Aspiration Thrombectomy was performed in all patients using a 6 F aspiration catheter. Patients were randomized to IC Tirofiban (Study group) and no IC Tirofiban (control group). To ensure high intra-thrombus drug concentrations, a 0.25-mg/kg bolus of Tirofiban was administered locally at the site of the infarct lesion via the aspiration catheter after flushing of the aspiration catheter well. Assessment of final TIMI flow and myocardial blush was done by blinded observer.

Outcomes: Primary end point: Infarct Size at 30 Days measured by cMRI. Secondary end point: Myocardial blush grade at the end of the PCI procedure. Major Adverse Cardiac Events (MACE) at 30 days defined as re-infarction, stroke, severe heart failure and death. Bleeding risk was assessed using TIMI (major and minor) risk scores.

Results: Evaluable MRI results at 30 days were present in only 40 of 50 patients (80%), with the most common reasons for missing data being patient re-infarction prior to 30 days and inability to tolerate the procedure. Patients randomized to IC Tirofiban compared with no IC Tirofiban had a significant reduction at 30 days infarct size (median, 15451 mm³ - IQR, 17404 mm³ - n=20) vs (median, 43828 mm³ - IQR, 49599 mm³ - n=20) P value= 0.002. Patients randomized to IC Tirofiban compared with no IC Tirofiban had no significant difference post PCI (P value= 0.67).

Conclusions: In patients with large anterior STEMI presenting early after symptom onset and undergoing primary PCI, infarct size at 30 days was significantly reduced by bolus IC Tirofiban delivered to the infarct lesion site following manual Aspiration Thrombectomy. There is no significance in MACE at 30 days between patients received bolus IC Tirofiban and patients who did not receive.

P123

Clinical profile and results of mechanical complications of acute myocardial infarction

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Introduction: Currently, mechanical complications of acute myocardial infarction (MCAMI) are less common with early reperfusion, but their poor prognosis persists. The management depends on early diagnosis, stabilization and emergent surgery.

Objective: To describe the findings in patients with MCAMI and analyze their clinical course.

Methodology: Retrospective study in tertiary center with Coronary Care Unit, Cath-Lab and Cardiac Surgery, between 2013 and 2016.

Results: We found 12 patients with median age 77 (interquartile range [IR] 75.2-82 IR) years, 7 (58%) female. First AMI in 9 (75%) of patients. The MCAMI were: free wall rupture in 9 (75%), ventricular septal defect in 2 (16.7%) and papillary muscle rupture in 1 patient. The median time from onset of symptoms until medical care request was 30 hours and until the appearance of the MCAMI was 78 hours. The symptoms prior to diagnosis were: chest pain 11 (91.6%), psychomotor agitation 6 (50%), dyspnea 5 (41.7%), syncope 5 (41.7%) and vomiting 4 (33%), 1 patient was asymptomatic. Examination findings: Hypotension 9 (75%), pericardial effusion 9 (75%), cardiac tamponade 6 (50%), electromechanical dissociation 5 (41.7%), refractory HF 3 (25%), new murmur 3 (25%) and thrill 2 (16.7%). ST elevation was found in 10 (83%) cases in the first ECG, with Q wave in 7 (58.3%) patients. Maximum ST segment elevation was ≥ 3 mm in 75% of patients and persistent ST elevation ≥ 24 hrs in 66% and ≥ 72 hrs in 44% of cases. Coronary angiography was performed in 9 (75%) cases. One vessel disease was found in 4 (44%) patients, and multivessel disease in 5 (55%) of cases; of these, Reperfusion modality was ICP in 8 (89%) and case fibrinolysis prior to coronary angiography in 1. TIMI 3 flow was achieved in 3 (25%) patients. Echocardiography findings during admission were: systolic dysfunction 10 (83%) patients, compensatory hyperkinesia was found in 6 (50%) patients. Regarding treatment received in the first 24 hours of hospital admission: all received double antiplatelet therapy and low molecular weight heparin, diuretics in 9 (75%), inotropics in 3 (25%), beta blockers in 3 (25%) and ACE inhibitors in 4 (33%) patients. Intra-aortic balloon pump was implanted in 4 (33%) cases. Surgical treatment was performed in 3 patients without intraoperative mortality, nevertheless 1 died postoperatively. In the remaining patients, surgery was not performed due to extreme high surgical risk or death shortly after diagnosis of MCAMI. With an overall mortality of 83.3% and the majority (70%) within 48 hours of diagnosis of MCAMI.

Conclusions: The clinical profile of our patients coincides with previous literature data. The sum of

clinical, ECG and image findings must increase the suspicion of MCAMI, towards performing an early diagnosis and management. More studies are needed to address this matter.

P124

Clinical significance of heart failure biomarkers in myocardial infarction

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Purpose: To estimate the content of galectin-3 and its relationship with clinical course of myocardial infarction (MI) in comparative aspect with N-terminal natriuretic propeptide (Nt-proBNP).

Materials and methods: We examined 87 subjects admitted with the diagnosis of ST-elevated myocardial infarction (STEMI). All the subjects underwent standard diagnostic methods in MI, including coronary angiography (CAG). 84 (96.6%) subjects underwent percutaneous coronary intervention (PCI) in symptom related artery. The median left ventricle (LV) ejection fraction (EF) was 50%. Galectin-3 was estimated by immunoenzyme method in blood serum in all the subjects on the 1st - 2nd days of the disease and in 81 subjects it was estimated in dynamics on the 10th - 14th days. The allowed values of this biomarker in blood serum are 0.0-2.28 ng/ml. Nt-proBNP level was estimated in 81 subjects on the 1st - 2nd days of MI and in 78 subjects on the 10th - 14th days of the disease. Reference range of this indicator in subjects younger than 75 years old is up to 125 pg/ml, older than 75 years old – up to 450 pg/ml. We used standard statistical methods of data processing.

Results: On the 1st - 2nd days of MI galectin-3 level exceeded the allowed values and was 9.5 [3.3;11.9] ng/ml. Nt-proBNP analogously was 51.3 [36.9;236.9] pg/ml. In dynamics by the 10th - 14th days galectin-3 level was increasing and reached 15.6 [9.9;37.4] ng/ml ($p=0.003$), while Nt-proBNP level decreased and reached 70.9 [24.7;203.1] pg/ml ($p=0.11$). Nt-proBNP level on the 10th - 14th days of the disease was higher ($p=0.04$) in women as compared to that in men (159.8 [56.8;223] pg/ml vs 64.3 [21.1;17.5] pg/ml). Analyzing the anamnestic data and relationship with cardiovascular risk factors it was indicated that subjects with the presence of diabetes mellitus (DM), arterial hypertension (AH), cerebrovascular accident (CVA) history were characterized by higher galectin-3 concentrations on the 10th - 14th days of MI ($p<0.05$). Galectin-3 on the

1st - 2nd days of the disease didn't show any significant relationships. At the same time the presence of chronic heart failure (CHF) history in subject was associated with high Nt-proBNP concentrations both on the 1st - 2nd and on the 10th - 14th days of MI. This indicator in subjects with CHF on the 1st - 2nd days was 234.2 [166.6;271.5] pg/ml, while the subjects without CHF had 111 [32.6;215.7] pg/ml ($p=0.02$); on the 10th - 14th days – 188.6 [63.8;251.7] and 64.98 [21.9;169.9] pg/ml correspondingly ($p=0.02$).

Conclusions: Galectin-3 level is a more stable and sensitive indicator in estimation of clinical severity of subjects with myocardial infarction as compared to Nt-proBNP.

P125

The impact of chest pain center authentication on the door-to-wiring time in ACS patients undergoing PPCI

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Background: The door-to-balloon time (D-to-B) is the most important indicator of the quality evaluation of chest pain centers' operation. However, there is still a lack of large sample sized, systematic report investigating the influence of chest pain center (CPC) authentication on the door-to-balloon time in China.

Aims: This paper aims to investigate the impact of the CPC authentication of First Affiliated Hospital to a University on the door-to-wiring time.

Methods: General information and clinical laboratory data were collected from the consecutive patients undergoing the primary percutaneous coronary intervention in the First Affiliated Hospital to a University between Jan 1st, 2012 and July 31st, 2015. Patients included in the research were divided into three groups according to the initiation time and the passage time of CPC authentication: pre CPC, during CPC and post CPC authentication groups. We compared the door-to-wiring time, the attainment rate, the length of hospital stay and the in-hospital mortality among the three groups and analyzed the impact of gender factors on the door-to-wiring time.

Results: By the one-way ANOVA, the door-to-wiring time in during CPC authentication group was 120±46min, which significantly decreased from 160±49min ($P0.05$), respectively. After multivariate adjustment, we found the gender was significantly related with the door-to-wiring

time and that the door-to-wiring time in males was shortened by 13.92 minutes versus the females. We also found that age had no relation with the door-to-wiring time ($P=0.440$).

Conclusion: The CPC authentication of First Affiliated Hospital to a University shortened the door-to-wiring time. After multivariate analysis, the door-to-wiring time in during CPC authentication group was shortened by 38.89 minutes compared with pre CPC authentication group, and the door-to-wiring time in post CPC authentication group was shortened by 76.85 minutes compared with pre CPC authentication group. The attainment rate improved significantly from 6.89% in the pre CPC group to 26.58% in during and post CPC groups.

P126

New biomarker for prediction of adverse outcomes in patients with acute myocardial infarction

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During the first month after a myocardial infarction (MI), death can occur due to cardiogenic shock, sudden cardiac death, heart failure and other events. The search for new markers that significantly predict adverse outcomes after acute myocardial infarction (AMI) is still going. ST2 is a member of the interleukin-1 receptor family biomarkers. It is being actively studied in the field of myocardial infarction prognosis.

Purpose: to determine significance of ST2 in prognosis of 30-day mortality after AMI.

Methods: 83 patients with ST-elevation myocardial infarction (STEMI) were included in the study, they were admitted to the hospital from 2014 to 2016, signed the informed consent: 70% men and 30% women, mean age was 61,70±1,35 years. All patients underwent a baseline investigation which includes: standard electrocardiography, echocardiography, angiography, determination of marker of myocardial necrosis – cardiac troponin T. GRACE score has been used for risk stratification. The glomerular filtration rate (GFR) was estimated by Cockcroft-Gault formula. In addition, the level of ST2, N terminal-pro B-type natriuretic peptide (NT-pro BNP) were determined during the first day of hospitalization. The endpoints were all-cause mortality. During 30-day follow-up 15,7% patients died.

Results: different variables of clinical, instrumental and laboratory status were put to comparison on surviving and

non-surviving patients. GRACE score ($p\leq 0.0004$), the level of serum creatinine ($p\leq 0.002$), GFR ($p\leq 0.01$), the level of biomarkers NT - pro BNP ($p\leq 0.0006$) and ST2 ($p\leq 0.00001$) were significantly different in those groups. Average value of ST2 for all patients was 63,73±7,96 ng/ml, in surviving patients - 47,5±5,8 ng/ml, in non-surviving - 150,9±31,0 ng/ml. For identification of the main risk factor for adverse outcome, we have used logistic regression method and found ST2 (area under the ROC curve 0.88; $p<0.0001$; 95% confidence interval: 0.790 – 0.941) with 98 % of sensitivity and 63 % of specificity can predict 30-day mortality in patients after AMI.

Conclusions: biomarker ST2 was the best for predicting 30-day mortality after admission and could be used in combination with other markers in clinical practice to improve risk stratification of patients with AMI.

P127

False positive ST-segment elevation myocardial infarction. results in the first year of the implementation of our STEMI code

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Introduction: Acute ST-segment elevation myocardial infarction (STEMI) is a serious disease in clinical practice. Rapid activation of the cardiac catheterization laboratory for primary PCI improves outcomes for STEMI, but selected emphasis on minimizing time to reperfusion may lead to a greater frequency of false-positive activations (FPA).

Purpose: Our aim was to analyze the clinical profile cases with diagnosis of STEMI: we compared FPA with true positives activations of STEMI (TPA) in the first year of the implementation of STEMI Code in our Community (so called Infarct Code Aragon). We defined FPA as a lack of culprit lesion by angiography.

Methods: We analyzed the data of patients included in STEMI Code and they were assigned into two groups: FPA and TPA. Baseline characteristics, activation times, delays in care, cardiac events and survival were evaluated. Analysis was done using SPSS Statistical Analysis System 18.

Resultados: 591 consecutive patients (64±14 years, 450 males) with a presumptive diagnosis of STEMI from January 2015 to January 2016 were analyzed. In our

study, a FPA diagnosis of STEMI was made in 99 patients (16.8%) with no responsible coronary artery lesion. There were no differences in sex distribution, mean age or LV systolic function. Patients in the FPA group had a higher prevalence of cardiogenic shock (16.1% vs 9.8%; $p=0.07$) but this was not statistically significant. The common causes of the false-positive diagnoses were NSTEMI with atherosclerotic stenosis greater than 70% but without culprit lesion or vessel occlusion (26,4.5%), myocarditis (14, 2.4%), coronary spasm (13,2.2%) as well as stress-induced cardiomyopathy (7, 7%). There was a significant mayor rate of LBBB in FPA group (11,3% FPA vs 0.8% TPA; $p<0.001$). TPA STEMI diagnoses were triaged to the cath lab more quickly (57.4 ± 39.6 TPA vs 77.6 ± 78.7 ; $p=0.002$) and had shorter hospital stays (6.3 ± 5.8 TPA vs 8.1 ± 7.7 ; $p=0.021$). During admission, there were not major differences between both groups in in-hospital mortality (8.9% TP vs 6.3% FPA; $p=0.52$). During the follow-up of 6.18 ± 3.49 months, there were no differences in major adverse cardiac events (MACE) and in the hospital mortality (10.7% vs 10.8% FPI VP; $p=0.97$).

Conclusions: In our series, the LBBB is an electrocardiographic criterion is common cause activation of FPA. TPA STEMI diagnoses were triaged to the cath lab more quickly. There were no major differences between groups in major events or survival in follow-up.

P128

Myocardial infarction with ST-segment elevation with 12-48h and hemodynamic stability: experience of a center

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Introduction: There are clear benefits from early revascularization in patients with acute myocardial infarction with ST segment elevation (STEMI). However, in patients with more than 12 hours of evolution the benefit of primary angioplasty (PTCA) is not proven when there is hemodynamic stability (HS).

Purpose: WE describe the patients admitted to a Cardiology Service with STEMI between 12 and 48 hours of evolution (S12-48) with HS. We evaluated the differences between the performance or nonperformance of PTCA and predictors of mortality.

Methods: We conducted a retrospective, descriptive and correlational study with all patients with S12-48 hospitalized in a Cardiology Department from 1st October 2010 to 30th June 2013. We evaluated the baseline

characteristics, differences of the group undergoing PTCA, the factors associated with in-hospital and 1 year mortality. For statistical analysis, we used the SPSS 20.0.

Results: During this period, 250 patients were admitted with E12-48, 166 men (66.4%) with mean age of 68.6 years. 87 (34.8%) underwent PTCA. In-hospital and 1 year mortality rates were 12.0% and 16.4%, respectively.

In univariate analysis, factors associated with PTCA were male sex, preserved left ventricular ejection fraction ($> 50\%$) and no prior history of heart failure (HF), stroke and dementia. In multivariate analysis, the only independent predictor of PTCA was age (65 ± 12 years for PTCA vs. 70 ± 13 years for the remaining, $p<0.01$).

PTCA was associated with a decrease in complications of heart failure and in-hospital (4.6 versus 16%) and 1 year mortality (4.6 versus 22.7%).

They were associated with in-hospital mortality: prior history of high blood pressure, diabetes mellitus (DM), stroke, peripheral artery disease and renal insufficiency, not performing angiography and PTCA and multivessel disease. They were associated with mortality at 1 year: prior DM, stroke, IR, dementia and hemorrhage, multivessel disease and not performing PTCA.

In multivariate analysis, independent predictors of both in-hospital and 1 year mortality were lower left ventricle ejection fraction and older age.

Conclusion: The only independent predictors of in-hospital and 1 year mortality were lower left ventricle ejection fraction and older age. PTCA performed between 12-48h in stable patients with STEMI was not an independent predictor of mortality reduction.

P129

Pathogenetic role of endothelium-dependent vasodilation and acute cardio-renal syndrome in stable STEMI patients

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Purpose: establish clinical and pathogenetic mechanisms of worsening renal function in patients with STEMI in the first 7 days of hospital observation.

Methods: 122 STEMI patients. Men – 82.78%, mean age – 55.69 ± 0.90 y. Glomerular filtration rate (eGFR) was measured by MDRD formula. Endothelial function was determined by endothelium-dependent vasodilation (EDVD) of brachial artery on the 1st and 7th day. To evaluate the real dynamics of renal function criteria of acute kidney injury a dynamic reduction in eGFR by 20%

or more compared to the original level within 7 days was used.

Results: In patients with initially preserved renal function (eGFR ≥ 90 ml/min/1,73m²) its worsening was observed in 43.5%, eGFR 45-59 ml/min/1,73m² - in 22.9 %, eGFR 60-89 ml/min/1,73m² - 24.3%. Renal function deterioration in patients with eGFR ≥ 90 ml/min/1,73m² on 1st day of STEMI was observed in the presence of pronounced EDVD decline and its maintenance within 7 days, activation of inflammation (C-reactive protein, fibrinogen). In patients with eGFR 60-89 ml/min/1,73m² its progression was accompanied by preserving endothelial dysfunction on the background of persistent activation of inflammatory processes. In patients with initial eGFR 45-59 ml/min/1,73m² deterioration occurred with progressive endothelial dysfunction without increasing markers of systemic inflammation.

Conclusions: endothelial dysfunction was shown to be an important pathogenetic factor of acute cardio-renal syndrome in patients with STEMI. Patients with worsening renal function and normal and moderately reduced initial eGFR had a persistent activation of inflammatory processes, while patients with significantly reduced renal function showed further decline in eGFR independent of these factors.

P130

Correlation of SYNTAX score with conventional echo parameters and parameters of myocardial mechanics in patients with STEMI

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In patients with acute myocardial infarction with ST-segment elevation (STEMI) treated with primary PCI (PPCI) in the early post-procedural period, in addition to conventional, modern techniques of myocardial mechanics as strain (S) and strain rate (Sr), can be of the great importance. In previous studies SYNTAX score is used as anatomical risk score of patients, based on angiographic findings.

Objective: Evaluation of correlation between values of SYNTAX score with conventional parameters of global and regional left ventricular function and parameters of myocardial mechanics in patients with STEMI.

Methods: In 56 consecutive STEMI patients treated with pPCI, echo examination was performed on day 4 \pm 2 (VIVID 9GE, EchoPAC Ver 113). Besides conventional

assessment of systolic LV function, longitudinal (L), circumferential (C) and radial (R) strain (S) and strain rate (Sr) for all 18 LV segments were done for all myocardial layers.

Results: The patients were in the sixth decade of life (57.4 \pm 10.7 years), 75.9% males. Anterior localization of STEMI had 45.4% patients. Longitudinal S increasing progressively of the level of the epicardium to endocardium: LS epi -11.68 \pm 3.38%, LS mid -13.26 \pm 4.00%, LS endo -15.43 \pm 4.85%. Similar was found with the circumferential S: CS epi -13.46% \pm 4:07, CS mid -14.37 \pm 4.18%, \pm CS endo 4:42 -15.41%. Average LSr was -0.87 \pm 0.24 1/s, CSr -1.08 \pm 0.31 1/s, a RS 12.27 \pm 5.04%; EF 48.7 \pm 11.5%; WMSI 1.46 \pm 0.35. The average SYNTAX score amounted 15.94 \pm 8:34. The highest correlation was found between SINTAX score and parameters of LS for all layers. Besides that, significant correlations found with endocardial level CS and RS (p= 0.001).

Conclusion: In the early post-procedural period in STEMI patients, the parameters of myocardial mechanics as well as conventional echocardiographic parameters significantly correlated with SINTAX score. The correlation of SYNTAX score with the parameters of LS was similar for all layers. It was not found for CS were the highest correlation estimated in endocardial layer.

Acute coronary syndrome - Non ST-elevation myocardial infarction

P131

Is previous treatment with statins important in diabetic patients when admitted with an acute coronary syndrome?

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Background: The mortality and morbidity associated with acute coronary syndrome (ACS) in type 2 diabetes mellitus (T2DM) patients remains high despite all advances in treatment. The relationship between the type of ACS and the previous treatment with statins is unknown.

Objective: We aimed to compare the type of ACS (acute myocardial infarction vs. unstable angina) between diabetic patients who were consistently treated with statins and statin-naïve patients.

Methods: Retrospective study of 830 consecutive patients with T2DM admitted for ACS in a single Coronary Care Unit (CCU) from May 2004 through

November 2011. The patients included had known T2DM, with no history of coronary, cerebral or peripheral arterial disease. The patients were studied regarding their previous treatment with statins (group 1 (n=388)) versus no statin (group 2 (n=422)). The primary endpoint was the type of ACS.

Results: Patients in group 1 were younger, more frequently hypertensive and previous smokers, with higher body mass index and with more family history of cardiovascular disease. They were more frequently medicated with antiplatelet agents, beta-blockers and ACE inhibitors/ARB's but the only two predictors of a better outcome were statin and antiplatelet agent. The pretreatment with statin remained a predictor for lower acute myocardial infarction risk (odds ratio [OR] 0.465, 95% confidence interval [CI] 0.298 – 0.725), conferring a 53.5% lower risk of STEMI or NSTEMI versus UA.

Conclusion: Type 2 diabetic patients admitted to a CCU with an ACS, those medicated with statins had a lower risk of myocardial infarction. Further studies are warranted to support this observation.

PI32

Long-term clinical outcomes after non-ST-elevation myocardial infarction (NSTEMI) in a Russian population (EPICOR-RUS study)

AstraZeneca

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Background: To date, there are no data on long-term outcomes of patients with MI in Russia.

Purpose: To evaluate the incidence of clinical outcomes during 2 years after NSTEMI in a Russian population.

Methods: EPICOR-RUS (NCT01373957) was a multi-centre (35 Russian hospitals), observational, cohort study evaluating antithrombotic management patterns in the short- and long-term (up to 2 years). Recruited patients (n=599) had been hospitalized for acute coronary syndrome within 24 hours of symptom onset. These patients were diagnosed with unstable angina (n=77), NSTEMI (n=147), or STEMI (n=375). These analyses focus on the description of long-term clinical outcomes (at 1 and 2 years) after NSTEMI and patterns of antiplatelet treatment at discharge.

Results: Fifty-four NSTEMI patients (36.7%) underwent percutaneous coronary intervention (PCI) for their index event. At discharge, 32 patients (21.8%) were prescribed a single antiplatelet agent (aspirin or clopidogrel) and

115 patients (78.2%) were given dual antiplatelet therapy (DAPT) (aspirin and clopidogrel). Five patients were lost to follow-up through the 2-year period, including 3 patients lost to follow-up at 1 year. In the NSTEMI cohort the cumulative incidence of cardiovascular (CV) death was 1.4% at 1 year and 3.5% at 2 years of follow-up. The incidence of all cause mortality at 1 and 2 years of follow up was 2.7% and 4.8% respectively.

Hospitalisation/physician office visits due to a CV event took place for 54.2 % patients [77/142] through 1 year and 60% [82/139] through 2 years. Rate of hospitalisation/physician office visits due to a bleeding event was 1.8% [2/111] through 1 year and 1.8% [2/109] through 2 years.

Conclusion: Despite only 78.2% of NSTEMI patients being prescribed DAPT at discharge, mortality of these patients in the EPICOR-RUS study was low. More than half of patients were hospitalised or visited physician office due to a CV event. Meanwhile, the prevalence of hospitalisation/physician office visits due to a bleeding was very low.

PI33

Gender differences in hospital management of acute coronary syndrome

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Objectives: It has been reported that female sex in acute coronary syndrome (ACS) is associated with a worse prognosis, partly due to a worse diagnosis and therapeutic management. Our goal is to analyze whether these assertions are applicable to our environment and routine clinical practice.

Methods: We retrospectively collected data from patients undergoing coronary angiography for ACS from January 2013 to December 2015. We analyzed baseline epidemiological variables and clinical characteristics of the event and its therapeutic management, complications, and cardiovascular mortality at one year.

Results: We analyzed a total of 1127 consecutive patients admitted for ACS in a tertiary hospital. 270 (28%) were women. In the female group, 173 (64%) had a STEMI and 97 (36%) high-risk NSTEMI. Women were older (71 ± 64 vs 12.8 ± 13.4, p < 0.001). Males had more risk factors, except diabetes mellitus, more prevalent in women. The GRACE scale of ischemic risk placed both

groups in a high risk profile, being higher in males (171 ± 42 vs 159 ± 45 , $p = 0.005$). According to CRUSADE score, bleeding risk was moderate in males and high in women (28 ± 17 vs 41 ± 19 , $p < 0.001$). We did not find significant differences in the variables related to interventional management of the event: time until coronary angiography, use of femoral or radial access and revascularization. In medical management, it highlights the lower use of stronger antiplatelet agents (ticagrelor and prasugrel) in women (41.3% vs 29% , $p = 0.004$), even excluding anticoagulated or patients with previous stroke. This difference could be explained by the lower weight, more longevity and high hemorrhagic risk in this group. The rest of pharmacotherapy at discharge (statins, beta blockers and proton-pump inhibitors) was similar. Finally, there were neither differences in complications during hospitalization (bleeding, stroke, reinfarction, stent thrombosis, ventricular arrhythmias and death), nor in the number of cardiovascular deaths at one year follow-up.

Conclusions: In our population, there is gender parity in management of ACS. Some of the differences found can be explained by the uneven risk profile. However, this differences do not have any clinical or prognostic significance.

P134

Adipophilin in coronary atherosclerosis versus in stent related neo-atherosclerosis: mechanistic implications

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Background: Adipophilin, or adipose differentiation-related protein, a 50-kDa protein initially described in adipocytes has a crucial role in atherosclerosis plaque growth: adipophilin is found associated with intracellular lipid droplets and is involved in lipid accumulation in human macrophages and cholesterol crystal formation. However, its association with different forms of atherosclerosis, namely native coronary plaque and neo-atherosclerosis of previously implanted stent, has not been assessed so far.

Purpose: The aim of the present study was to evaluate the expression of adipophilin in patients with native human atherosclerotic lesions or in-stent related neo-atherosclerosis.

Methods: We enrolled 42 consecutive patients (32 men, mean age 71 ± 11 years) with a clinical indication for coronary angiography. In 31 patients atherosclerotic

plaque were detected in the native vessel, while 11 patients had in-stent re-stenosis occurring late after stent implantation (> 1 year) and confirmed to be neo-atherosclerosis on OCT analysis. 14 patients (33.33%) presented with stable angina, 2 (4.76%) with unstable angina, 16 (38.09%) with NSTEMI and 10 (23.81%) with STEMI. In all patients adipophilin mRNA and protein levels were assessed by RT-PCR and western blotting, respectively. Periprocedural myocardial injury was assessed according to the III definition of myocardial infarction as an elevation of cardiac Troponin values $> 5 \times 99$ th percentile in patients with normal baseline values (≤ 99 th percentile) or a rise of cardiac Troponin values $> 20\%$ if the baseline values were elevated. Angiographic microvascular obstruction (MVO) was defined as TIMI flow < 3 or TIMI 3 with MBG 0 or 1.

Results: Patients with native coronary atherosclerosis had similar demographic, risk factors and clinical presentation as compared to those with late restenosis ($p = NS$). No differences were found when comparing stable patients versus those presenting with acute coronary syndromes ($p = 0.69$) as regard to both RNA and protein levels of adipophilin, while significantly higher level were detected in patients with in-stent re-stenosis as compared to patients with atherosclerosis on the native vessel ($p < 0.03$). Remarkably, protein levels of adipophilin correlates with the occurrence of periprocedural necrosis after stent implantation ($R^2 0.41$; $p = 0.05$). When STEMI patients were analyzed, instead, adipophilin levels were significantly higher in patients experiencing MVO after primary PCI ($p < 0.03$) as compared to those not showing MVO.

Conclusions: Adipophilin is significantly increased in patients with late restenosis compared to patients with native coronary atherosclerosis. Moreover, adipophilin predicts reperfusion damage, during primary or elective angioplasty, probably due to its mechanistic role on cholesterol crystal embolization.

P135

Switching from clopidogrel to prasugrel in ACS patients undergoing PCI: a single-center experience

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Prasugrel is a recommended treatment for acute coronary syndrome (ACS) patients undergoing percutaneous coronary interventions (PCI), but many patients arrive to the cath lab pre-treated with Clopidogrel. Switching between clopidogrel and prasugrel occurs frequently in

Table 1.

| | NAÏVE | SWITCH | p |
|----------------------------|-------------|-------------|---------|
| N | 175 | 253 | |
| Age (mean ± sd) | 57,3 + 9.5 | 57,8 + 10.2 | 0.57 |
| Male (%) | 157 (89.7%) | 233 (92.0%) | 0.72 |
| STEMI (%) | 137 (78.3%) | 158 (62.5%) | P<0,001 |
| NSTEMI (%) | 30 (17.1%) | 85 (33.6%) | P<0,001 |
| Unstable angina (%) | 8 (4.6%) | 10 (4.0%) | 0,8 |
| Hematocrit (admission) | 43,0 ± 5,9 | 44,5 ± 6,8 | 0,4 |
| Creatinin (admission) | 1,0 ± 0,2 | 1,0 ± 0,3 | 0,8 |
| Glomerular filtration rate | 92,8 ± 39,0 | 97,8 ± 38,0 | 0,2 |
| Diabetes (%) | 24 | 47 | 0,2 |
| Hospital mortality (%) | 0 (0%) | 1 (0.6%) | 0,69 |
| Major bleedings | 0 | 0 | 1 |
| Minor bleedings (%) | 1 (0.6%) | 2 (0.8%) | 0,8 |

clinical practice, although definitive data on this strategy are still missing.

Aim: to evaluate safety of prasugrel treatment in ACS clopidogrel-pretreated patients in clinical practice.

Methods: data of consecutive ACS patients admitted to a single center CCU submitted to PCI treated with 60 mg of prasugrel with or without prior clopidogrel therapy were analyzed and compared. Hospital mortality, major and minor bleeding according to TIMI classification were considered.

Results: a total of 253 patients were already treated with a loading dose of clopidogrel (SWITCH group) before admission, while 175 patients were P2Y12 antagonist naïve (NAÏVE group). Clinical characteristics and outcome are presented in Table. No differences were observed between the two groups apart from a higher percentage of patients with ST-segment elevation in NAÏVE group. No major bleedings, one hematemesis due to gastric ulcer in NAÏVE group, one hematuria and one rectal bleeding in SWITCH group were observed.

Conclusions: in clinical practice switching from clopidogrel to prasugrel in ACS patients undergoing PCI seems to be safe without excess of bleeding.

P136

Major bleeding in non-ST segment elevation acute myocardial infarction: population characteristics, predictors and in-hospital prognostic impact

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Introduction: Major bleeding (MB) is a severe complication that can occur in non-ST segment elevation acute myocardial infarction (NSTEMI) patients (pts) and its occurrence could influence therapeutic management and prognosis.

Purpose: Characterization of pts with NSTEMI and MB (defined by the GUSTO criteria). Evaluation of MB's impact in therapeutic management of pts, in in-hospital mortality and major adverse events. Define potential predictors of MB occurrence in NSTEMI pts.

Methods: We studied 5207 pts with NSTEMI from a Multicentric National Registry, and defined 2 groups: 1) Pts with MB; 2) Pts without MB. Data from pts demographics, previous medical history, anti-thrombotic medication, coronariography/angioplasty was recorded. We defined the following in-hospital adverse events (IHAE): re-infarction, heart failure (HF), cardiogenic shock (CS), stroke, need for invasive mechanical ventilation (MV) and blood transfusion (BT). In-hospital mortality was compared and a multivariate analysis was performed to identify predictors of MB occurrence.

Results: In NSTEMI pts, MB was documented in 1.3% (66 pts). These pts were older (73±12 vs 67±13 years; p<0.001) and more likely to have medical history of hypertension (86.2 vs 74.3%; p=0.03), heart failure (21.2 vs 8.2%, p<0.001), peripheral artery disease (15.6 vs 7.0%, p=0.022), chronic kidney disease (15.2 vs 7.9, p=0.03) and previous bleeding (10.8 vs 1.9%, p<0.001). In group 1, pts were more likely to have ST-segment depression on EKG (56.1 vs 36.1%, p<0.001), evolving in Killip II-IV (34.8 vs 15.9%, p<0.001) and to receive in-hospital iv unfractionated heparin (UFH) (27.5 vs 15.%, p=0.004), without differences regarding other anti-thrombotic agents. There were no differences in the rate of coronariography (78.8 vs 84.0%, p=0.249), access route (femoral: 31.9 vs 24.3%, p=0.228) or angioplasty performed (47.7 vs 51.5%, p=0.538) despite higher likelihood of multivessel disease (76.1 vs 55.7, p=0.006). Pts with MB were more likely to develop HF (25.4 vs 14.7, p=0.027), stroke (4.5 vs 0.6%, p=0.01) and to receive MV (6.1% vs 1.%, p=0.006) or BT (43.9 vs 1.5%, p<0.001) but without differences regarding the other IHAE. In-hospital mortality was higher in pts with MB (7.6 vs 2.1%, p=0.013). Using multivariate analysis, there were identified as independent predictors of MB the following: previous history of bleeding (OR 5.35 [2.13-13.43] CI 95%, p<0.001), mechanical ventilation (OR 6.49 [2.15-19.56] CI 95%, p=0.001) and the use of UFH (OR 2.23 [1.14-4.36] CI 95%, p=0.019).

Conclusions: Major bleeding occurred in 1.3% of pts with NSTEMI and was associated with higher in-hospital

mortality, higher incidence of HF and stroke and need of blood transfusion. There were identified as independent predictors of MB in NSTEMI pts, the previous history of bleeding, mechanical ventilation and iv UFH administration during hospitalization.

P137

Pronostic impact of early coronary angiogram in patients with non-ST-segment elevation acute coronary syndrome

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Purpose: According to the recommendations of the latest guidelines, non-ST-segment elevation myocardial infarction (NSTEMI) patients with a high risk (GRACE score > 140) should undergo an angiography within the first 24 hours. However, the clinical benefit of this strategy is not well established. Our aim was to analyse if performing an early angiography in NSTEMI patients is related with better prognosis.

Methods: From January-2013 to June-2015, 447 consecutive patients were admitted in the Acute Cardiac Care Unit of a tertiary hospital with the diagnosis of NSTEMI. We classified them into three groups depending on the moment when the coronary angiogram was performed. Patients in group 1 underwent an early angiography (within the first 24 h); in group 2 angiography was performed between 24-72 h and in group 3 after 72 h.

Results: A coronary angiogram was performed within the first 24 hours in 285 patients (63.8 %). There were not any differences between groups neither in gender (p=0.565),

distribution of cardiovascular risk factors, previous history of coronary disease (p=0.314), nor in the presence of other comorbidities. However, patients from group 1 were significantly younger [66.5 (13.5) vs 71.1 (12.7) years in group 2 and 70.7 (13.5) in group 3, p=0.016]. Patients from group 1 showed a lower GRACE score [157.67 (44.9) vs 170 (39.5) points in group 3, (p=0.041)], with a CRUSADE score that was similar (p=0.251). We found no differences in variables with known prognostic impact, such as killip class (p=0.604), presence of sustained ventricular arrhythmias (p=0.541), non fatal myocardial infarction (p=0.907), stroke (p=0.926), bleeding events (p=0.775) or in-hospital mortality (p=0.965).

Conclusion: Despite the recommendations of current guidelines that suggest performing an early angiography in high-risk NSTEMI patients, in our study, this strategy did not show any clinical benefit in terms of survival or reduction of mayor adverse cardiovascular events. These results underline the need of new studies in order to establish which cohort of patients would benefit from an early angiography.

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Re-infarction during hospital stay for non st-segment elevation acute myocardial infarction: incidence, predictors and impact on mortality

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Introduction: Re-infarction is a post-myocardial infarction complication with important prognostic significance. However little is known regarding its incidence, patient profile and impact on mortality.

Purpose: Determine the prevalence of re-infarction during hospital stay for non ST-segment elevation myocardial infarction (NSTEMI), identify predictors and assess its impact on in-hospital mortality.

Methods: We studied 3721 patients (P) with NSTEMI included in a multicentre national registry. We considered 2 groups: Group 1- P that suffered re-infarction and Group 2- P who did not suffer re-infarction. Data relating to demographic features, patient history including cardiovascular and non-cardiovascular co-morbidities, clinical presentation, vital signs at admission, data regarding coronary angiography, such as, number of affected vessels, number of treated vessels, type of stent implanted and medical therapy. We analyzed left ventricular function and in-hospital complications

Table 1. Comparative between the three groups.

| Variable | Group 1 (n=285) | Group 2 (n=102) | Group 3 (n=60) | P |
|---------------------------------|--------------------|--------------------|-------------------|-------|
| Heart Failure | 74 (27.3%) | 26 (26.3%) | 19 (37.7%) | 0.743 |
| Non-fatal myocardial infarction | 16 (5.7%) | 5 (5.1%) | 4 (6.7%) | 0.907 |
| Stroke | 4 (1.4%) | 2 (2%) | 1 (1.7%) | 0.926 |
| Bleeding | 22 (8.1%) | 8 (7.1%) | 7 (11.7%) | 0.775 |
| Sustained VT | 12 (4.4%) | 3 (3%) | 1 (1.7%) | 0.541 |
| In-hospital mortality | 21 (7.5%) | 7 (7%) | 4 (6.7%) | 0.965 |

VT: Ventricular tachycardia.

namely: heart failure (HF), cardiogenic shock, mechanical complications, cardiopulmonary resuscitation, need for invasive mechanical ventilation, major bleeding and need for blood transfusions. We compared in-hospital mortality. We performed multivariate data analysis to identify independent predictors of re-infarction and the impact of re-infarction on in-hospital mortality.

Results: Re-infarction was found in 1.8% (67 P). Patients who suffered re-infarction were older (72 ± 11 vs 67 ± 13 years; $p<0.001$), had higher prevalence of hypertension (86.6% vs 74.4%; $p=0.024$) and peripheral arterial disease (16.7% vs 6.8%; $p=0.005$). Aside from diastolic arterial pressure which was lower in P from group 1 (75 ± 14 vs 80 ± 16 mmHg; $p=0.011$), no difference was found in remaining vital signs or Killip-Kimball class at admission. P from group 1 were subjected to more coronary angiographies (94% vs 83.7%; $p=0.023$), more percutaneous coronary interventions (PCI) (70.1% vs 50.8%; $p=0.002$) and presented more frequently left anterior descending coronary artery disease (77.4% vs 63.2%; $p=0.021$) and multivessel disease (75.4% vs 55.6%; $p=0.002$). However no differences were found in number or type of vessels submitted to PCI. Re-infarction was associated with worse left ventricular function ($p<0.001$), higher prevalence of HF (35.8% vs 15.6%; $p<0.001$), cardiorespiratory resuscitation (4.5% vs 0.4%; $p=0.003$). In-hospital mortality was higher in P of group 1 (9% vs 2%; $p=0.003$). By multivariate data analysis re-infarction was found as an independent predictor of in-hospital mortality. We also identified age, peripheral arterial disease and KK class ≥ 2 as independent predictor factors for re-infarction.

Conclusions: Re-infarction is a rare complication that is associated with higher rates of complications and in-hospital mortality. In our population it occurred in 1.8% of NSTEMI patients. Age, peripheral arterial disease and KK class ≥ 2 were identified as independent predictors of re-infarction.

P139

Short-time variation in available beds predicts admission rate among chest-pain patients independently of high-sensitivity troponin t, seasonal and daily variation

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Introduction: Chest pain is a common symptom at the emergency department (ED) which often leads to admission. Assessment algorithms aim to safely reduce the rate of admission but it is unknown if the number of available beds at the time of the admission decision affect

admission rate or the risk of major adverse cardiac events (MACE) after discharge.

Purpose: To investigate whether number of available beds was associated to admission rate or 30-day MACE among chest pain patients in the ED.

Methods: This was an observational study at two EDs between 1st of January 2013 to 14th of September 2015. All patients >18 years with chief complaint chest-pain and at least one high sensitivity cardiac troponin T (hs-cTnT) measurement were included. Information on number of available beds at the short-term emergency wards and coronary care units was extracted every five minutes and the average during a 30-minute period was calculated for each patient, two thirds into their stay at the ED, when the admission decision usually occurs. Associations between number of available beds (one standard deviation increase) and admission rate, acute myocardial infarction (AMI) among admitted and 30-day MACE among discharged were studied with logistic regression together with sex, age, hs-cTnT >14 ng/L, ED site, season (winter as reference), visit-year (2013 as reference) and 24-hour variation (day, evening and night with day as reference).

Results: Out of 24,730 patient visits, 6,873 were admitted out of which 1,134 were diagnosed with AMI. Among discharged, 70 patients had a 30-day MACE. The number of available beds varied in relation to the 24-hour period ($p<0.001$), season ($p<0.001$) and decreased yearly ($p<0.001$) during the study. Admission was independently associated to the number of available beds (OR 1.11 CI95% 1.07-1.15), male sex (OR 1.52 CI95% 1.42-1.62), initial hs-cTnT >14 ng/L (OR 6.41 CI95% 5.93-6.94), age (OR 1.76 CI95% 1.69-1.83) year (OR 0.87 CI95% 0.81-0.94 for 2014 and 2015 respectively) and seeking the ED during spring or night (OR 1.15 CI95% 1.05-1.25 and OR 1.29 CI95% 1.17-1.43 respectively). AMI among admitted was more common among those with male sex (OR 1.48 CI95% 1.27-1.72), initial hs-cTnT >14 ng/L (OR 6.42 CI95% 5.38-7.65), seeking the ED during the evening (OR 0.82 CI95% 0.70-0.96) and 2015 as year of ED admission (OR 1.27 CI95% 1.06-1.51). Furthermore, initial hs-cTnT >14 ng/L (OR 7.01 CI95% 3.76-13.06), age (OR 2.45 CI95% 1.71-3.50) and male sex (OR 1.92 CI95% 1.15-3.21) were all associated to 30-day MACE. No relation between 30-day MACE and number of available beds was seen ($p=n.s$).

Conclusions: The number of available beds was associated to admission rate independent of other clinical information including hs-cTnT and may have affected the admission decision. No relation between available beds and 30 day-MACE was seen. Further studies are needed on the causal relationship and optimal number of available beds for chest-pain patients.

Acute heart failure

P140

Reliability of B lines in follow up of patients with acute decompensated left side heart failure

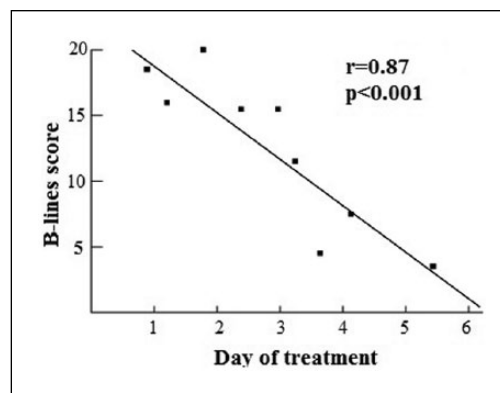
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Introduction: The accuracy of therapy in patients with acute decompensated left side heart failure (ADLSHF) usually assessed by conventional chest X ray. Classical sign is a resolution of pulmonary congestion. Lung ultrasound is alternative, absolutely safe, bedside method, used for assessment of water content. The most important part of examination is B-lines, which number depended mainly on elevated left ventricular (LV) filling pressure.

Purpose: The aim of this study was to assess the reliability of B lines in follow up of patients with ADLSHF and to compare with conventional chest X ray.

Materials and methods: The study was conducted on 100 admitted at Emergency room patients aged 40-84 years, due to symptoms and signs of ADLSHF. On admission all participants underwent physical exam, echocardiography in a FOCUS model and a lung ultrasound for B-lines. These findings were compared with Kerley B-lines on chest X ray. After 4 ± 2 days of intensive treatment, the lung ultrasound was repeated and compared with chest X ray. To assess the reliability of the measurements, we used intraclass correlation coefficients (ICC). Two experienced investigators evaluated the results independently from one another.

Results: At admission all participants had diffuse bilateral B-lines on the lung ultrasound. It was established a strong correlation between the quantity and distribution of B lines on the lung ultrasound and the severity of pulmonary congestion on the chest X ray ($r=0.78$; $p<0.001$). We found a moderate correlation with LV systolic function ($r=0.56$;



B-lines and clinical improvement

$p<0.001$). All patients demonstrated significant reduction of the B lines at the hospital discharge after adequate diuretic therapy. The results of lung ultrasound showed linear correlation along with clinical improvement and lack of pulmonary congestion on the chest X ray ($r=0.87$; $p <0.001$). The method demonstrated 97% sensitivity (95%CI) and 87% (95%CI) specificity in follow up of patients with ADLSHF. Chest X ray presented 85% (95%CI) sensitivity and 63% (95%CI) specificity. The assessment of the reliability of B-lines by ICC showed very good strength of agreement (0.8895; 95%CI) and good for chest X ray (0.6754; 95%CI).

Conclusion: This study demonstrates that lung ultrasound using B-lines is a useful, absolutely safe, bedside diagnostic tool for assessment of pulmonary congestion. The method could be repeated in course of treatment for clinical monitoring of patients with ADLSHF.

P141

What are the markers of prognosis in acute decompensated heart failure and low cardiac output?

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Background: The real markers of prognosis in patients with acute decompensated heart failure (ADHF) and low cardiac output are uncertain and could improve different strategies in treatment.

Purpose: To described markers related with mortality in patients with ADHF and low cardiac output.

Table 1. US B-lines score against chest X ray

| | Sensitivity | Specificity | ICC | Strength of agreement |
|--------------------------------------|-------------|-------------|----------------|-----------------------|
| US B lines score | 97% (95%CI) | 87% (95%CI) | 0.8895 (95%CI) | Very good |
| Chest X ray for pulmonary congestion | 85% (95%CI) | 63% (95%CI) | 0.6754 (95%CI) | Good |

US - ultrasound ICC - intraclass correlation coefficient

Methods: This was an observational, retrospective and multicentric study with 221 patients included between January 2,015 and January 2,016. The following markers were available: systolic arterial pressure, diastolic arterial pressure, heart rate, creatinine, C-reactive protein, lactate, sodium, BNP, left ventricle ejection fraction, left ventricle diastolic diameter (LVDD) and pulmonary arterial systolic pressure. Comparison between patients died or not was made by T-test and Q-square and was considered significant when $p < 0.05$. Complementary analysis was made by ROC curve calculating the area under the curve (AUC) and the cut-off score of the relation between each marker and mortality. Confidence interval used was 95%.

Results: About 63% were male and the median age was 65 years. Ischemic etiology was the most prevalent (31.7%) and in-hospital mortality rate was 35%. Were observed significant differences between patients died or not, respectively, in: LVDD (68.7 mm vs. 66.8 mm, $p = 0.005$), lactate (26.9 mg/dL vs. 19.7 mg/dL, $p = 0.001$), heart rate (87 vs. 79, $p = 0.047$) and BNP (2,322 ng/L vs. 1,511 ng/L, $p=0.004$). AUC were: LVDD = 0.524 (CI 95% [0.38 – 0.67]); lactate = 0.560 (CI 95%); heart rate 0.524 (CI 95% [0.38 – 0.67]) and; BNP = 0.524 (CI 95% [0.38 – 0.67]). The cut-off scores were: LVDD = 71.5 mm (sensitivity = 37.9% and specificity = 81%); lactate = 30 mg/dL (sensitivity = 35.5% and specificity = 86%); heart rate = 79 bpm (sensitivity = 55.7% and specificity = 53%) and; BNP = 1,519 ng/L (sensitivity = 65.1% and specificity = 64%).

Conclusions: Mortality in patients with ADHF remains high. LVDD, lactate, heart rate and BNP were related with mortality in patients with ADHF and low cardiac output.

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Circulating mitochondrial DNA predicts survival in patients with acute heart failure

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Background: Patients suffering from acute heart failure (AHF) requiring admission to an intensive care unit (ICU) have a poor prognosis. Activation of the innate immune system contributes to the pathogenesis of AHF. Mitochondrial DNA that shows similarities to bacterial DNA may be released after tissue damage and activates the innate immune system.

Purpose: The aim of this study was to analyze whether circulating levels of mtDNA predict 30-day survival in patients with AHF.

Methods: We included 90 consecutive patients with AHF admitted to our cardiovascular ICU (33% with cardiogenic

shock, 21% with acutely decompensated HF and 46% of patients suffered from AHF after cardiac arrest). Blood was taken at admission and mtDNA levels were measured by real-time PCR.

Results: Mean age was 62.1 ± 16.0 , 76.7% of patients were male and median NT-proBNP levels were 4986 (1525 – 23842) pg/mL. 30-day survival was 64.4%. Median mitochondrial DNA levels at admission were significantly higher in non-survivors when compared with survivors (29.6 (12.1 – 70.7) ng/mL vs. 20.6 (7.3-37.1 ng/mL), $p<0.05$). Patients with plasma levels of mtDNA in the highest quartile had a 2.6-fold higher risk of dying after adjustment for age, gender, NT-proBNP levels and APACHE II score ($p<0.05$).

Conclusion: Circulating levels of mtDNA predict mortality in AHF patients requiring ICU admission.

P143

Lung ultrasound for monitoring cardiogenic pulmonary edema

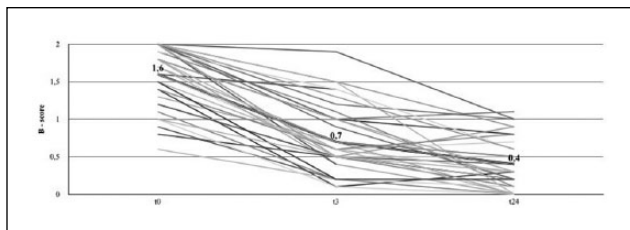
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Background: Several studies addressed the accuracy of lung ultrasound (LUS) in the diagnosis of cardiogenic pulmonary edema (CPE) evaluating the interstitial syndrome, which is characterized by multiple and diffuse vertical artifacts (B-lines), and correlates with extravascular lung water. We studied the potential role of LUS in monitoring CPE response to therapy, by evaluating the clearance of interstitial syndrome within the first 24 hours after Emergency Department (ED) admission.

Methods: LUS was performed at arrival (T0), after 3 (T3) and 24 (T24) hours. Eleven regions were evaluated in the antero-lateral chest; the B-lines burden was estimated in each region (0= no B-lines, 1= multiple B-lines, 2= confluent B-lines/white lung) and a mean score (B-Score, range 0-2) was calculated. Patients received conventional CPE treatment. Blood chemistry, vital signs, blood gas analysis, diuresis at T0, T3, T24 were also recorded. A complete echocardiography was obtained during hospitalization.

Results: Forty-one patients were enrolled. Respiratory and hemodynamic parameters improved in all patients between T0 and T3 and between T3 and T24. Mean B-score significantly decreased at T3 (from 1.59 ± 0.40 to 0.73 ± 0.44 , $p < 0.001$) and between T3 and T24 (from 0.73 ± 0.44 to 0.38 ± 0.33 , $p < 0.001$). B-score was higher in the lower pulmonary regions at any time. At final evaluation (T24) 75 % of apical and only 38% of basal regions were cleared.



Conclusion: LUS allows to assess the clearance of interstitial syndrome and its distribution in the early hours of treatment of CPE thus representing a possible tool to guide therapy titration.

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Ultra-sensitive cardiac troponin I in diagnosis of early myocardial damage in patients with acute heart failure

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Background: New sensitive assays for cardiac troponins (cTn) are able to detect very low cTn concentrations. However, clinical interpretation of these findings, outside of acute coronary syndrome, remains unclear.

Purpose: The aim of the study was to interlink different patterns of cTn leak (measured with an ultrasensitive assay) with clinical characteristics and outcomes in patients hospitalized with acute heart failure (AHF).

Methods: Ultra-sensitive cardiac cTnI (us-cTnI) was measured on admission, after 24, and after 48 hours using new diagnostic platform. The following pattern of us-cTnI was defined as confirming 'myocardial damage' occurring early during AHF: A. us-cTnI above the 99th upper reference limit (> 10.19 pg/mL) either at baseline or after 24 hours without significant (> 20%) decrease in subsequent samples or B. a significant (>20%) increase from baseline in 24 and 48 hours. Remaining patients were classified as having 'no myocardial damage' us-cTnI pattern.

Results: We analyzed 91 patients with AHF (age: 64±12 years, 79% men, 24 % AHF de novo, median hospital stay was 7 days) among whom 30 (33%) met the criteria for 'early myocardial damage'. These patients had on admission: lower systolic blood pressure (124±29 vs

140±36, mmHg), more often peripheral oedema (60% vs 34%), higher levels of NTproBNP (7116 [4893-14955] vs 4670 [2209-7980], pg/mL), creatinine (1.39 [1.20-1.75] vs 1.07 [0.90-1.30], mg/dL), urea (72 [49-100] vs 46 [37-58], mg/dL) and more common history of chronic heart failure (90%vs 69%) (all p<0.05). During hospital stay 13 % from 'early myocardial damage' group required inotropic therapy and 3.3% pts died (vs 5% and 1.6% in the remaining patients, respectively). During 1-year follow-up cardiovascular mortality was significantly higher in patients with 'early myocardial damage' (40% vs 18%, p=0.023; test log-rank: p=0.032).

Conclusion: The pattern of us-cTnI characterizing 'early myocardial damage' in patients hospitalized with AHF is associated with worse clinical status and poor outcome. Serial evaluation of us-cTnI during early phase of hospitalization for AHF may be useful to identify high risk patients.

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Concomitant cardiac damage, renal and liver dysfunction in patients with acute heart failure

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Background and purpose: Presence of organ dysfunction/damage during early phase of acute heart failure (AHF) is associated with poor outcome. In this context, however, clinical relevance of the inter-organ crosstalk has not been evaluated. This study was designed to assess prognostic consequences of the interplay between impaired function/damage of different organs in AHF.

Methods: Consecutive patients hospitalized for AHF between September 2010 and July 2012 were studied (those with clinical diagnosis of concomitant acute coronary syndrome were excluded). The organ dysfunction/damage on admission was diagnosed with the following criteria: a. cardiac damage – as troponin I (TnI) increase above the upper normal limit (>0.056 ng/ml); b. renal dysfunction – as the estimated glomerular filtration rate below 60 mL/minute/1.73 m²; c. liver dysfunction – as at least one of the following abnormal liver function tests: AST/ALT above the 3 times of the upper normal limit (114 IU/l, 105 IU/l, respectively), bilirubin above the upper normal limit (>1.3 mg/dl), albumin below the lower normal limit (<3.8 mg/dl). The primary endpoint was all-cause mortality during 12-month follow-up.

Results: We recruited 316 patients with AHF (mean age 66±12 years, 73% men). At baseline, renal dysfunction, myocardial damage and liver dysfunction were present in 54%, 41% and 61% of patients, respectively. Only 39 (12%) patients did not show any evidence of organ dysfunction/damage. Patients were classified into 2 subgroups: those with 2 or 3 organs dysfunction/damage (159 [50%]) vs. those without or with only single organ dysfunction/damage (157 [50%] patients). The former group comprised older patients (68±11 vs 65±12 years), with lower systolic blood pressure (125±31 vs 134±34, mmHg), higher level of urea (40 [27-67] vs 30 [19-44], mg/dL), NT-proBNP (7309 [4169-13104] vs 4302 [2305-6947], pg/mL), CRP (11 [5-30] vs 8 [4-21], mg/L) and lower level of sodium (138±5 vs 139±4, mmol/L), who more often required inotropic support during in-hospital stay (14% vs 4%) (P<0.05 in all comparisons). The 1-year mortality rates were 43% in former vs 17% in the latter group, respectively (P<0.0001). Importantly there was no statistically significant difference in 1-year mortality between patients without vs with only single organ dysfunction/damage (10% vs 19%). The multivariable analysis revealed that dysfunction/damage of 2-3 organs predicted higher mortality after adjustment for the other prognosticators.

Conclusion: In patients with AHF, presence of multi-organ dysfunction/damage on admission carries relevant prognostic information. Interestingly, the number of affected organs (rather than the organ itself) seems to be crucial to identify those at high risk of poor outcomes (similarly to the multi-organ dysfunction syndrome).

P146

Prognostic value of acute-on-chronic kidney injury in patients with decompensated heart failure

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Objective: Acute kidney injury (AKI) is an independent risk factor for adverse outcomes in acute decompensated heart failure (ADHF), occurs as a consequence of new onset kidney injury (AKI de novo) or acute deterioration of pre-existed chronic kidney disease (CKD) (AKI on CKD). The aim of the study was to determine the prevalence of different variants of AKI in ADHF patients and to evaluate the impact on short-term (30-days mortality) and long-term (6 months rate of ADHF rehospitalizations) outcomes.

Methods: In 183 patients admitted with ADHF (125 male, 69±9 years (M±SD), arterial hypertension (AH) 87%, ischemic heart disease (IHD) 56%, myocardial infarction (MI) 53%, atrial fibrillation 51%, diabetes mellitus (DM) 36%, known CKD 40%, ejection fraction (EF) 44±15%) the prevalence of different variants of AKI was assessed. AKI

was defined using 2012 KDIGO Guidelines. Depending on the presence of known CKD AKI was divided into 'AKI de novo' and 'AKI on CKD'. Mann-Whitney and multiple logistic regression analysis were performed P <0.05 was considered statistically significant.

Results: 41% of patients developed AKI and in 63% AKI developed among patients with pre-existed CKD. Patients with 'AKI on CKD' versus patients 'AKI de novo' had greater duration of CHF (4.2±1.7 vs 2.3±1.5, p<0.01), higher prevalence of IHD (64 vs 29%, p<0.01), AH (100 vs 71%, p<0.01), MI (53 vs 29%, p<0.01), DM (55 vs 15%, p<0.01), anemia (53 vs 0%, p<0.001), higher rate of prior HF hospitalizations (100 vs 57%, p<0.001). 'AKI on CKD' versus 'AKI de novo' tended to develop in the later periods of hospitalization (4.2 ± 3.8 vs 3.0±2.3 days, p >0.05), less often was transient (45 vs 71%, p<0.01), had lower risk of 30-days mortality (11 vs 29%, p<0.05) and higher 6 months rate of ADHF rehospitalizations (60 vs 29%, p<0.01).

Conclusions: 'AKI on CKD' was more frequent in ADHF patients and developed in 63%. Patients with 'AKI on CKD' were at greatest risk of adverse long-term outcomes in ADHF. Development of 'AKI on CKD' was not associated with higher risk of 30-days mortality.

P147

Long or short length of stay in non acute coronary syndrome acute pulmonary edema, does it matter?

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Background: Non - acute coronary syndrome (ACS) acute pulmonary edema (APE) is a severe form of acute heart failure (AHF) with a rising incidence and still high in-hospital and early after discharge mortality. Mean length of stay (LOS) is important both in medical and administrative points of view, cost of AHF hospitalizations being substantial. This raises the question: How long must be a patient with AHF hospitalized to be cost-effective? It depends on the clinical and hemodynamic profile of the patient?

Purpose: to establish correlations between clinical and paraclinical profile of patients with non - ACS APE and average LOS, to be optimal cost-effective in relation with short-term (30 days) mortality (STM).

Methods: 92 patients with non-ACS APE (APE outside of an ACS) consecutively hospitalized in Cardiology Clinic St. Pantelimon, between 01.01-31.12.2013, distributed and analyzed according to 3 etiologies, based on anamnesis, clinical and paraclinical data: ischemic, primary valvular and hypertensive (non ACS APE with preserved LVEF,

without significant valvular or documented coronary artery disease). We identified correlations between mean LOS and 30 days mortality according with etiology.

Results: 41 (44.56%) patients with ischemic etiology, 22 (23.91%) valvular, 26 (28.26%) hypertensive. The mean LOS was 6.6 days, longer for ischemic substrate, compared to the valvular and hypertensive ones (7.13 ± 4.44 vs 6.18 ± 3.43 vs 6.07 ± 3.05), statistically insignificant differences ($p > 0.05$). STM was 4.48%, significantly correlated with ischemic substrate ($p = 0.05$), the only one associated with death. In the whole lot we have not found statistically significant (SS) differences ($p = 0.8$) between STM and average LOS, relatively equal deaths vs survivors (7.5 ± 4.5 vs 7.8 ± 4 days), but differences SS for ischemic substrate ($p = 0.04$, deaths vs survivors: 4.0 ± 1.7 vs 8.3 ± 3.5). For this, the ROC curve analysis identified a threshold of 5 days being positive predictive, under which the risk of STM increases with a sensitivity of 100 and a specificity of 65.62, 95% CI 0.6-0.8, area under the curve 0.79 and $p < 0.01$.

Conclusions: In our analysis, STM in non-ACS APE was significantly influenced by ischemic substrate ($p = 0.04$). For this substrate LOS smaller than 5 days proved to be a positive predictive parameter ($p < 0.01$) for fatal prognosis. In cost-effective strategy LOS should be adjusted, taking into account the non-ACS APE etiology and the prognosis associated with it.

PI48

Short and medium term prognosis parameters in non acute coronary syndrome pulmonary edema with ischemic underlying pathology

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Background: Data from national and international registries have shed light on the ischemic etiology as dominant in acute heart failure (AHF), regardless of clinical form. Ischemic substrate also associates a poor prognosis, both in the short and medium term.

Purpose: Identification of short and medium term prognostic parameters, in a group of patients with non-acute coronary syndrome (ACS) acute pulmonary edema (APE) - APE outside an ACS - and ischemic substrate.

Methods: Ninety two patients with non-ACS APE consecutively hospitalized in Cardiology Clinic St. Pantelimon Hospital, between 01.01-31.12. 2013, distributed and analyzed according to 3 etiologies, based on anamnesis, clinical and paraclinical data: ischemic, primary valvular and hypertensive (non-ACS APE

with preserved LVEF, without significant valvular or documented coronary artery disease (CAD). The group included all patients with non-ACS APE with proven CAD, with or without reduced ejection fraction (EF) and/or revascularization procedures. For these patients we have identified clinical and paraclinical parameters with short and medium term (MT) prognostic value.

Results: Forty one (44.56%) patients with ischemic etiology, 22 (23.91%) valvular, 26 (28.26%) hypertensive. In-hospital mortality (IHM) in the entire group was 9.64% and was not statistically significantly (SS) associated with substrate ($p = 0.6$), maximum IHM for ischemic substrate (58.74% from all in hospital deaths). Thirty days (4.48%) and 1 year (28.36%) mortality were SS associated with ischemic substrate ($p = 0.05$, relative risk (RR) = 1.07 and $p = 0.01$, RR = 1.43). None of the clinical and biological parameters analyzed - on admission SBP, HR, urea, creatinine, sodium - were correlated with IHM or 30 days mortality. For 1 year mortality only decreased SBP ($p = 0.04$) and sodium levels ($p = 0.05$) were SS correlated with poor prognosis. The echocardiographic parameters SS correlated with poor prognosis were: TAPSE < 18 mm ($p = 0.01$), PAAT < 102 ms ($p < 0.01$) for IHM, PAAT < 103 ms ($p = 0.02$) for 30 days mortality, TAPSE < 18 mm ($p = 0.02$) for 1 year mortality.

Conclusions: Similar to data from AHF registers, in our analysis ischemic etiology was also dominant and SS associated with MT prognosis. The parameters with short and MT prognostic value in a heterogeneous group of ischemic patients with non-ACS APE were more echocardiographic, and express the dysfunction of right ventricle (RV) -TAPSE, and high pulmonary vascular resistance -PAAT, and less clinical and paraclinical ones. This results make the evaluation of RV function and pulmonary hypertension to be extremely important in determining risk and prognosis for this patients.

PI49

Effect of levosimendan on the levels of biomarkers ST2, galectin and oxidative stress in patients with acute decompensation of chronic heart failure

IG 140505

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Introduction: Acute heart failure is a common condition associated with considerable morbidity, mortality, and cost of the therapy. Levosimendan is a positive inotropic drug for the treatment of acute decompensated heart failure (HF). Its administration aims improving haemodynamic outcomes such as congestion, cardiac output, cardiac index, right ventricle failure. Furthermore levosimendan

treatment decreases brain natriuretic peptides (BNP) levels and oxidative stress.

Purpose: The aim of our study was find out the short-term effect of levosimendan on the levels of new biomarkers sST2, galectin (gal) and oxidative stress in patients with acute decompensation of chronic heart failure

Methods: we enrolled 13 patients (average age 72,6; 11 male gender), with acute heart failure. Average systolic function of left ventricle was 22,6%. Etiology of heart failure in 8 patients was ischemic heart disease and in 5 patients dilated cardiomyopathy. All patients were treated with levosimendan. We evaluated the levels of sST2, gal and oxidative stress before administration of levosimendan (1), in the middle (2) and finally at the end of application. The oxidative stress of blood plasma was assessed by BAP and ROM test.

Results: average value sST2 (1) 106,8 ng/ml; (2) 116,5 ng/ml and (3) 100,7 ng/ml. Comparison of values of sST2 was significant decreasing between (2) and (3) $p=0,038$; other results were not significant. Average value gal (1) 10,12 ng/ml; (2) 7,51 ng/ml a (3) 7,39 ng/ml. We did not reveal significant changes between values of gal and furthermore we found no positive effect on oxidative stress.

Conclusion: administration of positive inotropic drug mostly did not influence significant values of new biomarkers sST2, gal and also oxidative stress. Positive effect of levosimendan could appear later, namely after decreasing of synthesis of proteins sST2 and gal. This statement we want verify to perform other observation.

PI50

Impact of gender difference in patients with Takotsubo syndrome-a multicenter registry in eight academic hospitals in east Japan

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Background: Takotsubo syndrome (TS) is popular in patients with female than male and its prognosis is favorable in previous studies. However, the gender difference for clinical characteristics was not well evaluated. The aim of

this study was to compare the gender difference in patients with TS.

Methods: The study cohort consisted of 183 consecutive patients with TS in the registries of eight academic hospitals in east Japan between 1997 and 2014. Patients were divided into the male (n=36) and female groups (n=147). The authors conducted a retrospective observational study to analyze of gender difference. Day of symptom onset was categorized into four 3-month intervals (Jan. to March, April to June, July to Sept., and Oct. to Dec.). Time of symptom onset was categorized into four 6-h intervals (night: 12:00 to 5:59 AM; morning: 6:00 to 11:59 AM; afternoon: 12:00 to 5:59 PM; and evening: 6:00 to 11:59 PM) for circadian analysis.

Results: The existence of a main afternoon peak of occurrence was observed in the female group for circadian variation (13% in the night, 24% in the morning, 42% in the afternoon, and 21% in the evening; $p<0.001$). Moreover, TS events were most frequent in summer (34%) and least so in winter (18%; $p<0.05$). However there were no significant difference in the male group. Intra-left-ventricular pressure gradient (ILV-PG) was observed in twelve patients with female but no case in the male group (8.1 % vs. 0 %: $p=0.076$). In these twelve female patients, one case developed oozing cardiac rupture complicated with cardiac tamponade and required emergency surgical operation. Thirteen cases developed in-hospital death (in-hospital mortality 7.1%, 6.1% in the female group and 11.1% in the male group: $p=0.30$).

Conclusion: Circadian and seasonal variation presented in not male but female group. ILV-PG was not rare and one case of oozing rupture was observed in female patients with TS. These results suggested the pathogenesis and clinical feature of TC were different between the both genders.

PI51

Acute heart failure in post-cardiac surgery: diagnostic performance of novel systemic inflammation markers and transthoracic cardiopulmonary ultrasound

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Background: Postoperative heart failure (PHF) remains a major determinant of poor outcome after cardiac surgery (CS). A prompt diagnosis of PHF has a paramount role in order to optimize the best therapeutic strategy depending on haemodynamic and systemic status of each patient. The former can be evaluated by means of transthoracic cardiopulmonary ultrasound (CPUS), analyzing extravascular lung water, as assessed through the dynamics of B-lines, and left ventricular end-diastolic pressure (LVEDP), as

derived from the non-invasive assessment of left ventricular diastolic function. Otherwise, inflammatory systemic status can be assessed through many laboratory markers. Among these, preoperative neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) were found to be significant predictors of adverse outcomes in patients with coronary artery disease and in patients who underwent percutaneous coronary intervention and CS.

Purpose: Aim of our study was to assess the additional diagnostic performance of NLR and PLR along with CPUS for early rule-in and rule-out diagnosis of PHF.

Methods: We retrospectively collected laboratory data of 81 patients (mean age: 68.9±9.8 years; male gender: 67%; mean EuroSCORE: 6.9±3[±SD]) consecutively admitted to the cardiac surgery intensive care unit after elective CS (61% of CABG); only those with available CPUS before and after CS were considered eligible. According to our previously published data, we considered positive for PHF all patients with a number of 15 B-lines more than baseline, increased LVEDP and reduced echocardiographic myocardial performance indexes. ROC-curve analyses were performed to calculate the best cut-off for each parameter and to compare diagnostic performance of NLR and PLR towards the final diagnosis.

Results: The adjudicated final diagnosis of PHF was done in 30 patients (37%; mean NT-proBNP 1003[IQR]). Only NLR and PLR demonstrated a mild correlation with B-Lines ($r=0.34$, $P=0.002$; $r=0.32$, $P=0.004$, respectively), left ventricle ejection fraction (LVEF) ($r=-0.33$, $P=0.003$; $r=-0.33$, $P=0.003$, respectively), left ventricle end-diastolic volume index (LVEDVI) ($r=0.41$, $P<0.001$; $r=0.26$, $P=0.04$, respectively) and stroke volume (SVI) ($r=0.34$, $P=0.002$; $r=0.32$, $P=0.004$, respectively). A stronger correlation was conversely assessed between NLR, PLR and estimated pulmonary arterial pressure (PAPs) ($r=0.70$, $P<0.001$; $r=0.61$, $P<0.001$, respectively). In ROC analyses, NLR yielded a C-statistic of 0.56 (% CI: 0.39-0.72; best cut-off 2.5 [LR 2.7]) and PLR 0.51 (95% CI: 0.34-0.68; best cut-off 67 [LR 2.7]).

Conclusions: Elevated preoperative NLR and PLR well correlate with elevated B-lines, reduced echocardiographic myocardial performance indexes and PAPs in early diagnosis of PHF in elective patients after CS. Thus, these easy-to-obtain and cost effective parameters should be considered in order to make a prompt diagnosis of PHF and optimize treatment and length of in-hospital stay after CS.

Antithrombotic therapy

P152

Antiplatelet therapy in code STEMI: who, when and where?

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Introduction and purpose: Antiplatelet therapy is a cornerstone in the treatment of patients with acute myocardial infarction. Our purpose was to evaluate thoroughly the antiplatelet therapy administered in our primary angioplasty protocol.

Methods: We analyzed a prospective registry of 518 consecutive patients with suspected acute myocardial infarction that triggered the ST segment elevation myocardial infarction (STEMI) code to perform a primary angioplasty. We recorded antiplatelet agent received and the time and place of its administration.

Results: 74.9% of our patients were pretreated, mostly with clopidogrel (48.6%) compared with new antiplatelet agents ticagrelor and prasugrel (NAA) (26.3%). The place of first medical contact (FMC) of pretreated patients was primarily hospital emergency rooms (54%), followed by ambulatory emergency care (28.9%) and at home or public pathway (16.8%) by emergency medical services. Patients pretreated with NAA were mainly attended at hospital emergency rooms (58%), compared to ambulatory emergency care (26%) and emergency medical services (16%). At discharge 53% of patients who underwent primary angioplasty were treated with NAA, while clopidogrel was used in 40%. Pretreated patients had longer FMC-to-balloon delay times compared to those not pretreated (median in minutes: 129 against 120).

Conclusion: NAA pose as our first choice in antiplatelet agents at discharge, which contrasts with a very low use in pretreatment. This is mainly due to a high variability of staff who acts as the first medical contact. We tend to pretreat patients with longer FMC to balloon delay times.

P153

Anticoagulant switch in non-ST elevation acute myocardial infarction: prevalence and impact in in-hospital morbidity and mortality

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Background: The switch of anticoagulants is still not recommended in the latest ESC guidelines for non-ST elevation acute myocardial infarction (NSTEMI), but its clinical impact in the real world is still unknown.

Purpose: To assess the impact in in-hospital morbidity and mortality of the anticoagulant switch during the acute phase of NSTEMI.

Methods: From a multicenter national registry, we studied 4224 patients (Pts) with NSTEMI who underwent coronary angiography. We compared two groups: Group 1 - Pts who performed anticoagulant switch (unfractionated heparin (UFH) and enoxaparin, fondaparinux and UFH, enoxaparin and fondaparinux) and Group 2 - Pts that remain always with the same anticoagulant. We exclude all patients with previous history of atrial fibrillation (AF), or who developed AF during hospitalization and all Pts who already done anticoagulant therapy. We registered age, sex, clinical history, previous therapy and in-hospital therapy and results of coronariography. We defined the following in-hospital complications: major bleeding; need for blood transfusion, heart failure (HF), cardiogenic shock, Re-infarction and stroke. We compared the in-hospital mortality and a multivariate analysis was performed to assess the impact of the anticoagulants switch in the incidence of Re-infarction, major bleeding, HF and in-hospital mortality.

Results: The switch of anticoagulants was performed in 14.2% (601Pts), with the change between enoxaparin and UFH the most common (80.3%). Pts of group 1 were older (66 ± 12 vs 64 ± 12 years, $p=0,007$) and with the exception of chronic renal failure, there were no differences in the remaining medical history and previous therapy. At admission, Group 1 received less therapy with betablockers (81,0 vs 86,0%, $p=0,001$) and aldosterone antagonists (5,5 vs 7,8%, $p=0,04$) and more therapy with inotropes (2,0 vs 1,0%, $p=0,039$), without differences in the remaining therapy, specially antiplatelet and anti-thrombotic. At coronary angiography, Group 1 had more disease of the left anterior descending artery (67,7 vs 62,2%, $p=0,011$), were submitted to more angioplasties (76,3 vs 61,1%, $p<0,001$), however without differences in the number of vessels with disease. Group 1 had more HF (15,6 vs 9,2%, $p<0,001$), cardiogenic shock (2,2 vs 0,7%, $p<0,001$), stroke (1,3 vs 0,5%, $p=0,019$), major bleeding (2,2% vs 0,8, $p=0,002$) and more need of blood transfusion (3,0 vs 1,0%, $p<0,001$). In-hospital mortality was also higher in Group 1 (2,0 vs 0,6%, $p=0,002$). By multivariate analysis, the switch

of anticoagulants was an independent predictor of HF [OR: 3.96 (2.45 to 6.40), $p<0,001$], major bleeding [OR: 2.62 (1.13 to 6,09), $p=0,025$] and in-hospital mortality [OR: 4.07 (1.36 to 12.19), $p=0,012$].

Conclusions: In the real world, the switch of anticoagulants is associated with increased in-hospital morbidity and mortality, becoming an independent predictor of HF, major bleeding and in-hospital mortality.

PI54

Dual antiplatelet therapy in Russian patients beyond 12 months after myocardial infarction (EPICOR-RUS study)

AstraZeneca

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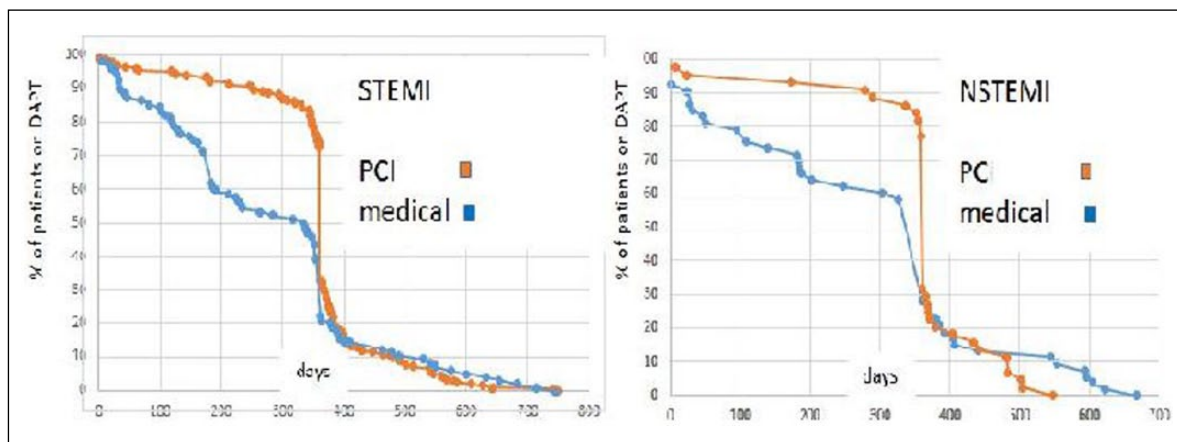
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Purpose: A new recommendation on the possible use of dual antiplatelet therapy (DAPT) beyond 12 months post myocardial infarction (MI) was to appear in new ACC/AHA guidelines on duration of DAPT in patients (pts) with coronary artery disease. The goal of the current analysis was to describe DAPT in Russian pts beyond 12 months after MI in a real-life setting for pts hospitalized with MI.

Methods: EPICOR-RUS (NCT01373957) was a Russian urban multi-centre (35 hospitals), observational cohort study, that described short- and long term (up to 2 years) antithrombotic management patterns in a total of 599 pts who had been hospitalized for acute coronary syndrome (ACS) within 24 hours of symptom onset, and had a discharge diagnosis of either unstable angina (UA) (n=77), non-ST-elevation myocardial infarction (NSTEMI) (n=148) or STEMI (n=374). A total of 558 pts completed the study



% of patients on long-term DAPT after MI

according to the protocol. Early termination occurred as a result of death (n=27), withdrawal of informed consent (n=3) and loss to follow-up (n=12). One pt was excluded from the study analysis because of non-compliance with inclusion/exclusion criteria. This analysis focuses duration of DAPT beyond 12 months.

Results: In the STEMI group, only 72.4% of pts managed by percutaneous coronary intervention (PCI) and 39.8% of medically managed pts received DAPT at 12 months. About 11.33% and 4.93% of STEMI PCI pts and 12.9% and 7.53% of medically managed STEMI pts still took DAPT at 15 and 18 months, respectively (figure 1). In the NSTEMI group only 77.3% NSTEMI PCI pts and 26.4% of medically managed NSTEMI pts received DAPT at 12 months. About 13.64% and no NSTEMI PCI pts and 13.21% and 11.32% of medically managed NSTEMI pts still took DAPT at 15 and 18 months, respectively (figure 2). No pts received DAPT by the end of the second year.

Conclusion: At 12 months the proportion of post MI pts on DAPT is rather low (26.4-77.3%) due to several reasons. Beyond 1 year the proportion declines rapidly and at 15-18 months is low (0-13.64%). The possible reason of low rate of DAPT after 12 months is that an appropriate recommendation has appeared after EPICOR-RUS study completion.

PI155

Prevalence and appropriateness of antiplatelet therapy in acute coronary syndromes: a single centre real world experience

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Purpose: Prasugrel and ticagrelor are recommended as first choice antiplatelet agents in the current guidelines of acute coronary syndromes (ACS) with ST-segment elevation (STEMI) and with non-ST-segment elevation (NSTEMI). However, the adoption of these indications into practice remains challenging and few real-world data are available. Aim of this study was to evaluate the pattern of use of antiplatelet agents in a large ACS population of a contemporary coronary care unit (CCU).

Methods: Six-hundred and three patients with a diagnosis of ACS were admitted to Sant'Andrea Hospital CCU, Rome, from January 2013 to December 2014. Appropriateness of choice for clopidogrel, ticagrelor and prasugrel at admission and at discharge was evaluated. Any treatment was defined as appropriate, less appropriate or inappropriate by applying an algorithm based on specific guidelines.

Results: At admission, 229 (38%) patients received clopidogrel, 266 (44.1%) ticagrelor and 75 (12.5%) prasugrel; 33 (5.5%) patients did not receive double antiplatelet treatment. Appropriate, less appropriate and inappropriate antiplatelet agents' choices were made in 63.2%, 34.9% and 1.8% of cases. The selection of ticagrelor and prasugrel at admission was mostly appropriate (85.7% and 82.7%, respectively), whilst clopidogrel was commonly a less appropriate choice (68.1%). From 2013 to 2014, we observed an improvement in the appropriateness of choice of all antiplatelet agents at admission (58.9% to 63.2%, p=0.027) and particularly of clopidogrel (less appropriate choice from 76.1% to 59.8%, p=0.008; appropriate choice from 23.1% to 39.3%; p=0.008). At discharge, 166 (27.5%) patients received clopidogrel, 248 (41.1%) ticagrelor and 87 (14.3%) prasugrel; 52 (8.6%) patients stopped double antiplatelet therapy for haemorrhagic complications and 17 (2.8%) patients died during hospitalization. Appropriate, less appropriate and inappropriate choice was made in 77.8%, 21.4% and 0.8% of patients. Treatment with ticagrelor and prasugrel at discharge was still mostly appropriate (95.2% and 84.9%, respectively). No statistically significant difference was found between the appropriateness of choice at discharge from 2013 to 2014. A diagnosis of STEMI resulted the only independent predictor of appropriate choice both at admission (OR 2.32, CI 95% 1.6-3.4, p<0.001) and at discharge (OR 2.7; CI 95% 1.6-4.3, p<0.001). Older age (> 75 years) was the only independent factor associated to a less or unappropriated choice at admission (OR 0.7, CI 95% 0.5-1, p=0.05), while glomerular filtration rate (GFR) <60 ml/min was associated with less or unappropriate choice at discharge (OR: 0.5; CI 95% 0.3-0.9, p=0.023).

Conclusions. From our real world experience, use of antiplatelet agents was generally appropriate, with an improvement of appropriateness from 2013 to 2014. STEMI was positively while older age and renal failure were negatively related to an appropriate choice.

PI156

Use of new antiplatelet drugs in elderly patients with acute coronary syndrome in the real world

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Background: The new antiplatelet drugs ticagrelor and prasugrel (NA) provide a more appropriate profile for patients with high thrombotic risk after an acute coronary

syndrome (ACS). A conservative approach is frequently chosen for elderly patients without being clear the potential benefits of NA. Our aim is to evaluate the actual use of NA in elderly patients.

Methods: We analyzed the characteristics of patients ≥ 70 years admitted because of ACS between 2013 and 2015 in 4 hospitals participating in the ARIAM Registry.

Results: We included 2900 patients. Of them, 930 (32%) were ≥ 70 years (77.35 ± 5.1), 575 (61%) had ACS with ST elevation (STEMI), and 355 (39%) ACS without ST elevation (NSTEMI); 269 patients (28.9%) received NA. The characteristics of patients receiving NA were similar to the rest. Significant predictive variables of less NA use were left bundle branch block (0.4% NA vs 2.6%, $p = 0.04$), chronic renal failure (5.2% NA vs 9.8%, $p = 0.036$) and older age (75.4 years in NA [74.87-75.97] vs 78.1 [77.74; 78.53], $p < 0.001$). No differences in history of diabetes, bleeding, acute myocardial infarction, use of antiplatelet drugs, coronary intervention or arterial bypass surgery were detected. The delay between the onset of symptoms and arrival to the hospital was lower in patients receiving NA (202.9 vs 252.9 minutes $p = 0.02$). In the group of NSTEMI, the percentage of patients nonrevascularized was lower among those who received NA (3.9 vs 17.8% $p < 0.01$). In the STEMI group the percentage of patients with primary angioplasty received more frequently NA (NA 87 vs 67.7% $p < 0.001$). Patients treated with fibrinolysis received less often NA (19.1% vs 8.3 NA $p < 0.001$). There were no differences according to the number of affected coronary arteries. After multivariate analysis, independent predictors of NA use were ST elevation, lesser delay to hospital arrival, lesser advanced age and more recent date.

Conclusions: NA are being used more often in older people through the last three years. Its use is more frequent in STEMI. More advanced age and more delay to the arrival to the hospital are independently related to less use of NA.

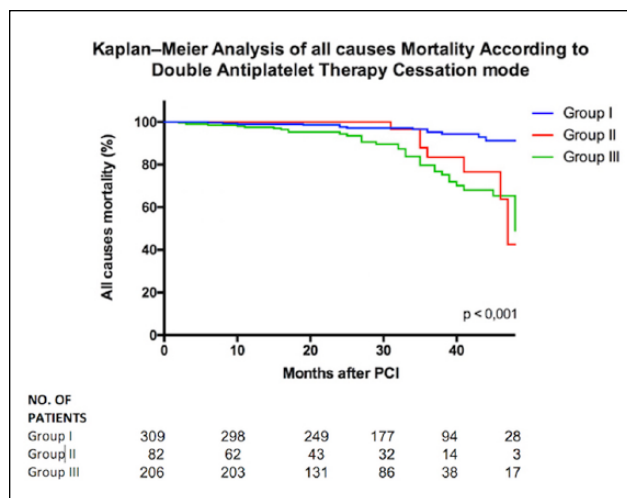
P157

Clinical events after percutaneous coronary intervention depending on dual antiplatelet therapy cessation

All participant hospitals are supported by the Spanish Ministry of Health, Social Services and Equality

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Kaplan-Meier Analysis

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Purpose: to quantify antiplatelet therapy duration in clinical practice after percutaneous coronary angioplasty with stent implantation, and to assess associations between different modes of dual antiplatelet therapy cessation and mayor events.

Methods: multicenter prospective observational registry between 2010 and 2015. Out of 6086 coronary angiogram procedures and 2325 patients undergoing angioplasty with stent implantation, 669 patients were randomized. We examined the effect of dual antiplatelet therapy cessation mode on adverse events: mortality, hospital readmission, myocardial infarction, new coronary revascularization, stroke, major bleeding and stent thrombosis. Kaplan-Meier survival curves were constructed to describe all causes and cardiovascular mortality over time, and log rank tests were applied to evaluate differences between groups. Kaplan-Meier survival curves were constructed comparing overall and cardiovascular 4-year survival in the 3 groups of patients according to dual antiplatelet therapy cessation mode.

Results: 310 (50.9%) patients were classified as recommended therapy discontinuation (group I), 92 (15.1%) as disruption (group II) and 207 (34%) as prolonged maintenance of dual antiplatelet therapy (group III). They maintained double antiplatelet therapy for 13.7 ± 9.6 , 7.7 ± 6.1 and 26.3 ± 12.4 months respectively. Differences were observed on: cardiovascular readmission 33 (10.6%), 11 (12.0%) and 45 (21.7%) in groups I, II and III ($p = 0.002$); new revascularization 11 (3.5%), 6 (6.5%) and 33 (15.9%)

respectively ($p < 0.001$); all-cause mortality 14(4.5%), 10(10.9%) and 41(19.8%) ($p < 0.001$) and cardiovascular mortality 2(0.6%), 2(2.2%) and 8(3.9%) ($p = 0.035$). After multivariate analysis, age OR 1.09 (95% CI 1.06-1.12) and belonging to group III OR 6.68 (95% CI 3.39-13.16) were predictors of mortality whereas β -blocker treatment was protective OR 0.37 (95% CI 0.20-0.70). The 4-year overall survival was significantly worse in the groups of patients from group II and III than in group I ($p < 0.001$).

Conclusions: for patients undergoing percutaneous coronary intervention, no-adherence to dual antiplatelet therapy medical recommendations increases morbidity and mortality.

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Influence of bleeding and ischemic risk on the prescription of new antiplatelets in patients with acute coronary syndrome

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Background: guidelines for the management of acute coronary syndromes (ACS) recommend the GRACE and the CRUSADE scores as quantitative risk scoring systems to assess mortality and bleeding risk, respectively. Therefore, clinicians should take into account both risks in weighing the clinical net benefit of the prescribed therapy.

Purpose: to assess the influence of ischemic and bleeding risk on the prescription of new antiplatelets (prasugrel and ticagrelor) in pts with ACS.

Table 1. Multivariate regression analysis

| | OR (CI 95%) | P |
|----------------------------|---------------------|--------|
| Age (x year) | 0.953 (0.944-0.962) | <0.001 |
| Sex (male) | 0.946 (0.710-1.261) | 0.705 |
| Diabetes | 1.528 (1.212-1.927) | <0.001 |
| Prior vascular disease | 0.887 (0.653-1.206) | 0.445 |
| Killip class | 0.915 (0.746-1.123) | 0.398 |
| Cardiac arrest | 1.738 (0.931-3.634) | 0.142 |
| Heart rate (x bpm) | 0.994 (0.988-1.001) | 0.071 |
| Systolic blood pressure | 1.001 (0.997-1.005) | 0.639 |
| Creatinine (mg/dl) | 0.789 (0.615-1.014) | 0.064 |
| Elevated cardiac troponina | 2.277 (1.564-3.316) | <0.001 |
| ST-segment deviation | 1.340 (1.026-1.701) | 0.016 |

Methods: retrospective analysis including 2092 consecutive ACS pts. Both GRACE and CRUSADE risk scores were calculated for each patient. Influence on new antiplatelet prescription were evaluated using a logistic regression analysis.

Results: 483 pts (23%) were treated with a new 2Py12 inhibitor. Pts on new antiplatelets had lower GRACE (135 ± 39 vs. 147 ± 43 ; $p < 0.001$) and CRUSADE (24 ± 14 vs. 31 ± 16 ; $p < 0.001$), than pts without them. On multivariate analysis, only CRUSADE risk score was associated with prescription of new antiplatelets (OR per point: 0.967; $p < 0.001$). On multivariate analysis including items of both scores, age was the only independent high ischemic risk-related factor associated with lower prescription of these agents (Table 1).

Conclusion: In ACS pts, bleeding risk has higher impact over ischemic risk on the prescription of new antiplatelets. Impact of ischemic risk seems to be limited by the underuse of these agents in old pts. Our study results suggest that individual factors may have higher impact on clinicians' prescription profile than global risk assessment. This factors should be taken into account in the interpretation and design of futures studies exploring benefits of new antiplatelets in ACS pts.

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Bleeding complications associated with chronic anticoagulation in patients with acute coronary syndrome

Government of Spain

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Background: Patients with an indication for oral anticoagulation (OAC) undergoing percutaneous coronary intervention (PCI) for acute coronary syndrome (ACS) are a group at high risk for bleeding complications.

Objectives: In patients with indication OAC and an ACS and 1-year of follow-up: 1) to assess the incidence of bleeding events 2) to determine the incidence of intracranial and gastrointestinal haemorrhage 3) to determine the factors associated with bleeding.

Methods: A single-center prospective registry included patients with indication for OAC undergoing PCI from 2006-2013 and 1-year of follow-up. The primary end point was the incidence of major or minor bleeding.

Results: We included 537 patients of whom 392 patients had an ACS: 222 (41.3%) had an ST elevation-myocardial infarction (STEMI); 170 (31.7%) had a Non-STEMI and the remaining 145 (27%) stable angina. All 392 patients with ACS were analyzed (average age 72.6 ± 10.2 years; 73.4% male).

The incidence of bleeding events was 13.6% at 1-year. Patients on OAC prior to ACS showed a trend to show more bleeding events (9.7% vs 19.6%, $p = 0.08$). Those who received OAC before being discharged had a higher incidence of major bleeding compared to those who received dual antiplatelet therapy (DAPT) (12.7% vs 3.3%, $p = 0.0001$). Those patients who had a haemorrhagic event had a higher incidence of embolic stroke (2.4% vs 9.0%, $p = 0.024$), even if the bleeding was minor (12.0% vs 2.7%, $p = 0.04$). Furthermore, patients who had bleeding events showed a non significant trend to a higher incidence of stent thrombosis (2.2% vs 4.0%, $p = 0.45$). Six patients (2.7%) had an intracranial haemorrhage and gastrointestinal bleeding appeared in 10 cases (4.5%). A Cox regression model adjusted for age, renal failure, prior stroke, type of stent and OAC treatment showed that previous stroke was the most powerful independent predictor of bleeding [HR 2.59, 95% CI 1.43-4.69, $p = 0.002$].

Conclusions: In our series, patients with indication for OAC presenting an ACS had a high incidence of bleeding events, especially intracranial and gastrointestinal bleeding. Patients with bleeding events presented more frequently an embolic stroke, probably by interruption of antithrombotic medication. A history of previous stroke was the most powerful predictor of bleeding.

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Safety and efficacy of new antiplatelets agents in the real world: Results from a multicenter study

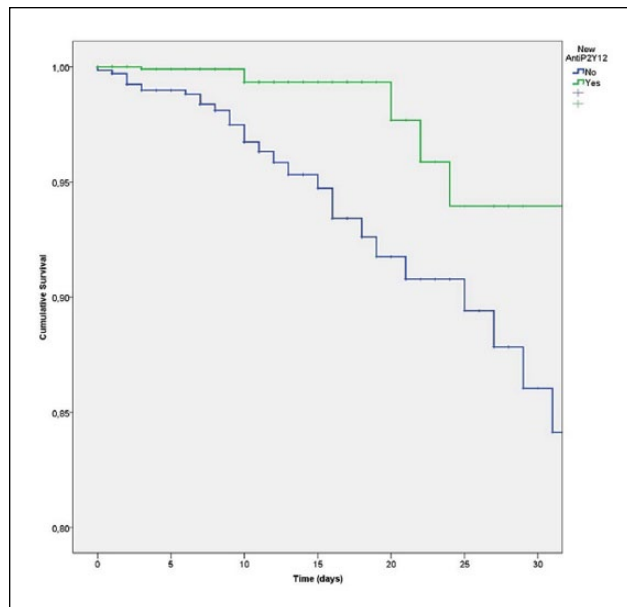
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Background: The use of new antiplatelet agents, prasugrel and ticagrelor (NAP), is still low in daily practice, partly because of the perception of its potential for major bleeding. There are just a few studies in the Real World with NAP. Our target is to study safety and effectiveness of NAP in a real cohort of patients with acute coronary syndrome (ACS)

Methods: A multicenter retrospective observational study (4 centers) of ACS patients collected prospectively in 4 coronary care units between 2013-2015 was carried out. Univariate, multivariate and propensity analysis were done (greedy matching, without replacement caliper 0.05) 16 variables were included.

Results: 2906 patients with ACS dual antiplatelet therapy at discharge were analyzed (63 ± 12 years, 60% STEMI, 55%) 1598 patients received clopidogrel (control group



survival curves.

[CG]) and 45% NAP (1308 patients); NAP ratio increased during the study (31% 2013, 53% 2014, 63% 2015). The CG was significantly older (66 vs 60 years, $p < 0.0001$), had more comorbidities (hypertension, bleeding history, CKD, stroke, myocardial infarction, COPD), a higher GRACE (144 [120.174] vs 139 [117.159]; $p = 0.0005$) and CRUSADE score (27 [16.41] vs 20 [11.31]; $p < 0.0001$); however the same incidence of cardiogenic shock at admission was observed (2 vs 1.6%; p ns). In the univariate analysis, overall mortality was lower with NAP (9 vs 2%, $p < 0.0001$), without increasing the rate of total bleeding (4% vs 3%, p ns), major (0.5% vs 0.3%, p ns) and minor (1.2 vs 1.4%, p ns) or bradycardia (13 vs 12%, p ns). After propensity analysis (448 subjects), equaling the differences in baseline characteristics (standardized differences $< 10\%$), the total mortality reduction remain with NAP versus clopidogrel (adjusted OR 0.20 95% CI [0, 07 to 0.53]; $p < 0.0001$), without increasing total bleeding events (oR 1.59, 95% CI [0.73 to 3.5]; $p = 0.242$) neither adverse effects. The intrahospitalary mortality was similar with prasugrel and ticagrelor (1.8% vs 1.4%, p ns).

Conclusions: According to this real world study, the NAP use has been increased in the last few years, with a mortality reduction without increasing bleeding or adverse events compared to clopidogrel. Our study, strengthens the recommendations of clinical practice guidelines.

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Tolerability of ticagrelor in the elderly: a real world experience

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Background: Elderly patients presenting with acute coronary syndromes (ACS) are a high risk group for ischaemic events and complications related to treatment. Ticagrelor is recommended in various guidelines for management of ACS. Real-world data on the tolerability of ticagrelor in the elderly is scarce which may discourage clinicians from following guidelines. Such data may offer useful safety information and guide clinical practice.

Purpose: To compare side effects of ticagrelor in the young (<70) and the elderly (≥70).

Methods: Comparative analysis of the occurrence of any bleeding, dyspnoea and bradycardia up to 12 months follow-up was undertaken in 407 consecutive patients aged <70 and ≥70 presenting with ACS to an English district general hospital. All patients received dual anti-platelet therapy (DAPT) with aspirin and ticagrelor.

Results: 407 patients presented with ACS: Male 69.5%, Female 30.5%, unstable angina: 17.2%, NSTEMI: 70.8%, STEMI: 12%. Coronary angiography in 81.6%, PCI in 68.4%, CABG in 1.9% and medical management in 29.7%. Complication rates are shown in Table 1. There was no significant difference in the incidence of all bleeding, dyspnoea or bradycardia between those <70 years and ≥70. Premature discontinuation for any reason was more common aged ≥70 mainly due to non life threatening side effects (n=43). All-cause mortality was 4.41% at 1 year post discharge. No deaths were due to ticagrelor.

Conclusion: This real world analysis of ACS patients managed with ticagrelor shows a safety profile, comparable to outcomes in the PLATO trial. Application of a guideline adherent ACS protocol for DAPT with ticagrelor in this elderly population appears safe and well tolerated.

Table 1. Table 1

| | <70 | ≥70 | | P value (Chi Squared) |
|------------------------------------|----------------|----------------|------------|--------------------------|
| Total | 203 (49.9%) | 204 (50.1%) | n= 407 | |
| All Bleeding | 16 | 24 | 40 (9.8%) | 0.088 |
| Intracranial Bleeding | 0 | 2 | 2 (0.49%) | 0.156 |
| Ticagrelor stopped due to bleeding | 4 | 18 | 22 (5.39%) | <0.05 |
| Dyspnoea | 10 | 13 | 23 (5.64%) | 0.519 |
| Ticagrelor stopped due to dyspnoea | 8 | 11 | 19 (4.66%) | 0.481 |
| Ticagrelor stopped for any reason | 25 | 62 | 87 (21.3%) | <0.05 |
| Bradycardia | 0 | 1 | 1 (0.25%) | 0.317 |

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Monocyte subset distribution predicts survival in patients with acute heart failure

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Background: Activation of the innate immune system contributes to the pathogenesis of acute heart failure (AHF). As key regulators of innate immunity, monocytes may play a crucial role in the development of this disease. Monocytes are a heterogenous cell population that can be divided into at least three cell populations: Classical monocytes (CM; CD14++CD16-), intermediate monocytes (IM; CD14++CD16+CCR2+) and non-classical monocytes (NCM; CD14+CD16++CCR2-).

Purpose: The aim of this study was to analyze whether monocyte subset distribution is associated with 30-day survival in patients with AHF.

Methods: We included 90 consecutive patients with AHF (33% with cardiogenic shock, 21% with acutely decompensated HF and 46% of patients suffered from AHF after cardiac arrest). Blood was taken at admission and after 72 hours and monocyte subset distribution was analyzed.

Results: Mean age was 62.1 ± 16.0, 76.7% of patients were male and median NT-proBNP levels were 4986 (1525 – 23842) pg/mL. 30-day survival was 64.4%. At admission, no association between monocyte subsets and outcome was seen. However on day 4, increased levels of IM (9.4 (4.0-13.8) % vs. 4.3 (2.1-7.9) %; p=0.02, respectively). and lower levels of CM were predictive of 30-day mortality (86.8 (77.5 – 88.9) % vs. 90.5 (84.3 – 92.9), p= 0.02, respectively), while the NCM proportion was not associated with mortality. Risk of dying was increased 10.6-fold in the lowest tertile of CM and 9.5-fold in patients in the lowest IM tertile (p<0.05 for both).

Conclusion: Circulating monocyte subsets are associated with 30-day mortality in patients with AHF requiring ICU admission. Activation status of the innate immune system as reflected by monocyte subset distribution may play a major role in pathophysiology and outcome in this patient cohort.

P164

The mechanisms of thrombocytopenia after transcatheter aortic valve implantation

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Background and aim: Thrombocytopenia (TP) has been observed after transcatheter aortic valve implantation (TAVI), however pathogenesis requires further investigation.

Methods: 32 patients without previous indications for dual antiplatelet therapy (mean age 78.5±7.9 years, 62% females) with severe aortic valve stenosis (mean gradient 54.6±16.9mmHg) qualified for TAVI operation (Edwards Sapien XT) were analyzed. Platelet counts (PC) were analyzed before surgery, on the day of operation and for the three following postoperative days (POD 1 to 3). For platelet activation P-selectin (PS, serum) and platelet factor 4 (PF-4, CTAD plasma) were assayed whereas for coagulation activation prothrombin fragments 1+2 (F1+2, serum) were assessed before procedure, on POD-1 and POD-3 (ELISA), Table.

Results: During the postoperative period a significant PC drop, the most evident on POD-2 was observed, since then there was a PC raise, Table. The PC drop correlated directly with the amount of iodinated contrast agent ($r=0.42$, $p=0.016$) and day by day PC decrease significantly negatively correlated with baseline mean platelet volume. Neither clinical nor perioperative parameters influenced PC decrease. Greater acute PF-4 decrease correlated with greater acute PC drop ($r=0.48$, $p=0.043$) and during the study slower PF-4 increase correlated with higher PC increase on POD-3 ($r=-0.505$, $p=0.032$). The impaired prothrombotic state, as assessed by F1+2, correlated with higher PC raise on POD-3 ($r=0.514$, $p=0.03$).

Conclusions: Platelet reduction shortly after TAVI operation is related to the amount of contrast and baseline microthrombocytosis. Platelet activation and blood coagulation along with impaired platelet renewal might be underlying mechanism of TP following TAVI procedure.

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COLIN trial: Interest of Colchicine in the treatment of patients with acute

Table 1. Table

| | Platelet countx10 ³ / μL * | PF-4, IU/mL * | PS, ng/mL | F1+2, pg/mL * |
|----------|---------------------------------------|---------------|-------------|-----------------|
| Baseline | 189.8±53.9 | 1296.2±515.8 | 66.0±18.82 | 39991.2±20272.3 |
| POD-1 | 131.2±76.3 | 1005.1±533.2 | 74.86±18.92 | 35535.0±18918.6 |
| POD-2 | 94.7±31.3 | X | X | X |
| POD-3 | 104.5±49.8 | 1534.1±531.1 | 69.79±16.97 | 31977.9±18539.8 |

*one-way ANOVA, $p<0.05$

myocardial INfarction and with inflammatory response

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Background: Inflammation is involved during acute myocardial infarction and could be an interesting target to limit ischemia-reperfusion injuries. Colchicine, known for its pleiotropic anti-inflammatory effects, could decrease systemic inflammation in this context.

Aims: To evaluate the impact of colchicine on inflammation, in patients admitted for ST elevation myocardial infarction.

Methods: All patients admitted for ST-elevation myocardial infarction with one of the main coronary artery occluded and successfully treated with percutaneous coronary intervention were consecutively included. They were randomized to receive 1mg colchicine once daily upon optimal medical treatment for 1 month or optimal medical treatment only. C reactive protein was assessed at admission and daily until discharge.

Results: Forty-four patients were included, 23 were treated by colchicine and 21 by conventional treatment only. At baseline, both groups were well balanced. The culprit artery was more often left anterior descending artery in the colchicine group ($p=0.07$) reflecting a more severe group. There was no significant difference in the mean value of C reactive protein peak between the 2 groups, 29.03 mg/L in the colchicine group vs 22.01 mg/L in the control group, $p=0.23$.

Conclusion: In our study, the effect of colchicine on inflammation in ST-elevation myocardial infarction context could not be demonstrated. Further larger studies may clarify the impact of colchicine in acute myocardial infarction.

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Interest of colchicine in the treatment of acute myocardial infarction responsible for heart failure in a mouse model

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Background: Inflammation is deeply involved in the pathophysiology of ischemia-reperfusion (I/R) lesions and remodeling phenomena after an acute myocardial infarction (AMI), responsible for heart failure.

Colchicine exerts anti-inflammatory effects, through the inhibition of neutrophil chemoattraction, the inflammasome and proinflammatory cytokines.

Purpose: We aimed at evaluating the impact of colchicine on the infarct size in a mouse model.

Method: Myocardial I/R injury were induced in 19, 8 to 10 weeks, male C57BL/6 mice, after left thoracotomy, by ligating the left coronary artery for 45 min followed by reperfusion. 400 µg/kg of Colchicine or placebo was administrated via the intraperitoneal (i.p) route 25 minutes before the reperfusion (blinded administration)

24 hours later mice were sacrificed after intracardiac Evans blue injection, the heart was removed and the left ventricle (LV) was cut in transverse slices stained with Triphenyl-tetrazolium chloride (TTC). The area at risk (AAR) and infarcted area (IA) were determined by computerized planimetry, the AAR/total area and IA/AAR ratios were calculated. All data are expressed as percentage mean and standard error of mean.

Results: 10 animals were included in the control group and 9 in the Colchicine group (blinded adjudication). All the animals were successfully operated and survived at 24 hours. The AAR/total area ratios were respectively 54.44 ± 2.9 % in the Colchicine group versus 51.96 ± 4.4% in the control group, p= n.s.

No difference in infarct size could be found in Colchicine treated mice in comparison to control mice with IA/AAR ratios respectively at 49 ± 3.4% versus 53.7 ± 5.3%, p= n.s.

Conclusion: In conclusion, reduction of infarct size could not be obtained by treatment with Colchicine after induced myocardial infarction in mice. Further analysis should be performed to evaluate inflammatory cells accumulation in myocardium and inflammation pathways as well as LV remodeling.

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Acute simultaneous treatment of chloroquine and metformin afford significant protection of the injured kidney in experimental model of ischemia-reperfusion in rats

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Background: Recently our study group have showed that old antimalarial drug, chloroquine, could provide significant protection in an experimental model of renal ischemia-reperfusion (I/R) injury. Some increasing evidence suggest that metformin, an oral antidiabetic agent, also posses anti-inflammatory and antioxidant effects.

Purpose: In this study we aimed to analyze the acute effects of combined simultaneous intravenous application of chloroquine and metformin, 30 min before ischemia and compare these results with our previous findings.

Methods: Male adult Wistar rats (n=58, b.w. 250-300 g) were anesthetized and then subjected to bilateral renal ischemia (45 min) followed by reperfusion with saline lasting 4 hours. Study was carried out in strict accordance with the Animal Welfare Act of the Republic of Serbia (Official Gazette of the Republic of Serbia No. 41/09) and 'Principles of laboratory animal care' (NIH Publication no. 85-23 revised 1985). Rats were randomized into six experimental groups (N=6-10 per group) - I: Sham + saline, II: I/R + chloroquine 0.3 mg/kg + metformin 3 mg/kg, III: I/R + chloroquine 0.3 mg/kg + metformin 10 mg/kg, IV: I/R + chloroquine 3 mg/kg + metformin 3 mg/kg, V: I/R + chloroquine 3 mg/kg + metformin 10 mg/kg, VI : I/R + saline. Selected biochemical (urea, creatinine and fractional excretion of sodium) and patohistological parametars (tubular necrosis, interstitial edema, loss of

Table 1. Baseline characteristics of population

| Characteristics | Colchicine group n=23 | Control group n=21 | p |
|--------------------------|-----------------------|--------------------|------|
| Male, n(%) | 19 (82.5) | 16 (76.2) | 0.9 |
| Age (y), mean ± SD | 60.1 ± 13 | 59.7 (11.4) | 1 |
| Diabetes mellitus, n (%) | 3 (13.0) | 3 (14.3) | 1 |
| Culprit artery, n (%) | | | 0.07 |
| - LAD | 14 (60.9) | 7 (33.3) | |
| - Circumflex | 3 (13.0) | 2 (9.6) | |
| - RCA | 6 (26.1) | 12 (57.1) | |
| TIMI flow | | | 1 |
| - 0 | 17.2 (77.2) | 16 (76.1) | |
| - 1 | 1 (4.6) | 1 (4.8) | |
| - 2 | 4 (18.2) | 3 (14.3) | |
| - 3 | 0 (0) | 1 (4.8) | |

PCI: percutaneous coronary intervention LAD: left anterior descending RCA: right coronary artery

brush border, casts formation and total histological score), as well as kidney injury molecule – 1(KIM-1) staining score were followed in the Sham group and rats subjected to I/R injury and pretreated with saline or chloroquine plus metformin. These markers were obtained from the appropriate serum, urine or tissue samples at the end of reperfusion period.

Table I. Table I

| Variabel | Mean | Sig (P) |
|----------------|-----------------|---------|
| TNF alpha pre | 11444 ± 2352,70 | 0,000 |
| TNF alpha post | 476,13 ± 482,99 | |
| MDA pre | 95,63 ± 21,27 | 0,000 |
| MDA post | 44,84 ± 50,95 | |
| SOD pre | 3,41 ± 0,46 | 0,001 |
| SOD post | 5,97 ± 4,19 | |
| CEC pre | 2,52 ± 3,05 | 0,000 |
| CEC post | 0,71 ± 1,41 | |
| EPC pre | 5,16 ± 4,59 | 0,000 |
| EPC post | 1,19 ± 1,76 | |

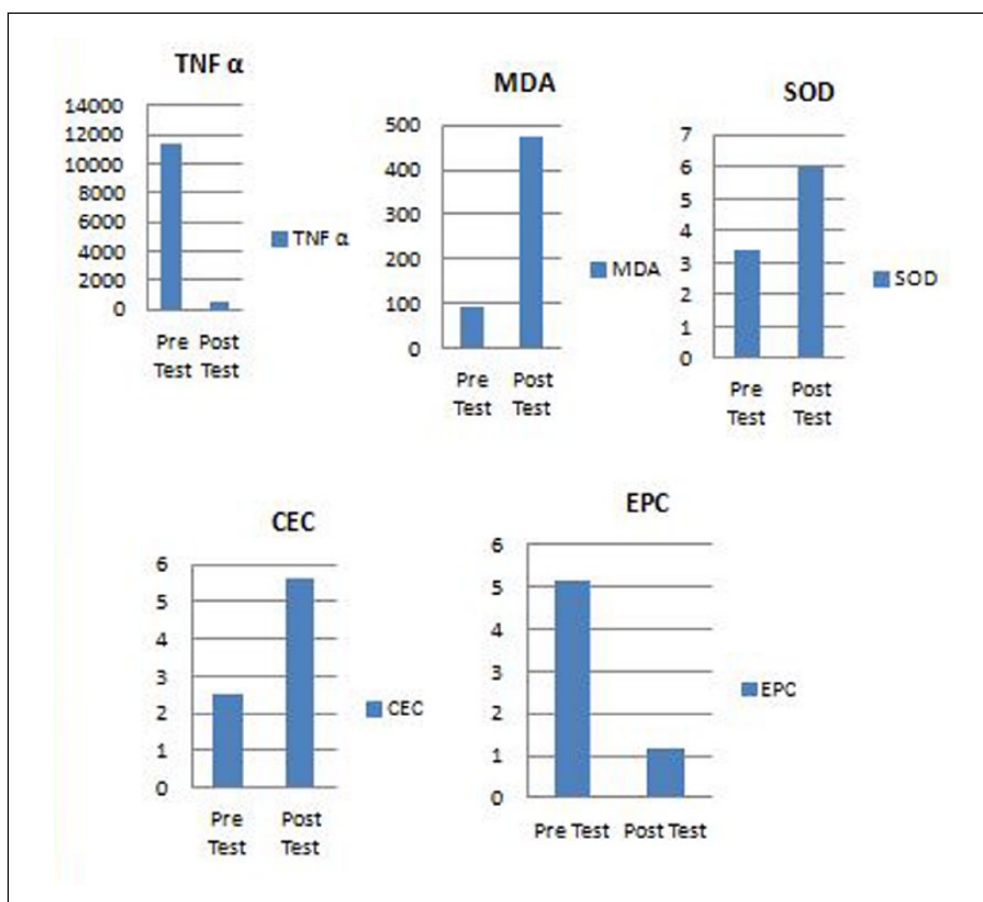
Results: Combined application of chloroquine (0.3or 3 mg/kg) and metformin (3 or 10 mg/kg) protected the I/R injured rat kidney in an U-shaped manner. The protective effects of the lower doses of chloroquine and metformin (0.3mg/kg + 3 mg/kg) were more profound regarding observed markers (serum creatinine and fractional excretion of sodium, total histological score, tubular necrosis score and KIM-1 staining score) ($P < 0.05$ vs. rats subjected to I/R injury and treated with saline only). However, it was not observed statistically significant difference regarding previous results with single dose of chloroquine ($P > 0.05$).

Conclusion: Our study showed for the first time that combined simultaneous intravenous application of chloroquine and metformin could afford significant protection of the injured rat kidney

PI68

The endothelial vascular protective effect of polysaccharide peptides in stable angina patients

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Background: Endothel dysfunction conjunction with oxidative process and inflammatory process was prime factor contributing in advancing atherosclerotic disease.

Purpose: This study was aimed to evaluate the effects of polysaccharide peptides (PsP) of *Ganoderma lucidum* on inhibits circulating endothelial cells (CECs), endothelial progenitor cells (EPCs), anti inflammation and anti oxidant.

Methods: This is a quasi clinical trial experimental study on 34 Stable Angina patients in Saiful Anwar General Hospital was determined based on ESC Stable CAD guidelines. Parameter measured were CEC, EPC, TNF- α , MDA and SOD. The patients were given PsP 750 mg/day in divided dose for 90 days.

Results: After PSP administration we found significantly reduce reduce the level of CECs from $2,52 \pm 3,05\%$ to $0,71 \pm 1,41\%$ ($p=0.000$) and did the EPCs level from $5,16 \pm 4,59\%$ to $1,19 \pm 1,76\%$ ($p=0.000$), the level of TNF alfa level from 11444 ± 2352.70 to 476.13 ± 482.99 ($p=0.000$), MDA level from 95.63 ± 21.27 to $44,84 \pm 50,95$ ($p=0.000$) and increased SOD level from $3.41 \pm 0,46$ to $5,97 \pm 4,19$ ($p=0.001$).

Conclusion: *Ganoderma lucidum* polysaccharide peptides have vascular endothel protective effect, reduce associate risk factor in stable angina patient and promising as additional drug in angina stable patients.

DVT and pulmonary embolism

PI69

Is syncope able to predict the mortality in patients with acute pulmonary embolism?

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Background and Aim: Acute pulmonary embolism (PE) may present with highly variable symptoms and electrocardiogram (ECG) abnormalities. In the context of PE, syncope may reflect high-risk hemodynamics or be the result of a vaso-vagal mechanism. We sought to analyze the prognostic impact of a syncopal presentation of acute PE.

Methods: We retrospectively analyzed 212 patients (mean age 72.77 ± 16.57 years; 100 of male gender) admitted to the emergency department with confirmed acute PE

between January to December 2010. The patients were divided in two groups according to presence (Group A = 29) or absence of syncope (Group B = 183) as the presenting symptom of PE. The endpoints were in-hospital mortality and long-term (mean 415.4 ± 356.5 days) all-cause mortality.

Results: The most common clinical presentations of PE were dyspnea (56.6%), chest pain (37.0%), cough (21.8%), confusion (17.0%), syncope (13.7%) and haemoptysis (11.3%).

There was no significant difference in age (70.48 vs. 73.13, $p=0.425$) between boths groups. Regarding laboratorial parameters, patients with syncope had higher creatinine levels (3.02 mg/dl vs. 1.03 mg/dl, $p=0.017$) and lower fibrinogen levels (3.31 vs 4.01, $p=0.009$).

Patients presenting with syncope had similar rates of in-hospital (6.9% vs. 11.5%, $p=0.461$) and all-cause mortality at follow-up (11.5% vs. 16.7%, $p=0.507$), compared with patients that presented with other symptoms on admission.

Conclusion: In our cohort, syncope was not associated with a poorer prognosis.

PI70

Thrombolytic therapy in unstable patients with acute pulmonary embolism: the importance of echocardiography

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Background: The main advantage of transthoracic ultrasound resides in the appreciation of the severity of pulmonary embolism; echocardiography is able to detect right ventricular dilatation, right ventricular hypokinesia/dysfunction or pulmonary hypertension. The Doppler ultrasound can also monitor the hemodynamic evolution and improvement of signs of acute pulmonary heart after thrombolytic therapy..

Methods: We performed a retrospective study of 217 patients with pulmonary embolism admitted to our Cardiology department from December 2004 to December 2014. Pulmonary embolism was confirmed by chest angio-CTin all patients. We collected data of admission echocardiography performed in the emergency unit and the echocardiography performed 72 hours after the beginning of treatment. Criteria of severity were defined as: cardiac collapse, elevated cardiac enzymes (troponin or BNP) and signs of acute cor pulmonale on echocardiography (ratio higher than 0.6, associated with a paradoxical septal wall motion).

Results: Among the 217 patients, seventy-nine had at least one severity criteria. Among these patients, 19 were

treated with streptokinase at a dose of 1.5 million units and heparin derivatives with reduced dosage (group A), 60 subjects were treated conventionally with anticoagulants adjusted dose (group B). In fact all the patients of Group A, presented with cardiac collapse. In group B only 10 patients showed cardiac collapse.

The admission Echocardiography showed of course a higher mean systolic pulmonary artery pressure in patients treated with thrombolysis (A: 67 ± 14 mmHg, B: 50 ± 16 mmHg, $P = <0.001$), however there was no significant difference in terms of dilatation of the right ventricle determined by the RV / LV ratio and the systolic function of the right ventricle assessed by tricuspid annular plane systolic excursion (TAPSE) and the tricuspid annular systolic velocity (S'). The second echocardiography objectified a significant decrease of pulmonary arterial pressure in the thrombolysis group (A: -26 ± 3 mmHg, B: -2 ± 04 mmHg, $P = <0.001$) and diminution of ventricular dilatation and a recovery of systolic right ventricular function. Among the group B there was no difference between patients with or without cardiac collapse (severe against intermediate risk).

The intra hospital mortality was similar between the two groups (A 5.3% B 6.6%, $P = NS$). We didn't notice any major side effects and in particular absolutely no bleeding.

Conclusion: Echocardiographic data showed significantly improvement in patients treated with thrombolysis compared to patients treated with conventional heparinotherapy despite a worst prognosis and a greater clinical severity in the first group.

PI171

Risk Stratification in pulmonary thromboembolism. Is PESI score enough?

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Introduction: PESI risk stratification in PE is useful for low-risk patients, but in cases of intermediate or higher risk (PESI \geq III) cannot adequately reflect the prognosis and the need for more aggressive treatment.

Methods: We analysed patients with PE admitted to the ICCU from June 2014 to April 2016. Clinical, biochemical and echocardiographic variables were identified, in addition to the PESI score to identify factors associated with a worse prognosis.

Results: Clinical variables are represented in Table I. Mean age was 61 ± 15 and 70% were women. The mean value of

Table I. Table I

| Variables | | % |
|---------------|-------------|--------------|
| Hypertensive | | 50 |
| DM | | 13 |
| Dyslipidaemia | | 60 |
| Smokers | | 33 |
| BMI >30 | | 56.7 |
| Neoplastic | | 20 |
| SBP <100mmHg | | 33 |
| PESI score | Mean | 108 \pm 35 |
| | Score I-II | 7 (23.3%) |
| | Score II-IV | 15 (50%) |
| | Score V | 8 (26.6%) |

NT-proBNP was 3885 ± 4133 pg/ml, and median troponin I was 0.45 ± 0.87 ng/ml. Categorized PESI was significantly associated with an increased troponin ($p=0.034$), but it wasn't related with pH, NT-proBNP, TAPSE <16 or RV dilatation. The presence of neoplastic was significantly associated ($p=0.018$) with mortality at 30 days. TAPSE <16 on admission showed a non-significant increase on mortality. Only 3 patients received fibrinolytic therapy (PESI 90; 123; 203). At 30 days 4 patients died, two with PESI III-IV and two with PESI V. There were no major bleeding and only 3 patients required transfusions.

Conclusions: Most of the PE admitted in the ICCU are of intermediate-high risk according to PESIs. It remains a challenge to know what patients may benefit from a fibrinolytic therapy on admission to improve prognosis. PESI score is based on clinical variables, therefore both biochemical and echocardiographic parameters, could complement and improve risk assessment more accurately. More studies are needed to know whether within this large group of high-risk patients without hemodynamic instability could benefit of a lower-dose fibrinolysis.

PI172

Should antiphospholipid syndrome be routinely excluded in pulmonary embolism patients?

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Background/Introduction: Antiphospholipid syndrome (APS) is a well-known cause of thromboembolic phenomena

but is not routinely assessed in pulmonary embolism (PE) patients, but often overlooked. An APS diagnosis may have clinical or therapeutic implications, and if overlooked may be a cause of PE recurrence.

Purposes: a) To evaluate the prevalence of APS, according to the 2006 revised Sapporo (Sydney) criteria, in a cohort of consecutive unselected patients admitted for PE in a medical ward of an European urban hospital. b) To search for demographic and clinical predictors of APS.

Methods: 68 consecutive patients were admitted for PE in a 3 year period (2013-2015). Antiphospholipid antibodies (aPL), including lupus anticoagulant, anticardiolipin and anti-B2 glycoprotein-I IgG/IgM, were evaluated at baseline. When positive, aPL were repeated at least 12 weeks apart. Demographic and clinical predictors were compared between the APS and non-APS group (Fisher's and Mann-Whitney tests) and cut-offs were obtained by ROC curve analysis.

Results: Mean age of our population was 68.9 ± 16.8 years, 29.4% were males. The median admission duration was 10.0 (interquartile range 8.0) days; the in-hospital mortality was 2.9%. Among these patients 30 were screened for APS, which was confirmed in 7 patients (23.3%). Comparing the APS and non-APS groups, APS patients were younger (45.1 ± 15.8 vs 69.3 ± 16.0 years, $p=0.002$), but there were no statistical differences regarding sex (females 85.7% vs 66.7%, $p=0.412$) nor unprovoked PE (57.1% vs 66.7%, $p=0.680$).

Conclusions: In this contemporary registry of consecutive unselected patients admitted due to PE, the prevalence of APS was high (23.3% among those screened). These high figures raise the possibility that APS should be routinely excluded. Further studies are needed to clarify whether an APS diagnosis has clinical relevant implications.

P173

The clinical characteristics and diagnostic values of the Wells and revised Geneva scores combined with D-dimer for acute pulmonary embolism in nonelderly and elderly patients

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Introduction: Diagnostics of acute pulmonary embolism (PE) in elderly patients may be difficult because of the coexistent cardiopulmonary conditions and age unfavorable influence on the characteristics of diagnostic tests for PE.

Purpose: To compare the clinical characteristics and the diagnostic values of the Wells score, the revised Geneva

score and each of them combination with D-dimer for suspected PE in elderly and nonelderly patients.

Methods: A retrospective analysis of 516 patients was conducted who were admitted to Vilnius University Hospital Santariskiu Klinikos Emergency department with suspected PE from January 2013 to January 2014. Patients were divided into two groups according to their age: ≥ 65 and < 65 years old. The positive predictive values of the Wells and revised Geneva scores as well as the negative predictive values of D-dimer, the Wells score combined with D-dimer and the revised Geneva score combined with D-dimer were calculated.

Results: Out of 516 cases, 219 (42.4%) were diagnosed with PE based on computed tomography angiography. Among PE patients 150 (45.5%) were ≥ 65 years old.

The incidence of hemoptysis and unilateral lower limb pain were significantly higher in the nonelderly patients than in the elderly (7% vs. 1%, $p = 0.0077$; 22% vs. 12%, $p = 0.0264$).

Hemoptysis was recorded in 7% of the nonelderly and in 1% of the elderly patients ($P = 0.0077$), unilateral lower limb pain – 22% and 12% respectively ($p = 0.0264$).

The positive predictive values of Wells and revised Geneva scores were 66.1% (95% CI: 52.99-77.67) and 50.5% (95% CI: 40.36-60.60) in the nonelderly patients ($p < 0.001$). The positive predictive values of Wells and revised Geneva scores were 74.3% (95% CI: 65.06 – 82.20) and 49.6% (95% CI: 43.49 – 55.77) in the elderly patients ($p < 0.001$).

The negative predictive value of D-dimer was 96.00% (95% CI: 86.29 – 99.51), the negative predictive values of the Wells score combined with D-dimer and the revised Geneva score combined with D-dimer were 100.00% (95% CI: 91.96-100.00) and 100.00% (95% CI: 90.00-100.00) respectively in the nonelderly. The negative predictive value of D-dimer was 88.37% (95% CI: 74.92 – 96.11), the negative predictive values of the Wells score combined with D-dimer and the revised Geneva score combined with D-dimer were 100.00% (95% CI: 89.72 – 100.00) and 100.00% (95% CI: 73.54 – 100.00) respectively in the elderly.

Conclusions: The diagnostic value of the Wells score was higher than the revised Geneva score in the elderly patients with suspected PE. The combination of D-dimer concentration and either the Wells score or the revised Geneva score may be considered as a high value strategy to rule out PE.

General intensive care

P174

Prediction of fluid status and survival by electrical cardiometry in acute circulatory failure

Table 1. Table (3): Comparison between survivors

| | Survivors | Non-survivors | P value |
|-----------------|-----------|---------------|---------|
| Baseline CO | 2.4±0.4 | 2.6±0.4 | 0.197 |
| Follow-up CO | 2.8±0.5 | 2.9±0.4 | 0.556 |
| Delta change CO | 15.6±4.3% | 11.6±3.2% | 0.008 |

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Purpose: Septic hemodynamic instability imposes challenges to critical care physician in deciding fluid management to optimize preload dependency state

Methods: Ninety patients with severe sepsis and hypotension (Mean arterial pressure i.e. MAP < 65mmHg) and evidence of tissue hypotension i.e. lactate level ≥ 4 , were enrolled in our study. Fluid resuscitation (30ml/kg) was administered. Fluid response was defined as MAP ≥ 65 mmHg with lactate level <4mmol/L. cardiac output (CO), measured by electrical cardiometry, in guiding fluid therapy

Results: The study included 41 males (45.6%) with age 47.8±19.7. Paired comparison showed significant change in MAP readings (P value <0.001). ROC curve showed cutoff 12.5% for delta CO to predict fluid responsiveness with Area under Curve (AUC) 0.927, sensitivity 90.0%, and specificity 70.0%. ROC also showed delta CO cutoff 12.5% to predict survival with AUC 0.756, sensitivity 66.7% and specificity 66.7%.

Conclusion: Delta change in cardiac output, measured by electric cardiometry could be used to predict fluid response and survival in acute circulatory failure in septic critically ill patients

P175

From coronary to critical cardiovascular care unit. Last 27 years' cause of mortality and patients profile analysis

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Background: Coronary Care Units (CCU) were founded in the sixties to reduce mortality in acute myocardial infarction (AMI) patients by monitoring the hearth rhythm to treat earlier the main AMI complications. However, in the XXI century, the old CCU has changed into a Critical Cardiovascular Care Unit with a different profile of patients.

Purpose: The mains are to analyze the global mortality of a University hospital CCU and the profile of patients from 1989 to 2015.

Method: Between February 1989 and December 2015, 16,510 patients were consecutively admitted in the Coronary Care Unit of a University Hospital. Depending on the year of admission, patients were classified in five groups: 1989-1994: n=3034, period 1; 1995-1999: n=2261, period 2; 2000-2004: n=2826, period 3; 2005-2009: n=3294, period 4 and 2010-2015: n=5095, period 5). We analyze the trend of mortality in the CCU in these five periods and compare the diagnosis at admission of all patients.

Results: Mean age was 63.6 (SD 13.6) years and 74.1% were men. The global CCU mortality in all periods was 5.5% and it was reduced from period 1 to 5 (6.9%, 7.7%, 5.6%, 4.6%, 4.2%, p <0.001). The cause of death have change with less death due to acute coronary syndrome (ACS), from period 1 to 5: 66.8%, 54.9%, 57.6%, 47.7% and 48.1% and more death due to malignant arrhythmias (1.9%, 6.4%, 5.7%, 10.5% and 11.7%) and other diagnosis (11.1% in period 1 vs 22.0% in period 5), all p<0.001. There are no significant change in the time of death since the admission of these patients (period 1: 4.5 days, 5.6 days, 5.6 days, 5.1 days and 5.1 days in period 5, p=0.53). The diagnosis at admission have been change with less (ACS) from period 1 to 5: 72.6%, 78.1%, 68.2%, 69.2% and 63.8%; and more admissions due to heart failure (6.7%, 7.3%, 7.0%, 8.5% and 11.4%) and malignant arrhythmias (1.8%, 1.9%, 3.0%, 3.7% and 4.3%), all p<0.001.

Conclusions: Global mortality in the CCU has been reduced in the last 27 years from 6.9% to 4.2%. There is an important change of the cause of death, with less death due to ACS and more death due to malignant arrhythmias and other diagnosis, although there are no changes in the time of death since the admission. Although acute coronary syndromes are still the main diagnosis, heart failure and arrhythmias increased in the last years.

P176

Efficacy of ICU scoring systems at coronary care and intensive care (Cardiac surgery) in 3 different hospitals

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Purpose: By using ICU scoring systems, enhancing the care treatment and risk of mortality of a patient in intensive care unit.

Introduction: ICU scoring systems are used for assessment of severity of disease. ICU scoring system has wide patient applicability, high sensitivity and having a wide range of

mortality prediction. But some models assess mortality, some predict long term morbidity and some functional status, so no scoring system currently incorporate of all these features. APACHE II, APACHE IV, SAPS III, SOFA, MODS, LODS, ODIN were selected for our research study.

Method: It is a multicentre cross-sectional cohort study conducted in three different hospitals. The entire consecutive cardiac surgical and non-surgical patients were admitted to ICU and CCU during the time period of July to December 2015. Purpose sampling was adopted on the basis of patient ventilated during the first 24 hours or maximum 72 hours. 140 out of 170 patients data were selected for analysis. proforma was based on the parameters of all seven calculators. online calculators were also used for computing the predicted mortality and length of stay. data was analysed using SPSS software (paired sample T-test and one-way anova). 97% confidence interval was taken in account of these scores which are well developed and used in well developed setups so the chance of error is very low.

Result: 60.7% CABG patients and 39.3% non-CABG patients were observed, Also 88% were shifted from the ICU while 12% were expired. Highest data percentage of all scoring systems fall in high survival rate group except LODS i.e, highest data percentage fall in death group. APACHE IV and MODS showed the good predictive efficacy of length of stay. High predictive efficacy of mortality has also been showed by all the scores except APACHE IV.

Conclusion: All scoring system show good calibration and discrimination of length of stay and mortality except APACHE IV which showed low predictive efficacy of mortality.

P177

Non cardiac complications in a in an intensive cardiac care unit: epidemiology and prognosis

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Introduction: The presence of non-cardiac complications is a major challenge in the treatment and prognosis of patients with heart disease. There is little evidence regarding the prevalence and prognostic impact of these complications in patients admitted in Intensive Cardiac Care Units (ICCU).

Purpose: To determine the prevalence of non-cardiac complications and their impact on prognosis in patients admitted in ICCUs.

Methods: Prospective study that included all patients admitted consecutively to our ICCU during a period of 3 years. The patients were divided in 2 groups: Group 1 -

Patients who had developed non-cardiac complications; Group 2 - Patients who had not developed non-cardiac complications. Demographic data were recorded as well as patient provenance, admission diagnosis, duration of hospital stay and patient destination after discharge. The non-cardiac complications that were evaluated are: infection (urinary tract infection, respiratory infection or sepsis), bleeding (not related to invasive procedures), renal failure (acute renal failure or acute exacerbation chronic disease), neurologic (transient ischemic attacks or stroke), respiratory (acute exacerbation of chronic obstructive pulmonary disease or pleural effusion of non-cardiac etiology) and others.

Results: In a total of 1546 patients admitted to ICCU, 244 patients (15.7%) developed non-cardiac complications of which 55.3% were infections, 22.9% renal failure, 15.9% bleeding, 5.7% neurological, 2.8% respiratory and 4.0% others. Overall, Group I patients were older (72.7 ± 11.7 vs 67.3 ± 14.2 years, $p = 0.001$) and more females (41.0% vs 33.5% $p = 0.029$). Most of the patients were admitted from the emergency department (57.7% vs 63.5%, $p = ns$), however Group 1 patients were more often admitted from other ICCU (3.2 vs 0.9 %, $p = 0.012$) and other wards (15.1 vs 4.9%, $p = 0.001$) and less frequently from the medical external appointment (2.0 vs 6.9%, $p = 0.006$). The main admission diagnosis was acute coronary syndrome in both groups (54.5 vs. 57.9%, $p = ns$), however the Group 1 patients were more often accepted by decompensated heart failure (17.6 vs 6.9%, $p = 0.001$), and cardiogenic shock (5.7 vs 0.5%, $p = 0.001$). There were no significant differences in other nosological groups. Group 1 patients had longer ICCU stays (5.9 ± 4.5 vs 2.9 ± 1.9 days) and higher mortality (9.8 vs 2.6%, $p = 0.001$). Group 1 patients were less discharged directly to household (4.5 vs 16.7%, $p = 0.001$).

Conclusions: Non-cardiac complications were present in 15.7% of patients admitted to the ICCU, and infection was the most common cause. Its incidence seems to be higher in patients with decompensated heart failure and cardiogenic shock and also in patients transferred from the ward or other ICU. Non-cardiac complications are associated with a significant increase in mortality and days of hospitalization.

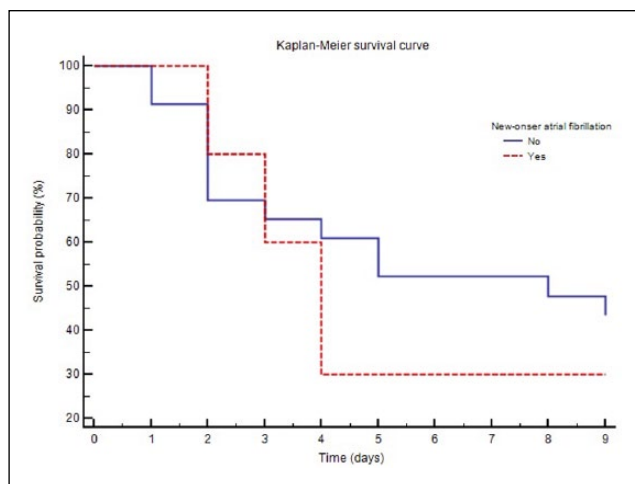
P178

Incidence, management and impact of atrial fibrillation in septic shock

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Introduction: The incidence of arrhythmia in the Intensive Care Unit (ICU) can approach 40%, most typically associated with conditions such as septic shock and respiratory failure.



Kaplan-Meier survival curve

Atrial fibrillation (AF) is the most common arrhythmia and the development of new-onset AF in septic patients has been associated with adverse outcomes.

Purpose: To evaluate the incidence, management and short-term prognostic impact of new-onset of AF in patients suffering from septic shock.

Methods: A retrospective single center study was conducted in a 7-bed adult Intensive Care Unit (ICU) during a eight month period. We studied all patients who fulfill septic shock criteria and evaluated incidence, duration, clinical signs and management of new-onset AF and also ICU mortality in all patients.

Results: Forty-one patients were evaluated (68% male, average age 69.8 ± 10.3 years, APACHE II score 65.2 ± 23.0), of which 8 patients (19%) had already have a previous diagnosis of permanent or paroxysmal AF. Of the remaining 33 patients, 10 (30.3%) develop new-onset AF after a mean length of ICU stay of 2 ± 1.4 days. Three of these patients needed electric cardioversion (150-200J) due to ventricular high-rate response and hemodynamic compromise (one unsuccessful) and all of them died in ICU. One patient did not need treatment and the remaining were treated with amiodarone. Of the 10 patients with new-onset AF, 8 (80%) died comparing with 15 (66%) of the 23 patients free from AF (Chi-squared test, $p=0.076$). Kaplan-Meier curve analysis (image) demonstrates non-significant worse short-term survival in patients with new-onset AF (p [logrank] = 0.410).

Conclusions: AF is a common complication in septic shock patients. Although our study includes few patients, there is a trend toward increasing short-term mortality in septic shock patients with new-onset AF. Therefore, physicians should be aware that new-onset AF in sepsis is not merely an observed temporary arrhythmia but probably a marker of poor prognosis and should be managed accordingly.

P179

The burden of malignancy at Intensive Cardiac Care Unit (PLATIS-3)

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Background: Recently developments were achieved in the treatment of malignancies, increasing the longevity of patients with malignant diseases. Cardiovascular diseases and cancer share similar risk factors. We sought to evaluate the effect of a history of malignancy in a large cohort of consecutive patients admitted to ICCU for acute cardiovascular event.

Methods: The study comprised 1000 consecutive patients who were admitted to ICCU during 2014. We have recorded their admission causes, basic characteristics, treatments and in-hospital outcome.

Results: 94 (9.4%) patients had a diagnosis of malignancy of them 68 (72%) patients had solid (mainly breast and prostate cancer) and 26 (28%) had hematogenous cancer. In 16 patients diagnosis of malignancy was made 0-6 months, in 15 patients 6-24 months before the qualifying hospitalization and 63 had remote (>2 years) diagnosis. Patients with a history of malignancy were older (72 ± 13 vs. 65 ± 15 , $p < 0.01$), more likely to be female ($p = 0.024$), anemic ($p = 0.014$) and to sustain pulmonary hypertension ($p = 0.03$). Other risk factors including diabetes and smoking as well as co-morbidities such as COPD, CVA, renal failure or were similar. There were also no differences in therapeutic interventions between the two study groups, as well as in clinical outcome including in major bleedings (4.3% vs. 2.9%, $p = 0.15$); acute renal failure (12% vs. 9.8%, $p = 0.6$) or mortality (1% vs. 2.2%, $p = 0.46$). Similarly when only patients admitted for ACS (N=610) were considered, a history of malignancy was associated with pulmonary hypertension ($p < 0.04$) and anemia ($p = 0.086$).

Conclusions: Patients with a diagnosis of malignancy compose about 10% of both the entire ICCU population as well as of the cohort of ACS. They were older, more likely to be female and anemic. Otherwise there were no significant differences in patient management or outcome regardless of the existence of history of malignancy.

Interventional cardiology, Coronary

P180

Complete revascularization versus culprit-vessel revascularization in acute myocardial infarction

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Background: The presence of multi-vessel disease (MVD) has been reported to be associated with worse prognosis in patients with ST-segment elevation myocardial infarction (STEMI). Identification of optimal strategies for treating such patients is the subject of considerable interest and controversy.

Objective: The aim of our study is to compare the in-hospital and short-term prognosis for patients presenting with STEMI who were treated by two different modalities. The treatment varied between target vessel revascularization (TVR) and complete revascularization (CR) in patients with MVD undergoing primary percutaneous coronary intervention (p-PCI).

Methods: A total of 40 patients with recent STEMI and MVD undergoing p-PCI were randomized to CR (group A) or TVR (group B) during p-PCI and followed up for 6 months after hospital discharge. The patients were followed-up for incidence of major adverse cardiac events (MACE) (in-hospital, and at 1 and 6 months after discharge), contrast-induced nephropathy (CIN) and ejection fraction (EF) improvement at 6 months.

Results: Forty patients (mean age 55.2±9.1 years; 33 males and 7 females) with comparable risk factors in the two groups were recruited in this study. Six months later, the patients in group A showed better improvement in systolic function as estimated by 2D echocardiography EF% (54.3±9.1 to 58.4±6.2; P-value 0.002) compared to group B (54.9±5.2 to 55.7±6.7; P-value 0.55). This improvement was more in patients with anterior wall myocardial infarctions. The incidence of MACE in both groups was comparable during the hospital stay and at 1 and 6 months follow-up. There were two MACE cases in group B, and no such case was observed in group A at 1 and 6 months follow-up (P-value 0.14). With regard to CIN, both groups showed similar results (2 cases in group A and 1 case in group B; P-value 0.54). The patients with door-to-balloon time less than 90 minutes were associated with better EF in comparison to those with a door-to-balloon time of more than 90 minutes (57.1±6.3 vs. 50.5±7.3; P-value 0.005).

Conclusion: The results of our study showed that CR is safe during p-PCI and is associated with better left ventricular EF at 6 months, especially in anterior myocardial infarction.

PI81

Strategies of treatment in patients with concomitant carotid and coronary artery disease

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Background: Cardiovascular disease (CVD) in its various forms is the leading cause of global death in developing and developed nations. The total number of annual death due to CVD is more than 17 million, approximately 29% of all death. Coronary artery disease and cerebrovascular disease (stroke) make up main part of this pattern. It is not difficult to imagine the rate of death when both pathology are combined. Thus, the resolution of this issue is one of the main problem of modern medicine.

Purpose: To define the effectiveness and safety of combined surgical and endovascular methods in patients with combined carotid and coronary artery disease.

Methods: Analyzed the results of examination and surgical treatment of 45 patients with combined lesions of coronary and carotid arteries. Of these, 32 (71.1%) were male. The average age of patients was 58.2±3.3 years. In all patients the cause of the vascular lesions was atherosclerosis. After routine examinations all patients were examined by selective carotid and coronary angiography. The results were calculated on SYNTAX Score and ECST (European Carotid Surgery Trial) or NASCET (North American Symptomatic Carotid Endarterectomy Trial). Moreover, all patients were estimated by EuroSCORE and ASA risk scale. Only patients with significant carotid artery stenosis were involved in the study.

Results: Patients were divided into three groups according to the results of SYNTAX Score. First group patients with SYNTAX Score ≤22, low risk of PCI (Percutaneous Coronary Intervention). This group consist of 16 patients. 22 patients made up the second group, with intermediate risk of PCI (SYNTAX Score=23-32). The third group includes 7 patients, with high risk of PCI (SYNTAX Score >32). The first group patients were performed staged PCI and CAS (Carotid Angioplasty with Stenting)/CEA (Carotid Endarterectomy). Similarly, second group patients also underwent to staged PCI and CAS/CEA or in cases of impossibility to perform PCI, to them carried out CAS and CABG (Coronary Artery Bypass Grafting) according to the EuroSCORE and ASA (American Society Anesthesiologists) risk. To last group patients were performed staged CAS and CABG due to the PCI high risk.

In one patient developed transient ischemic attack. Wound complications in two patients. There is no case of perioperative stroke and myocardial infraction.

Conclusions: 1. The development of endovascular techniques is preferable in the treatment of patients with combined carotid and coronary artery disease as they are performed under local anesthesia which significantly reduces the risk of complications, especially in older age category patients.

2. In cases of high risk or impossibility of performing PCI, it is advisable performing CAS or CEA with an allowance for perioperative risk before performing CABG.

3. Staged algorithm is safe and effective in treatment of patients with concomitant coronary and carotid artery disease.

P182

In-hospital and 5-year prognosis of patients undergoing primary PCI by radial access compared with femoral access

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Introduction: The benefits provided by the technical and pharmacological improvements in the early invasive treatment of STEMI may be reduced due to bleeding events, often related to the vascular access used. We assess in-hospital and long-term (1, 3 and 5 years) prognosis impact of radial access (RA) use in primary angioplasty (PPCI) versus femoral access (FA).

Methods: We analyzed according to the access intention, overall mortality, cardiovascular death and a combined endpoint of overall mortality, need for revascularization and ACS in a cohort of patients undergoing primary PCI for STEMI between 2005 and 2012.

Results: Among 971 patients enrolled consecutively, RA was used in 744 (82%).

About baseline characteristics, there were differences by age, being FA most used in older patients (68.4 vs. 64.9 p = 0.03); according to sex, most used in women (29.5% vs. 18.8%, p = 0.02); and according to renal function, it was worse in the FA group (creatinine clearance 75 ml / min vs. 91 ml / min p <0.001).

Crossover radial-femoral rate was 4.2%; there was no difference in door-to-balloon time (114min in FA vs 98min in RA, p = NS). Patients with FA evolved to shock more frequently (28% vs. 4.7%, p <0.001), with more need of mechanical ventilation, inotropic support and showed higher overage stay in ICU and global stay (10.4 vs. 8.4 days, p <0.001).

About in-hospital analysis, there were significant differences in higher mortality (17.9% vs 2.2%, p <0.0001) and higher rate of stroke (2.5% vs 0.4%, p = 0.02) in FA. In the analysis at 1, 3 and 5 years no significant differences in mortality were observed (7.4% vs. 6.6%; 11.5% vs. 11.1%; 22.4% vs 24.7% respectively, p = NS) in FA group compared to RA. There were also no differences in the analysis of the composite endpoint defined as mortality, need for new resvascularización and ACS.

Conclusion: In our cohort, the RA is associated with lower hospital mortality but this benefit is not maintained in the

long-term analysis. Probably the use of femoral access in critical patients, with high hospital mortality, conditions these results.

P183

One-year outcomes in patients with postprandial hyperglycemia newly diagnosed after percutaneous coronary intervention in acute coronary syndrome

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Backgrounds: Postprandial hyperglycemia is well-known risk factor for coronary artery disease. However, outcomes in non-diabetic patients with postprandial hyperglycemia after percutaneous coronary intervention (PCI) in acute coronary syndrome (ACS) has not been much researched.

Objectives: The aim of this study is to compare one-year outcomes after PCI for ACS between patients with postprandial hyperglycemia and ones with normal glucose tolerance.

Method: The patients with no previous diagnosis of diabetes mellitus who underwent PCI in ACS were enrolled in this study. An oral glucose tolerance test was performed in the patients with glycated hemoglobin (HbA1c) < 6.5%. One-year outcomes after PCI were compared between the patients with postprandial hyperglycemia which was defined as 2-h plasma glucose concentration of 140mg/dl or greater after a 75g glucose load and normal glucose tolerance. The primary endpoint was target lesion revascularization (TLR) and admission for cardiovascular events, including acute heart failure and acute coronary syndrome.

Results: ut of consecutive 60 patients, 45 (75%) had postprandial hyperglycemia and 15 (25%) had a normal glucose tolerance. Average follow up period was 337 days. 42 (70%) were male. The incidence of TLR tends to be greater in patients with postprandial hyperglycemia than normal glucose tolerance, however, not significantly different (hazard ratio 1.47, 0.81-2.81, p=0.21). The incidence of admission for cardiovascular events has similar trend between 2 groups (hazard ratio 1.36, 0.71-2.77, p=0.36).

Conclusion: Non-diabetic patients with postprandial hyperglycemia tend to have more incidence of TLR, and admission for cardiovascular events after PCI for ACS than normal glucose tolerance.

P184

Is the therapeutic hypothermia a risk factor for stent thrombosis?

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Background: High rates of stent thrombosis (ST) have been reported in patients with out-of-hospital cardiac arrest (OHCA) treated with therapeutic hypothermia (TH) who require primary percutaneous coronary intervention (PCI).

Purpose: To compare the incidence of ST in patients treated with primary PCI after OHCA who received TH or not.

Methods: We conducted a retrospective observational study in patients treated with primary PCI after OHCA between 2004 and 2016, 2004 to 2009 without TH, and 2010 to 2016 with TH. All patients were treated with dual antiplatelet therapy after PCI.

Results: A total of 111 consecutive patients were included, 39 in the non TH group and 72 in the TH group. There were no significant differences in baseline characteristics and clinical presentation among groups. (Table 1)

During hospitalization we identified 8 (7.2%) cases of definite or probable ST, (5 in the TH group and 3 in the non TH group) without any significant differences among groups.

Conclusions: The incidence of ST after primary PCI in patients with OHCA is high. In this study, the use of TH was not associated with increased ST compared with the non TH group.

P185

Evaluation of kidney function with new biomarker neutrophil gelatinase-associated lipocalin (NGAL) in patients undergoing coronary angiography

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Background: Contrast induced acute kidney injury (CIAKI) is important complication in the use of contrast media (CM). Neutrophil gelatinase-associated lipocalin (NGAL) is a small protein expressed in renal tubules and released unchanged in urine and plasma early after kidney exposure to toxins or ischemia.

Purpose: The aim of our study was to evaluate the diagnostic role of NGAL for early detection of acute

kidney injury after contrast administration and estimate relationship between standard markers (creatinine and glomerular filtration rate /GFR/) and the new biomarker.

Methods: The study enrolled 45 patients with arterial hypertension, diabetes mellitus and preserved kidney function (GFR estimated by the simplified Modification of Diet in Renal Disease /MDRD/ > 60 ml/min/1.73 m²), with established or suspected coronary artery disease undergoing coronary angiography and/or angioplasty. Blood samples for serum NGAL and serum creatinine were collected baseline at the day before, at 4th and 24th hours after contrast exposure. CIAKI was defined as absolute (≥ 44 $\mu\text{mol/l}$) or relative ($\geq 25\%$) increase in serum creatinine or 25% reduces of GFR in the first 48 hours after CM administration.

Results: From total enrolled patients CIAKI developed 9 (20%) and 16 (35.6%) patients served as controls. The rest of patients (n=20, 44.4%) had minimal change of serum creatinine and positive NGAL results and were defined as 'NGAL+' group. In the CIAKI group serum NGAL increases significantly on 4th (107.29 \pm 47.73 ng/ml, p=0.014) and 24th hour (123.02 \pm 75.54 ng/ml, p=0.046) after coronary intervention compared to baseline value (89.77 \pm 38.16 ng/ml). On the contrary, in control group its values remained unchanged during the first 24 hours after CM administration (83.24 \pm 17.86 ng/ml versus 82.49 \pm 18.82 ng/ml, p=0.548). The 'NGAL+' group shows similar to CIAKI results with significant elevation of serum NGAL in the first 4 hours after CM administration (107.62 \pm 54.71 ng/ml versus 87.55 \pm 29.73 ng/ml, p=0.036). The normal values of NGAL at baseline and 4th hour had significant correlation with GFR at 24th hour which remain unchanged. The increase of NGAL in 24 hours after contrast angiography and especially in the first 4 hours shows significant correlation with GFR estimated at 24th hour in CIAKI group (respectively R -0,818; R -0,845; p<0.01). Receiver operating characteristic curve analysis showed that NGAL at cut-off point of 89.45 ng/ml had 70% sensitivity and 75% specificity (95% CI 0.536-0.885; p=0.034) for early detection of kidney injury at 4th hour after CM exposure.

Conclusions: Our study demonstrates that NGAL increases early after contrast administration in patients who developed CIAKI later as well as in patients with subclinical acute kidney injury. The new biomarker correlates perfectly with changes in GFR and can be used for early detection of acute kidney injury.

P186

Comparison of Drug Eluting Stent PCI outcomes in diabetic versus non diabetic patients

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Introduction: since the advent of drug-eluting stents (DES), the results of angioplasty were improved and became close to surgery even in diabetic patients with three-vessel status. However, few studies have compared outcomes of DES PCI in diabetic and non-diabetic.

Aim: Compare the short and long term prognosis of drug-eluting stents PCI between diabetic and non-diabetic groups.

Method: it is a retrospective study involving all patients who underwent PCI with drug eluting stent. in our cathlab between 2003 and 2014. Major events (MACE) were defined as TVR, myocardial infarction and mortality.

Results: 829 patients underwent angioplasty with DES divided into two groups: Group D: diabetic patients (n=516) and group ND: non diabetic patients (n=313). The age, gender and clinical presentation were comparable between the two groups.

Among diabetic patients, the rate of TVR was significantly higher in patients with three vessel disease (175 patients) comparing to other diabetic patients (16% versus 3.8%; P=0.016).

Conclusion: Complications after angioplasty eluting stents in diabetic patients are still higher than in non-diabetic despite a significant reduction in MACE compared to bare metal stent. TVR is more common in diabetic patients with triple vessel, this justifies to recommend out of hand surgery in these patients.

Table 1. Table 1

| | TH n: 72 | Non TH n: 39 | p |
|--|-----------------|-----------------|------|
| Mean age \pm SD . years | 58.1 \pm 12.1 | 62.6 \pm 12.9 | 0.54 |
| Male gender. %. | 83.3 | 84.6 | 0.77 |
| Hypertension. %. | 38.8 | 46.1 | 0.46 |
| Diabetes. %. | 13.8 | 15.3 | 0.88 |
| Hypercholesterolemia. %. | 40.2 | 38.4 | 0.81 |
| Initial ventricular fibrillation. %. | 76.3 | 71.7 | 0.38 |
| Time to return os spontaneous circulation. median. minutes | 20 | 20 | 0.76 |
| Cardiogenic shock. %. | 61.9 | 61.5 | 0.91 |
| Left ventricular ejection fraction, mean \pm SD. %. | 41.1 \pm 5.7 | 36.3 \pm 17.9 | 0.43 |

Baseline characteristics and clinical presentation.

P187

Clinical results at long-term follow up of percutaneous coronary Intervention in ostial left main coronary artery disease

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Ostial left main coronary artery (LMCA) disease is in the 18% of LMCA lesions and the gold standard treatment is surgical. Continuous improvement in the devices and the emergence of drug-eluting stents (DES) has improved the results of percutaneous coronary intervention (PCI) in this high-risk lesions.

Purpose: The main objective of this study was to evaluate the efficacy and safety of PCI in ostial LMCA disease at 10 years follow-up.

Methods: We prospectively included 32 consecutive patients (71.84 \pm 12.64 years, 75% male) with ostial LMCA disease treated with PCI between June 2006 and April 2015. We evaluated the presence of major adverse cardiovascular events (MACE): cardiac death, non-fatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis after 10 years clinical follow-up (median 39.6 months).

Results: 40.6% had stable coronary disease and 59.4% had acute coronary syndrome (46.9% Non-STEMI and 12.5% STEMI). 46.9% were diabetic patients and 43.5% presented moderate-severe left ventricular systolic dysfunction. Logistic EuroSCORE mean was .85% and SYNTAX score was \geq 23 in 46.9 of the patients. We implanted second generation DES in the 73.3% (61.3% zotarolimus-eluting stent) with post-dilatation in the 43.3%. The angiographic success rate was 100%. Complication rate in the procedure was 3.1% with two cases of stroke post-procedure. During follow-up, MACE rate at 10 years was 10% (4% of cardiac death, 0.8% of nonfatal myocardial infarction, 6.5% of

Table 1. outcomes of drug eluting stent PCI

| Complications | Group D | Group ND | P |
|-----------------------------------|---------|----------|------|
| Early stent thrombosis | 2.1% | 1.7% | 0.6 |
| Tardive stent thrombosis | 1.1% | 1.0% | 0.84 |
| TVR (In stent restenosis) | 5.7% | 0.05% | 0.04 |
| MACE at one year | 12.9% | 8.4% | 0.61 |
| Myocardial infarction at one year | 2.5% | 2% | 0.65 |
| Mortality at one year | 3.0% | 2.3% | 0.6 |

TLR and thrombosis rate of 0%). 31.3% of patients had an angiographic follow-up.

Conclusions: The PCI in ostial LMCA disease is safe and effective with low rate of long-term cardiovascular major events in spite of the patients had high age, high surgical risk and complex anatomy.

Interventional cardiology, Structural heart disease

PI88

Acute changes of mitral valve geometry during interventional mitral valve repair with the mitraclip

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Introduction: Transcatheter mitral valve repair is an alternative option for treatment patients with severe and symptomatic functional or degenerative mitral regurgitation at high surgical risk. The acute effect of MitraClip procedure on mitral valve (MV) annular geometry remains unclear. We sought to assess immediate effect of TMVR on MV annular geometry with 3-dimensional (3D) transesophageal echocardiography.

Method and Results: Eight consecutive patients were treated from 28th October 2015 to 9th May 2016. Every patient was rejected to surgical replacement by the heart team. The procedure rate success was 100% with 3D reconstruction of MV annular geometry immediately before and after clip implantation. The mean age was 75±9,7 years; 4 patients (50%) had atrial fibrillation, 6 patients (75%) hypertension, 3 patients (37,5%) diabetes mellitus, 4 patients dyslipidaemia and 6 (75%) were smokers. 6 patients (75%) had functional MR the rest were degenerative.

Significant reduction of anterior-posterior MV diameters (38,8±2,9 and 32,5±2,3 mm; p=0,01), MV annular 2D circumference (124,6 ± 9,6 and 115,9 ± 9,8 mm; p=0,011), 2D annulus area (1205,8± 198,6 and 1021,6±167,3 mm²; p=0,02), 3D annulus area (1266,8± 215,7 and 1062±174,8 mm³ ; p=0,02) were obtained. There was a trend in reduction of MV annular geometry (MV ellipticity percentage 76,2±43,9 and 112,7±12,9 mm; p=0,073). There were no significant differences in lateral medial diameters.

Conclusions: Three-dimensional transesophageal echocardiography enables assessment of acute changes of MV geometry in patients undergoing the MitraClip procedure. Immediate significant reduction of MV annulus dimensions were observed.

PI89

Fever after TAVI: Inflammation or infection?

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Background: Following percutaneous aortic endoprosthesis implantation, fever was observed in 30-60% of patients. In our preliminary experience, a similar pattern was observed after transcatheter aortic valve implantation (TAVI). The aim of our study was to evaluate the incidence of fever after TAVI, its possible predictors and relationship with other complications.

Methods: All consecutive patients undergoing TAVI in a one year period between November 2014 and November 2015 were analysed. In all patients, blood samples including full blood count, biochemical profile and C-Reactive Protein (CRP) were measured. In addition, patients with fever had a full septic screen including blood, urine and sputum culture as well as relevant radiologic examinations. All patients were given 24-48 hour Antibiotic prophylaxis with Cefazolin. The decision to administer further antibiotics was made by the attending physicians.

Results: 41 patients (24 females) were included. The mean age of the patients was 80±7.4 years and mean EuroSCORE II was 5,2±4%. Porcelain aorta was the indication for TAVI in 56,1% of patients. Eleven (26,8%) patients were diabetics and 29 (70,7%) had eGFR less than 60 ml/min. All patients were implanted with Medtronic Corevalve® system (Evolut® in 65,9%).

Fever of subfebrile temperature was detected in 24 (58,5%) of patients. The fever developed within the first 48 hours after the procedure and persisted for a mean of 24 hours. In 41,5% of patients no cause for fever was found, and antibiotics were only administered to 5 (12,2%) patients of whom only 2 had a confirmed infection by the subsequent investigation (1 cholecystitis and 1 Pneumonia). 2 patients had a clinical presentation which met the criteria for post-cardiac injury syndrome and were treated with anti-inflammatory medication.

Mean CRP levels were elevated in all TAVI patients (mean 110±66,4 mg/l), but those with fever had significant higher values (127±66,1 vs 85,4±66,1mg/l; p=0,042). Fever was also associated with the occurrence of acute Kidney injury (p=0,038) but not with RBC transfusion (P=0,38) or magnitude of haemoglobin loss (p=0,88). Peak troponin I levels were numerically higher in the fever group (6,7±27,7 vs 1,2±0,9 mg/dL) but the effect did not reach statistical significance (p=0,41). Neither age, EUROSCORE II, diabetes, fluoroscopy time, or amount of contrast had association with the occurrence with fever. The duration of hospitalization was similar in both groups 11,5±6,2 vs 11,7±6,8 days)

Conclusions: In our experience, the majority of the patients undergoing TAVI developed a fever within 24-hours of the procedure. Most patients with fever had an evidence of an acute inflammatory response in the absence of documented infection. In our series fever was associated with occurrence AKI, raising the possibility that underlying micro-atheroembolism can be the link between the two occurrences.

PI90

Percutaneous mitral valvuloplasty with balt single balloon. survival and event free survival in long-term follow-up

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Background: Mitral balloon valvuloplasty (MBV) with single balloon (MBVSB) is the less expensive technique to perform MBV.

Objectives: To evaluate long-term follow-up (FU) of MBVSB Balt and to determine independent predictors of survival and event-free survival (EFS).

Methods: From 1987 to 12-31-2013, 526 procedures of MBV was performed, 404 (76.8%) with MBVSB Balt, being 256 procedures with long-term FU. The balloon diameter was 25 mm in 5 procedures and 30 mm in 251, mean dilatation area 7.02 ± 0.30 cm². The FU was 55 ± 33 (1 to 198) months. To determine independent predictors of survival and EFS it was used the multivariate Cox analysis.

Results: Mean age was 38.0 ± 12.6 (13 to 83) years, being 222 (86.7%) female, 215 (84.0%) in sinus rhythm, echo score (ES) 7.2 ± 1.5 (4 to 14) points and echo mitral valve area (MVA) pre-MBVSB 0.93 ± 0.21 cm². Mean pre and post-MBV area (Gorlin) was 0.90 ± 0.20 and 2.02 ± 0.37 cm² ($p < 0.001$) and success MVA ≥ 1.5 cm² in 241 (94.1%) procedures and mean pulmonary artery pressure pre and post MBV were 27 ± 10 and 20 ± 7 mmHg. Three (1.2%) patients began the FU with severe mitral regurgitation (SMR). At the end of the FU 118 (46.1%) patients were in NYHA FC I, 71 (27.7%) in FC II, 53 (20.7%) in FC

III, 3 (1.2%) in FC IV and there were 11 deaths (4.3%), 9 (3.5%) were cardiac death, being 5 during cardiac surgery. There were 17 (8.2%) patients with new SMR at the end of the FU. Twelve (4.7%) patients were submitted to new MBV, 27 (10.5%) to mitral valve surgery and 70 (26.3%) patients used no medication at the end of the FU. Independent predictors of survival with 7 variables were: ES ≤ 8 ($p < 0.002$, HR=0.143, CI 95% 0.042-0.487), age ≤ 50 years old ($p = 0.014$, HR 0.202, CI 95% 0.056-0.727 and absence of mitral valve surgery in the FU ($p = 0.004$, HR 0.170, CI 95% 0.050-0.571), being cardiac surgery in the FU the 7th variable and with 6 variables independent predictors were: EE ≤ 8 ($p < 0.001$, HR 0.116, CI 95% 0.035-0.384) and age ≤ 50 years old ($p = 0.011$, HR=0.203, CI 95% 0.059-0.693). Independent predictors of EFS were: absence of prior commissurotomy ($p < 0.002$, HR 0.318, CI 95% 0.151-0.667), female ($p = 0.036$, HR 0.466, CI 95% 0.229-0.951) and MVA post MBV ($p < 0.001$, HR 11.788, CI 95% 4.884-28.457).

Conclusions: MBVSB Balt was efficient with durable results similar to others techniques being less expensive

PI91

Percutaneous mitral balloon valvuloplasty with inoue versus balt single technique. immediate and in-hospital results, and cost effectiveness

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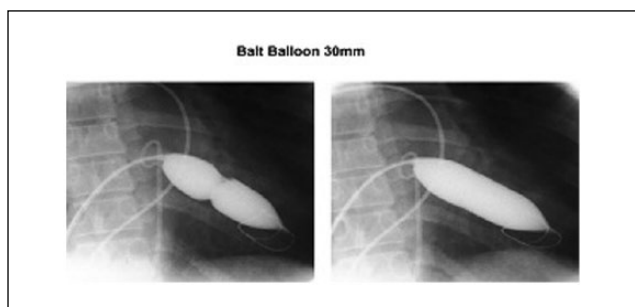
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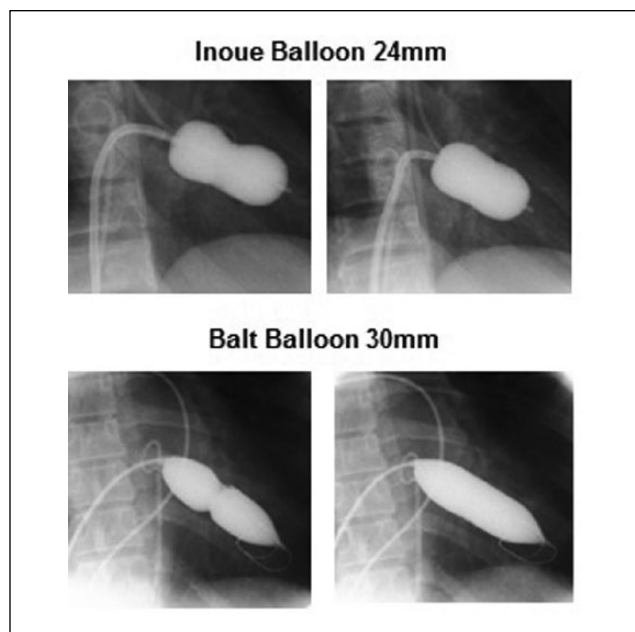
Percutaneous mitral balloon valvotomy (PMBV) has emerged as an alternative to surgical treatment of mitral stenosis.

Objective: to compare the immediate results, in-hospital evolution and cost of 468 percutaneous mitral balloon valvuloplasties (PMBV) with Inoue balloon (IB) and single Balt balloon (SBB).

Methods: IB group (IG): 73 procedures and SBB group (BG): 395 performed between 06/1987 and 12/1999. Mean age: IG 37.1 ± 10.1 years and BG 37.3 ± 12.8 ($p = 0.71745$); 59 women in IG and 327 in BG (0.685255); NYHA functional class in IG and BG, respectively: I in 4 and 4 patients, II in 23 and 87, III in 40 and 265 and IV in 6 and 39 procedures ($p = 0.010929$). Atrial fibrillation: 7 in IG and 55 BG ($p = 0.315511$). Echocardiographic score 7.2 ± 1.2 IG and 7.3 ± 1.5 BG ($p = 0.958911$). Mitral valve area (MVA) Echo pre-PMBV: 0.98 ± 0.19 cm² IG and 0.94 ± 0.21 BG ($p = 0.143954$)

Results: Within-group comparison IG and BG, respectively: Pre-PMBV: mean pulmonary pressure (MPP) 33.9 ± 13.5 and 38.6 ± 14.3 mmHg ($p = 0.007662$);





mitral gradient (MG) 17.3 ± 6.4 and 19.8 ± 7.0 mmHg ($p=0.013180$); MVA Gorlin pre-PMBV 0.90 ± 0.20 and 0.91 ± 0.21 cm² in BG ($p=0.8228449$). Post-PMBV: MPP 25.3 ± 8.6 and 27.2 ± 10.6 mmHg ($p=0.261415$); MG 5.9 ± 3.1 and 5.5 ± 3.7 mmHg ($p=0.083664$); MVA Gorlin 1.98 ± 0.46 and 2.04 ± 0.40 cm² ($p=0.419208$). Complications: 5 cardiac tamponade in BG: 3 treated by surgery with 2 deaths, 2 with pericardial drainage without death. 1 stroke in BG. Severe mitral regurgitation (MR) 1 patient of each group, treated by surgery. Calculated cost of both technique 2 consecutive years with reuse and price of acquisition at current prices demonstrated: IB technique US\$1,286,32 and SBB US\$309.94 for procedures.

Conclusions: Both techniques were efficient. IG less symptomatic; MPP and MG were higher in BG; results post-PMBV were similar. MR were similar. Other complication only in BG. Lower cost for material acquisition in BG

P192

Mitral balloon valvuloplasty: risk factors for lack of success, severe mitral regurgitation and major complications

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Background: Although there is scientific evidence on the safety and efficiency of mitral percutaneous balloon as a treatment for symptomatic mitral stenosis, is not free of failure and complications.

Objectives: To determine independent risk factors for incomplete procedure, failure, severe mitral insufficiency and serious complications in the procedure balloon mitral valvuloplasty.

Methods: A prospective longitudinal study of 518 procedures of mitral balloon valvuloplasty, conducted between July 6, 1987 and December 31, 2004, and 429 (82.8%) female patients and 89 (17.2%) of sex male, mean age 37.5 ± 12.8 years. It were considered as serious complications: perforation with cardiac tamponade, stroke and severe mitral regurgitation per procedure. Continuous variables were categorized. Comparisons between categorical variables were performed by Fisher's exact test or chi-square and logistic regression was performed and multiple logistic regression to identify independent factors to predict success, incomplete procedure, severe mitral regurgitation and severe complications.

Results: There was successful in 452 (94.2%) procedures. Serious complications occurred in 22 (4.2%) patients, and 10 cases were severe mitral regurgitation; there were no per-procedure death occurred and 4 (0.8%) in-hospital deaths. In multiple logistic regression, the lower age predicted success in the procedure; the only variable that predicted incomplete procedure was the initial learning curve period, the score > 11 points predicted severe mitral regurgitation per procedure. No independent variable and predicted serious complication.

Conclusions: Success was associated with younger age, incomplete procedure with the initial period of the procedure and severe mitral regurgitation per procedure with echocardiographic score > 11 points.

P193

Management and outcomes of patients admitted to a Coronary Care Unit following a transcatheter aortic valve implantation procedure

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Introduction: Coronary Care Units (CCU) have become a cornerstone in the early treatment of patients (pts) after a transcatheter aortic valve implantation (TAVI) procedure.

Our aim was to show the main baseline features, initial management and early outcomes of our TAVI pts admitted after the procedure in an advanced CCU led by Cardiologists.

Methods: We included all pts transferred from the Catheterization Laboratory (CL) to the CCU, just after a TAVI

procedure between 2009 and 2016. All baseline and in-hospital characteristics were prospectively collected in a database. Adverse events were defined according to Valve Academic Research Consortium-2, including myocardial infarction (x 15 times of normal peak of high-sensitivity (hs) T-Troponin).

Results: A total of 197 TAVI pts were included with a mean age of 80.7±6.3 years and 42.6% of women. Mean STS score was 6.4±5.1% and LogEuroScore was 15.5±10.9% with 61.9% of diabetes mellitus, 54.3% of previous heart failure, and 48.7% of known coronary artery disease. Coronary revascularization had been performed in 38.2% by either percutaneous (31.1%) or surgical (7.1%) interventions. The rate of other comorbidities such as chronic kidney disease, chronic obstructive pulmonary disease, peripheral vascular disease and previous stroke was respectively 19.8%, 25.9%, 12.7% and 12.2%. Frailty (present in 30.6% of our cohort) was assessed by eye-ball test and Charlson and Barthel scales.

Mean stay in CCU was 3.8±4.7 days. According to adverse outcomes, 11.6% developed acute kidney injury (AKI) (18% requiring dialysis) and 6.3% an episode of sepsis. Early acute stroke rate was 1.5%. Permanent pacemaker (PM) was implanted in 3.1% of pts during the stay in the CCU (over a rate of 19.8% of PM implantation). New onset atrial fibrillation was documented in 10.8%. New left bundle branch block was evidenced in 10.2%. Minor and major vascular complications occurred in 14.3% and 18%, including 6 pts with retroperitoneal hemorrhage. Elevated cardiac enzymes (x15 times baseline values) were present in a 41.6% with mean peak value of hs T-Troponin at 24-hour (647±143 pg/ml). In-hospital mortality was 6.5% (13 pts, 69.2% in the CCU and 30.8% in the CL) for the whole population (cardiovascular cause in 53.8% with 4 deaths related to mechanical complications, 23% of sepsis, 15.4% of vascular complications, 7.6% due to AKI). Pts not presenting any complication during the stay in the CCU reached a 41%, resulting in CCU-stay shorter than 24 hours in 17.3% and shorter than 48 hours in 49.2%.

Conclusions: Close monitoring of cardiac enzymes had major importance to determine the rate of peri-procedural myocardial infarction with known impact on outcomes. Main adverse outcomes in the CCU following TAVI presented early onset, including vascular complications and heart rhythm disturbances. Most pts did not present adverse events in the CCU suggesting that early discharge from the unit is feasible if free of events after 24 hours.

Myocardial and pericardial diseases

PI94

Pericardial drainage cavity with echoguided pericardiocentesis or pericardiotomy: our experience

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Objectives: The treatment of pericardial effusion and cardiac tamponade is still far from its resolution. The medical or surgical approach depends on the ability to control the inflammation and avoiding appearance that the disease has hemodynamic repercussions.

Methods: From 2006 to 2016 n 276 patients (155 males - 56.15% - females 121 - 43.84%) were admitted for surgical treatment of pericardial drainage cavity (DCP) at the Division of Cardiac Surgery dell'A. O. S. Giuseppe Moscati of Avellino. The procedures were Pericardiocentesis echoguided (PE) 155 pts (56.15%), pericardiotomy sottotifoidea (PS) 119 pts (43.11%) Median sternotomy (S) 2 pts (0.72%). 3 pts (8.1%) who underwent PE in the first instance they were converted into PS difficulties for drainage. 2 pts (0.72%) for puncture of the ventricle. The average amount of fluid drained and 'state of 560 ml (300ml-2000ml). The quality of the liquid was serous, serosanguineous, blood and purulent. In 10 pts (3.6%) cytology of the fluid and the pericardial fragments have confirmed the suspected diagnosis of malignant disease. The 65% of patients came from the dell'A.O Divisions. (Cardiology, Nephrology, Geriatrics, Oncology, Infectious Disease, Emergency Medicine) while 45% of the territory and how emergencies by CORE Campania.

The clinical and instrumental investigations indications Ecocardio on all end TAC rarely have enabled us to evaluate the process and to decide the surgical therapeutic procedure.

Laboratory tests carried out on the liquid were: Bacteriological examination, chemical-physical, cytological, while the removal of the pericardium fragment taken during the PS was sent in Pathology.

Result: The PE we believe was the principal procedure and PS reserve the eventual failure of the first, to patients in need of diagnosis (Oncology, nephrology), and postsurgical patients to relapse. All patients underwent PE were discharged after 5 days while patients undergo PS or S have needed a longer period of hospitalization from 15 days to 45gg. All patients were administered an anti-inflammatory which belongs to the class of NSAIDs for 14 days (Indomethacin or Paracetamol). Antibiotic therapy (third generation cephalosporin) was administered to all the patients for three days after the procedure while only for a case the antibiotic therapy has required the aid of an antibiogram.

Conclusion: Convinced that the presence of fluid in the pericardial cavity that gives a detachment of the pericardial leaflets > 1.5 cm (End Point) in diastolic echocardiographic

assessment is a fact that can not be resolved with medical therapy anti-inflammatory and / or cortisone we believe that the two PS and PE procedures are decisive for the disease to occur more complete emptying of the pericardial sac and the prompt administration of anti-inflammatory.

Not least was considered the reduction in hospital costs between the medical and surgical treatment therapy.

P195

Low voltage and transient QRS amplitude attenuation in takotsubo cardiomyopathy and acute coronary syndrome

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Background: Low QRS complexes voltage (LQRSV) and amplitude attenuation of QRS voltage (AAQRS) have been described in Takotsubo cardiomyopathy (TC) patients. TC physiopathology is not completely well understood. It has been postulated that myocardial edema may be the cause of LQRSV in the admission ECG and AAQRS in serial ECGs. Several studies have shown that myocardial edema is well recognized in acute coronary syndrome (ACS) during the acute phase.

Purpose: The aim of this observational study was to evaluate the presence of LQRSV and AAQRS in TC patients compared to ACS patients.

Methods: 25 TC patients and 25 ACS patients were matched according to age (± 5 years), gender, and presence or absence of ST elevation at hospital admission. TC diagnosis was made according to the Mayo Clinic criteria and ACS was defined according to the ESC guidelines on myocardial infarction. A 12-lead ECG was recorded at the patient admission, and before hospital discharge. ECGs were evaluated for LQRSV (≤ 5 mm in limb leads and/or ≤ 10 mm in precordial leads) and AAQRS (reflected as percentage change in QRS voltage between serial ECGs). LQRSV and AAQRS were evaluated in the following groups of leads: anterior (V1–V3), lateral (V4–V6), and high lateral (I, aVL), inferior (II, III, aVF), and aVR. A positive diagnosis for AAQRS was made when two of the three ECG leads, comprising the inferior, anterior, and lateral ECG lead groups, both ECG leads comprising the high lateral group, and lead aVR, showed AAQRS ≥ 2 mm. Test for paired data were employed for comparisons between TC and ACS patients.

Results: Age was 70 ± 12 years in TC group and 71 ± 12 years in ACS group ($p=0.49$), 84% were female ($p=1$). ST elevation was present at admission in 40% and absent in 60% ($p=1$). Left ventricular ejection fraction at admission was lower in TC patients ($38 \pm 10\%$ vs $49 \pm 12\%$; $p=0.02$). Duration of admission was longer in TC patients (6 ± 3 days vs 3 ± 1.5 days, $p=0.02$). Regarding the QRS voltage analysis: LQRSV was present at admission in 22/25 patients (88%) in TC patients and 20/25 (80%) in ACS patients ($p=0.44$), AAQRS was observed more frequently in TC patients (22/25, 88% vs 11/25, 44%; $p=0.01$), maximum AAQRS was higher in TC group ($39 \pm 21\%$ vs $13 \pm 13\%$; $p<0.001$) and the AAQRS extension (expressed as number of ECG groups of leads showing AAQRS) was also larger in TC patients (1.9 ± 1.4 vs 0.5 ± 0.7 ; $p<0.001$).

Conclusions: LQRSV and AAQRS are frequent phenomena in TC but also in ACS. Nevertheless, AAQRS is significantly more frequent, higher and more widespread in TC compared to ACS.

P196

Predictors of atrial fibrillation in Takotsubo cardiomyopathy-Portuguese multicentre study

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Introduction: Takotsubo cardiomyopathy (TC) is characterized by a transient left ventricular (LV) dysfunction. Atrial fibrillation (AF) complicates a significant number of cases of admissions for LV dysfunction.

Aim: To identify predictors of AF during the in-hospital period of TC.

Methods: A multicentre study involving 11 hospitals with inclusion of all patients diagnosed with TC in the last 10 years. Were evaluated demographic, clinical, electrocardiographic and echocardiographic data and determined the factors that are associated with the occurrence of atrial fibrillation. Multivariate analysis was performed to establish the independent predictors of AF in patients with TC.

Results: We included 205 patients with TC.

During the hospital stay (6.6 ± 6.0 days), AF was recorded in 9.8% of cases. Other complications were: heart failure (23.4%), cardiogenic shock (7.8%), acute pulmonary edema

(3.9%), complete AV block (2.4%), ventricular tachycardia (VT) (2.4%), LV thrombus (1.5%), stroke / AIT (1.5%), and death (2.0%).

In patients with TC, the factors associated with the in-hospital occurrence of AF were chronic renal failure (20.0% vs 4.9%, $p = 0.008$), the absence of a precipitating factor (60.0% vs. 34.6%, $p = 0.025$), and the presence of right branch block (RBB) (10.0% vs 1.6%, $p = 0.021$) or long QT (25.0% vs 7.6%, $p = 0.011$) in the initial ECG.

TC patients with AF have a significant higher rate of VT (15.0% vs 1.1%, $p < 0.001$) and complete AV block (10.0% vs 1.6%, $p = 0.021$).

In multivariate analysis, long QT ($p = 0.010$) in the initial ECG was the only independent predictor of in-hospital AF.

Conclusion: TC has a high rate of complications in the acute phase, with AF being one of the most prevalent. AF in patients with TC is associated with chronic renal failure, the absence of a precipitating factor, the presence of RBB or long QT on initial ECG. The presence of long QT was identified in our study as a predictor of AF in TC. TC patients with AF have an higher incidence of in-hospital VT and complete AV block.

P197

Evaluation of gender features of risk factors of chronic heart failure

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Objective: Assessment of chronic heart failure (CHF) prevalence and differential treatment in database of CHF Unit, compared with patients in consultation who were followed for CHF with preserved ejection fractions

Materials and methods: Retrospective analysis of 450 patients followed in cardiology departments of our hospital; from 2013 to March 2016.

Results: The main etiologic factors of chronic heart failure in 79.9% of cases are ischemic heart disease, artery hypertension and valvular heart disease. Revealed significant differences in the etiology of heart failure in men and women, as well as, in patients of all ages. The prevalence of heart failure in men was 56.8%, in men with CHF recorded 1.3 times more likely than women; 41% of patients with CHF were older than 50 years. CHF with left ventricular ejection fraction $< 45\%$ was diagnosed in 65% of patients. It should be noted that, among patients with CHF with preserved left ventricular ejection fraction, the number of women with CHF increases to 22%, and it is higher than in men in 2 times.

Conclusion: The gender differences in the structure of chronic heart failure patients: men more common have coronary heart disease, women valvular disease and artery hypertension. In women with CHF occurs predominantly with preserved LV ejection fraction, the percentage of patients with this variant CHF increases to 22%, and it is higher than in men in 2 times.

P198

Risk factors for the development of arrhythmias in patients with left ventricular noncompaction

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Introduction: Left ventricular noncompaction cardiomyopathy (LVNC) can predispose to the development of arrhythmias. However, the factors that predispose to the development of this arrhythmias are still unknown.

Aim: This study aims to determine the risk factors for arrhythmia in patients with the diagnosis of LVNC.

Methods: A retrospective multicentre study, including all patients diagnosed with LVNC in 10 hospital centres. Clinical, genetic, electrocardiography, echocardiographic and cardiac magnetic resonance (C-MR) parameter were analysed. A follow up was performed during a mean period of 3,4 years.

Results: The sample was composed of 86 patients with LVNC, 57% were males and the mean age was 51 ± 19 years. Most of this patients were diagnosed due to echocardiographic criteria (80%): Chin criteria in 31%, Stollberg criteria in 78% and Jenni criteria in 96%. About 74% of the patients diagnosed with transthoracic echocardiography performed a C-MR to confirm diagnosis. The mean ejection fraction was 48% and one quarter of patients had ejection fraction below 35%. Arrhythmias occurred in 14% of patients.

The factors that were associated with the development of arrhythmias during follow up were older age (63 ± 17 years vs 49 ± 18 years; $p = 0.02$) and initial presentation as dysrhythmia.

Conclusion: In this multicentre study with 86 patients with LVNC, the rate of dysrhythmia during a 3,4 years follow up

was 15%. The occurrence of arrhythmias during the follow up of patients with LVNC was associated with older age and the initial form of presentation as dysrhythmia.

Risk Stratification

P199

Effective risk assessment of long-term prognosis in patients with myocardial infarction using genetic approach

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Purpose: To develop an effective prognostic model for 1-year risk of complications in patients after ST-segment elevation myocardial infarction using both clinical data and variable sites of the genes APOE (rs7412 + rs429358), APOA1 (rs670), APOA5 (rs662799), ACE (rs4341 + rs4343), CETP (rs5882), LPL (rs328).

Material and Methods: 358 patients with ST-segment elevation myocardial infarction were admitted to the Kemerovo Cardiology Dispensary. Of these, 242 (67.2%) were males, and 116 (32.8%) were females. The mean age was 61.8 ± 11.1 years. All blood samples for genotyping were obtained on days 2-14th. DNA was isolated from peripheral blood lymphocytes using phenol-chloroform extraction followed by ethanol precipitation. The end-points were assessed 1 year after myocardial infarction. The end-points were as follows: death, recurrent myocardial infarction, acute cerebrovascular accident, hospitalization for decompensation of chronic heart failure and progression of angina pectoris. Statistical analysis was performed using SPSS Statistics 17.0.

Results: Prognostic coefficients, associated with the risk of complications 1 year after myocardial infarction, were calculated (relative rates of adverse outcomes) for each genotype of the studied variable sites. In order to assess the impact of the factors on long-term prognosis the following parameters were selected: clinical and demographic data, parameters, characterizing the presence of traditional risk factors, some laboratory data, instrumental data, as well indicators of the comprehensive risk assessment based on the patient's genotype. The regression analysis determined the most significant factors influencing 1-year prognosis: the presence of diabetes, low density lipoprotein (LDL) levels, and the comprehensive assessment based on the patient's genotype. The probability of complications

may be calculated using the values of these variables according to the following formula:

$P(Y = 1 / X1, X2, X3) = 1 / (1 + e^{-(-10.082 + 34.955 * X1 + 0.196 * X2 + 1.597 * X3)})$, where

X1 - a comprehensive assessment based on the patient's genotype, X2 - LDL level, X3 - the presence of diabetes.

The ROC-analysis was performed to evaluate the efficiency of this model. The area under the ROC-curve was 0.77, which exceeds the currently existing scales (TIMI, GRACE, CADILLAC) for the study sample.

Conclusion: An effective risk assessment scale for 1-year complications after myocardial infarction was designed using both clinical data and genetic parameters. The novel scale can be used in clinical practice for more accurate long-term prognosis in patients with myocardial infarction.

P200

Predictors of longer hospital stay in selected low risk patients admitted with acute coronary syndrome

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Background: The optimal length of hospital stay for patients with uncomplicated acute coronary syndrome is still undetermined.

Purpose: To identify predictors of longer hospital stay in selected low risk patients, as well as, the safety of an early discharge in selected low risk patients.

Methods: We analysed retrospectively 2531 patients admitted, in our coronary care unit with acute coronary syndrome, from July 2009 to December 2014. Low risk patients (n=441) were defined based on 4 characteristics: no signs of heart failure on admission; estimated glomerular filtration rate > 60 ml/min; systolic ventricular ejection fraction calculated by echo ≥ 50% and one vessel disease in the cath, excluding left main stem disease. The period of 4 days was accepted as the necessary to introduce prognostic modification drugs, educate and promote change in life styles. Patients were divided in two groups: group 1 - (n=206; 46.7%) patients with longer hospital length stay (>4 days); group 2 - (n=233; 53.3%) – patients with shorter hospital length stay (≤ 4 days). For each group we compared clinical features and adverse events. Primary endpoint was 1 and 6-month mortality; follow-up was completed in 98% of patients.

Results: Patients with longer hospital length stay were older (59±11 vs 56±11; p=0.002), had more prevalence of hypertension (59.7% vs 49.4%; p=0.03) and previous

diagnosed atrial fibrillation (5.3% vs 1.7%; $p=0.035$). About 44% of study population presented with STEMI, 47.4% with NSTEMI and 8.6% with unstable angina. Between groups there was no statistically significant difference in terms of the percentage of patients revascularized. CABG was more frequently performed on group 1 (4.4% vs 0.0%; $p<0.001$) and they also were more treated with glycoprotein IIb/IIIa inhibitors (15.5% vs 8.1%; $p=0.017$). During hospital stay, group 1 presented more frequently acute heart failure (5.3% vs 1.7%; $p=0.035$). Regarding other adverse events, it was not observed any differences between groups. There were no statistically differences between groups on 1-month (0.0% vs 0.4%; $p=0.25$) and 6-month overall mortality (0.0% vs 1.3%; $p=0.26$). After adjusting for different baseline characteristics in multivariate analysis, predictors of longer hospital length stay were age > 60 years [OR 2.06, 95% CI (1.32-2.23), $p=0.002$]; previous diagnosed atrial fibrillation [OR 3.69, 95% CI (1.11-12.22), $p=0.033$]; performing CABG [OR 11.14, 95% CI (2.44-50.85), $p=0.002$] and treatment with glycoprotein IIb/IIIa inhibitors [OR 2.30, 95% CI (1.17-4.52), $p=0.016$].

Conclusion: Low risk patients admitted with acute coronary syndrome was safely discharged after 4 days of hospital length stay. The predictors of longer hospital length stay identified were age > 60 years, previous diagnosed atrial fibrillation, performing CABG and treatment with glycoprotein IIb/IIIa inhibitors.

P201

Prognostic impact of CHA2DS2-VASc score as a predictor of events in heart failure

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Background: Chronic Heart Failure (HF) is a major problem worldwide, with prevalence and incidence increasing. It is the end stage of many diseases. Various scores were created in order to estimate the prognosis of these patients (pts), but none is considered ideal. The CHA2DS2-VASc score was implemented as a predictor of thromboembolic events in pts with atrial fibrillation (AF), also beginning to be used in pts without AF.

Purpose: To evaluate the impact of the score CHA2DS2-VASc as a predictor of events in pts with chronic HF and reduced ejection fraction.

Methods: Retrospective study where were including pts followed in a HF clinic (HFC) from a single center. The pts had reduced ejection fraction and were admitted in the HFC with a previous diagnosis of HF for at least 6 months or had prior hospitalization for acute HF. Pts with

follow-up (FU) of less than 12 months were excluded. Pts were divided into 2 groups: CHA2DS2-VASc ≤ 3 (G1) and CHA2DS2-VASc > 3 (G2). The groups were compared as to their clinical and echocardiographic characteristics and occurrence of hospitalization for HF (hHF), hospitalization for acute coronary syndrome (hACS), cardiovascular mortality (CVM), non-cardiovascular mortality (nCVM) and implantation of device (implantable cardioverter defibrillator or cardiac resynchronization therapy). To analyze the relationship of the qualitative variables we used Fisher's exact test, while the Student t test was used to analyze the influence of the quantitative variables. It also appealed to the Cox regression model for multivariate adjustment (SPSS 22.0).

Results: Included 270 pts, mean age 61.2 ± 13.5 years. 74.1% were male. 41.9% had ischemic etiology, 33.7% permanent AF and 64.4% severe depression of left ventricular systolic function. Mean FU time was 35.9 months ± 16 months. 158 (58.5%) integrated G1 and 112 (41.5%) G2. In univariate analysis, comparing two groups, pts in G2 were older ($p=0.01$), had more coronary disease history ($p=0.001$) and AF ($p=0.037$). In G1 there were more male pts ($p=0.001$) and pts in G1 had more history of smoking ($p=0.001$). During the FU, the pts in G2 had higher CVM and hHF ($p=0.041$ and $p=0.009$, respectively), with no significant differences in nCVM, hACS and implantation of device ($p=0.740$, $p=0.080$ and $p=0.864$, respectively). When used logistic regression, it was found that only the hHF remained significant difference between the two groups ($p = 0.005$).

Conclusion: In this study, the highest CHA2DS2-VASc score was associated with a higher CVM and was predictor of the occurrence of hHF.

P202

Does the CHA2DS2VASc score predict events in patients with ACS without AF

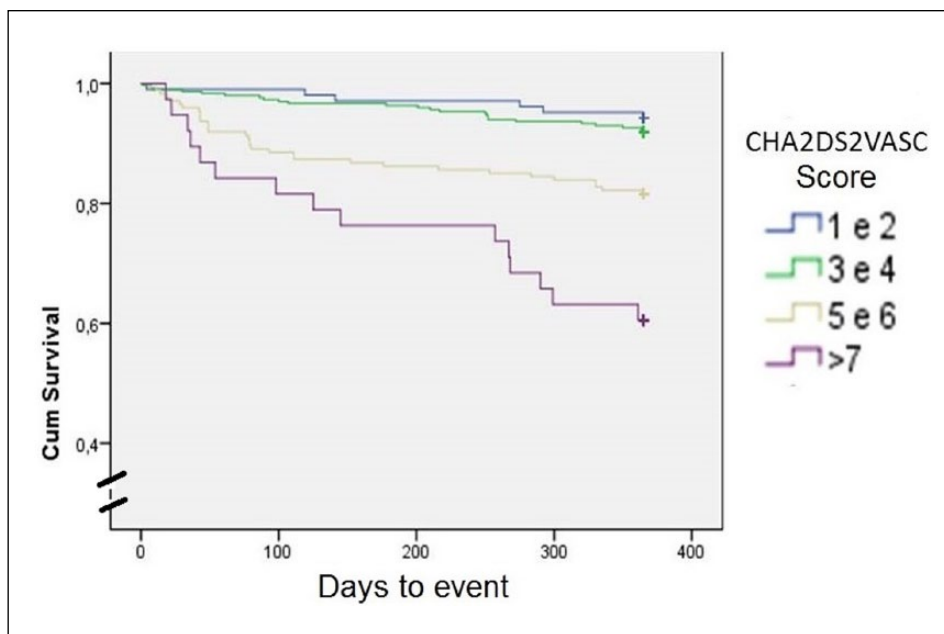
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Introduction: Currently there is a myriad of cardiovascular risk predictors, optimized to specific situations, but most are difficult to use, and very time consuming. The CHA2DS2VASc score has shown its usefulness in predicting events in atrial fibrillation (AF), despite its simplicity.

Objectives: To evaluate the CHA2DS2VASc score's ability to predict events following ACS patients without AF.

Methods: We selected all patients admitted for ACS in a single center in the temporal range from 01/01/2007 to 30/11/2014. There were only included those who were discharged and excluded patients with prior diagnosis of



Events on Follow-up

AF. CHA2DS2VASc score was evaluated in all patients and rated the composite endpoint of new ACS, stroke or death from any cause within 1 year of follow-up.

Results: The population in analysis consists of 993 patients, 71.8% male, mean age 67.0 ± 13.0 years, 46.2% were STEMI patients, and the rest were other forms of ACS. The average value of CHA2DS2VASc was 3.93. When evaluated the follow-up rate of events, it varies from 6.2% in patients with CHA2DS2VASc 1 or 2, to 37.5% in patients with a score > 7 (see figure: events on follow-up), confirming a relationship between higher score values and events in the follow-up ($p = 0.000$).

Conclusion: Although optimized for patients with AF, the CHA2DS2VASc score had diagnostic capabilities in other populations and is potentially useful in patients with ACS. Their advantage has to do with simplicity and ease of use, keeping good discrimination for events.

P203

Post acute coronary syndromes - outcome's predictors beyond ejection fraction

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Introduction: Heart failure (HF) after acute coronary syndromes (ACS) is a composite of different components, combining ischemia and hemodynamic deterioration. Related to HF are multiple variables easily assessed

which might be used as surrogate markers for prognostic evaluation beyond ejection fraction (EF).

Purpose: To determine in survivors after ACS which HF-associated variables predict risk of death or rehospitalisation due to cardiovascular (CV) causes (DoR).

Methods: Authors analysed a cohort of ACS survivals enrolled in a multicenter national registry between 1/10/2010 and 30/10/2014. Patients (P) were followed by 12 months. A statistical model was created using pre-hospital, clinical and laboratorial data, ACS classification, coronary anatomy when known, echo data and pharmacological treatment. HF-related variables were selected and univariate regression analysis was done. Based on statistically significant findings, and to search for independent variables a multistep multivariate logistic regression analysis was done.

Results: 5088 P were enrolled, (72% male; mean age 66 ± 13 years); 902 (17.7%) P died or had a CV rehospitalisation during follow-up. The results are presented in table 1.

Conclusion: Combining DoR as a composite endpoint, $EF < 50\%$ is the main predictor of a poor outcome, but many different variables closely related to HF are not powered to predict long term prognosis. In the current investigation, in P after ACS, only previous history of HF, in-hospital use of inotropes and diuretics at discharge showed a positive result.

P204

ACTION scale in STEMI patients: hemorrhage prevention for the elderly

Table I. Table I

| DoR predictors | HR | 95 % CI | p | HR | 95% CI | p |
|---|------|-----------|-------|------|-----------|-------|
| Previous heart failure | 2.89 | 2.42-3.45 | <.001 | 1.65 | 1.27-2.15 | <.001 |
| BNP > 305 pg/mL ⁽⁺⁾ | 1.13 | 1.10-1.15 | <.001 | | | |
| NT-proBNP > 3650 pg/mL ^(*) | 1.15 | 1.10-1.20 | <.001 | | | |
| Aldosterone antagonist ^(**) | 1.94 | 1.64-2.30 | <.001 | | | |
| Diuretics ^(**) | 2.58 | 2.27-2.94 | <.001 | | | |
| Inotropic agents ^(***) | 2.29 | 1.77-2.98 | <.001 | 1.91 | 1.33-2.73 | <.001 |
| In-hospital heart failure | 2.37 | 2.05-2.74 | <.001 | | | |
| Diuretics at discharge | 2.46 | 2.15-2.82 | <.001 | 1.42 | 1.15-1.77 | .001 |
| Aldosterone antagonist ^(****) | 1.81 | 1.49-2.18 | <.001 | | | |
| Ejection Fraction < 50% ^(****) | 1.92 | 1.68-2.20 | <.001 | 2.00 | 1.23-3.26 | .005 |
| Ejection Fraction <30% ^(****) | 2.05 | 1.55-2.70 | <.001 | | | |

(*)Admission; (**)in-hospital; (***)at discharge

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Background: STEMI is one of the most common cardiovascular disease which is nowadays have an effective way to be treated. But we still don't have an effective prognostic scale for hemorrhagic complications in STEMI patients.

Aim: to estimate prognostic value of different risk-stratification scales for STEMI patients.

Material and methods: 492 STEMI patients were included in current study retrospectively. All patients were divided into two groups: group I (n=40, with hemorrhages), group II (n=452, without any hemorrhages). Patients with hemorrhagic complication were older (67.62±9.20 vs 60.7±11.67, p=0.0003), more likely were women (60% vs 26.71%, p=0.0000). Patients in I group also were more likely to have myocardial infarction in anamnesis (27.5% vs 14.98%, p=0.0420).

We used CRUSADE, ACTION, REACH risk scales to determine hemorrhagic complication risk level.

Results: We calculated scores for all scales for 492 patients and compared our results in two groups (Table I).

Table I. Risk level according to different scales

| Scale | Group I, n=40 | Group II, n=452 | P-level |
|--------------|---------------|-----------------|---------|
| CRUSADE, M±m | 9,08±4,07 | 9,41±4,79 | 0,6751 |
| ACTION, M±m | 44,02±5,8 | 40,2±3,39 | 0,0000 |
| REACH, M±m | 5,22±7,1 | 3,45±1,63 | 0,11 |

Conclusions: The only valid scale according to our results is ACTION risk scale. We consider that its usage can become at effective way to evaluate risk of bleeding in STEMI patients.

P205

The prognostic value of lower extremities arterial disease and coronary artery disease

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Background: Risk factors for lower extremities arterial disease (LEAD) are similar to those important in the etiology of coronary artery disease (CAD) and are the typical for atherosclerotic disease. Therefore, it is expectable that the two pathologies may coexist in the same population.

Purpose: To study the prevalence of LEAD in patients referred for coronary angiography; to correlate clinical symptoms and physical examination with an actual LEAD diagnosis; to evaluate the prognostic importance of LEAD and CAD.

Methods: Prospective registry of consecutive patients referred for coronary angiography for a period of six months. CAD was diagnosed according to the angiogram. The presence of symptoms of LEAD was evaluated using the Edinburgh Claudication Questionnaire. Furthermore, patients were tested using the Ankle-Brachial Index (ABI). Finally, patients with a clinical suspicion for LEAD were submitted to a Doppler Ultrasound test. Patients were followed up in order to estimate death or major adverse cardiovascular event (MACE) after one year.

Results: After excluding urgent procedures and repeated patients, our final sample included 248 patients. CAD was present in 65.7% of patients. 6.5% had a previous LEAD diagnosis. The Questionnaire and the ABI gave rise to a LEAD suspicion in 18.1%. The Doppler test excluded the diagnosis in 20 patients, resulting in an overall LEAD prevalence of 16.5%. The Questionnaire and the ABI revealed, respectively, a positive predictive value of 30% and 54%.

CAD correlated significantly with male gender (OR 2.1). LEAD correlated significantly with tobacco use (OR 2.3) and severe chronic kidney disease (CKD) (OR 14.2).

After a median follow-up time of 312 days, the overall mortality was 5.3%. The endpoint of mortality or MACE occurred in 12.8% of the patients.

Overall mortality correlated significantly with LEAD (OR 3.9), multi-vessel CAD (OR 5.1) and older age (median 79 vs. 66 years, Mann-Whitney $p=0.004$). Older age and male gender were independent predictors of death in the logistic regression model. Age predicted mortality with an AUC of 0.77.

MACE correlated significantly with LEAD (OR 4.1), multi-vessel CAD (OR 3.3), CKD (OR 7.7) and cerebrovascular disease (OR 8.3). The latter, LEAD and tobacco use were independent predictors of MACCE in the logistic regression model. A 2 points score model using LEAD and multi-vessel CAD predicted MACCE with an AUC of 0.72.

Conclusions: There is a significant prevalence of LEAD amongst patients referred for coronary angiography. The Edinburgh Claudication Questionnaire and the ABI can be used to identify patients with possible LEAD. Both LEAD and multi-vessel CAD are associated with an increased risk of adverse events.

Special population: diabetes, elderly and renal failure

P206

Acute coronary syndrome in pre-diabetic patients (HbA1c 5.5-6.5%) - A comparison with diabetic patients in 1 year follow-up

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Introduction: Previous studies demonstrated that diabetic patients admitted with acute coronary syndrome (ACS) had an increased risk of adverse events in the follow-up. However, in the group of pre-diabetic patients with ACS there are controversial data with some studies indicate a worsening prognosis and others to suggest a prognosis similar to patients without glucose metabolism dysfunction.

Purpose: Characterize the population of patients with ACS with the diagnosis of diabetes mellitus (DM) and with HbA1c of 5.5-6.5% without diagnosis of DM. Compare rates of hospitalization and mortality between 2 groups in 1-year of follow-up.

Methods: A retrospective study was carried out encompassing all patients admitted for ACS in a Cardiology Service of 1 October 2010 to 31 August 2014. The patients were selected in two groups, one with diagnosis of DM and another with pre-DM (HbA1c of 5.5-6.5%). Baseline characteristics, data on admission and therapeutic strategies were evaluated. Univariate and multivariate analysis of mortality and hospitalization rates in 1-year follow-up were performed. For statistical analysis was used the SPSS 20.0.

Results: In study period were admitted 2818 patients with ACS, 783 (27.8%) with DM (HbA1c average of 7,8%) and 193 (6.8%) pre-diabetics with HbA1c 5.5-6.5%. Pre-diabetics in comparison with diabetic were more young (63.8vs67,67, $p<0.01$) and more often smokers (40%vs25%, $p<0.01$). On the other hand had less often history of: arterial hypertension (62%vs77%, $p<0.01$), acute myocardial infarction (14%vs32%, $p<0.01$), percutaneous coronary intervention (PCI) (12%vs. 21%, $p=0.01$) and peripheral arterial disease (5.7%vs13,8%, $p=0.01$). There were no statistically significant differences in gender and in left ventricle ejection between groups.

Pre-diabetic patients were more often admitted with chest pain at admission (67%vs. 55%, $p=0.01$), with ST-elevation ACS (55%vs42%, $p<0.01$) and less often with non-ST-elevation ACS (39%vs52%, $p<0.01$). There were no differences in performing coronary angiography or ICP and in coronary disease extension.

In 1 year of follow-up pre-diabetic patients in comparison with DM patients had a lower hospitalization rate (16%vs31%, $p=0.01$) and lower mortality rate (3%vs14%, $p=0.01$).

In the comparison of pre-diabetic patients with non-diabetic patients admitted for ACS there were no differences in their clinical characteristics, therapeutic strategies and rate of complications. In 1 year follow-up there were also no differences in hospitalization and mortality rates.

Conclusion: 1 – Patients with ACS and HbA1c 5.5-6.5% (pre-diabetic) in comparison with DM patients were younger, had lower number of morbidities, more admissions for ST-elevation ACS and less for non-ST-elevation ACS.

2 – DM patients had hospitalization and mortality rates in 1 year follow-up higher than pre-DM patients.

3 – Pre-diabetic patients (HbA1c 5.5-6.5%) with ACS had a prognosis similar to that of non-diabetic. patients.

P207

Acute coronary syndrome in young patients: are there any differences?

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Background: Acute coronary syndrome (ACS) is more frequent in middle and old age population. However, there has been an increasing incidence in young adults, who appear to have a distinct cardiovascular profile.

Purpose: To analyse risk factors, presentation and outcomes of ACS in young adults and to compare them with their older counterparts.

Methods: A prospective study was performed in one cardiology tertiary hospital centre including 3395 consecutive patients with acute coronary syndrome (ACS) (2005 – 2015). Patients (P) were divided according to age: <45 and ≥ 45 years old. ST segment elevation (STE) and non-ST segment elevation (NSTE) ACS sub-analysis was performed.

Results: We registered 11.8% younger than 45 years old, 85.5% male (vs 69.1% in the older group; $p < 0.001$). The most common cardiovascular risk factor in younger group was smoking habits (75.6% vs. 33.5%, $p < 0.001$), while in their older counterparts was arterial hypertension (68.9% vs. 29.8%, $p < 0.001$). The prevalence of obesity ($p = 0.012$) and family history ($p < 0.001$) were higher in younger P, while diabetes mellitus ($p < 0.001$), chronic renal failure ($p = 0.031$), previous angina ($p = 0.001$) or peripheral arterial disease ($p = 0.027$) were more frequent in the older group. Higher total cholesterol ($p < 0.001$), LDL-cholesterol ($p < 0.001$) and triglycerides ($p = 0.014$) and lower HDL-cholesterol ($p = 0.034$) were present in younger P, although previous diagnosis of dyslipidemia was significantly more frequent in older P (52.0% vs. 40.0%, $p < 0.001$). Younger P were more likely to present typical chest pain ($p = 0.010$) and to be in Killip class I ($p < 0.001$). This group had more STE ACS ($p < 0.001$), anterior ($p < 0.001$) and lateral wall ($p < 0.001$) localization. Single-vessel disease was more common in young P ($p = 0.000$) and right coronary artery was significantly less affected ($p = 0.013$). Systolic left ventricular dysfunction was less common in the younger group (29.2% vs. 35.9%, $p = 0.032$). Younger P underwent more frequently angiographic revascularization (81.3% vs. 69.2%, $p = 0.000$) and received more often antiplatelet medication at discharge (AAS $p = 0.021$ and P2Y12 inhibitor $p = 0.000$). In-hospital complications were less frequent in younger P ($p < 0.000$). In-hospital mortality was 1.8% in young P and 5.6% in older P ($p = 0.007$). After adjustment for potential confounding factors, age remained a prognostic predictor (HR 1.089, CI 1.066-1.113, $p < 0.001$). Mortality stayed lower in the younger group at 1-month and 1-year follow up ($p = 0.002$ and $p < 0.001$, respectively). The differences observed in the two age categories regarding classical

risk factors, symptoms and long-term prognosis were identical, independently of ACS presentation, STE and NSTE.

Conclusion: ACS in young age was associated with different risk factors, presentation and localization. Coronary artery disease was also less extensive and more submitted to intervention. Discharge and 1-year prognosis were more favourable in younger P.

P208

Acute coronary syndromes in the young: three decades of evolution

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Introduction: Acute Coronary Syndromes (ACS) are seldom in the fourth and fifth decades of life.

Purpose: This study intends to evaluate the evolution of prognosis and treatment of young patients with ACS during three decades.

Methods: Prospective data of 466 patients under 50 years of age consecutively admitted with an ACS. The patients were divided into 3 groups: A) patients admitted between 1st October 1989 and 1st October 1993 ($n = 86$, 18.5%, 96.5% male); B) patients admitted between 1st October 1999 and 1st October 2003 ($n = 207$, 44.4%, 88.9% male); C) patients admitted between 1st October 2009 and 1st October 2014 ($n = 173$, 37.1%, 87.9% male). The groups were compared according to cardiovascular risk profile, all-cause mortality at 1 year of follow up.

Results: The groups were similar regarding gender, age and history of Diabetes Mellitus. A decrease of prevalence of previous Angina (A = 55.8% vs B = 19.3% vs C = 8.7%, $p < 0.01$); Myocardial Infarction (A = 22.1% vs B = 14.5% vs C = 8.1%, $p < 0.01$) and, although not statistically significant, smoking (A = 74.4% vs B = 67.1% vs C = 64.7%, $p = 0.28$) was observed.

The analysis displayed a higher prevalence of Myocardial infarction versus Unstable Angina (A = 59.3% vs B = 77.3% vs C = 90.2%, $p < 0.01$). Treatment wise, a decreased use of thrombolysis during the three decades was observed (A = 29.1% vs B = 29.5% vs C = 1.7%, $p < 0.01$). The all-cause mortality at 1 year of follow up decreased along the decades (A = 10.5% vs B = 5.3% vs C = 1.7%, $p = 0.009$).

Conclusion: This study was hindered by the lack of data regarding percutaneous coronary intervention in the older decades. A substantial improvement of prognosis of young patients with ACS was observed.

P209

Age-related differences in epidemiological and clinical features of patients admitted for acute coronary syndrome

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Introduction and objectives: the incidence of acute coronary syndrome (ACS) increases with age. Our objective was to evaluate the epidemiological and clinical features, hospital management and long-term prognosis in patients admitted for ACS grouped by age.

Material and methods: we analyzed 1232 patients consecutively admitted to our center with the diagnosis of ACS (ST-segment elevation ACS, or non-ST elevation but with elevated cardiac biomarkers levels or ST-segment dynamic abnormalities). The baseline characteristics and the events after discharged (median: 22.2 months) were analyzed according to three age groups: young adulthood, YA, ≤ 60 years old (469 patients, 38%); middle adulthood, MA, 60-75 years old (444 patients, 36%); and older adulthood, OA, ≥ 75 years old (319 patients, 26%).

Results: As baseline characteristics, the OA group had more women (OA: 41.7 vs. MA: 20.3 vs. YA 14.7%; $p < 0.001$), diabetes (42.0 vs. 34.7 vs. 18.6%; $p < 0.001$), hypertension (78.7% vs. 69.6% vs. 36.7%; $p < 0.001$) and previous infarction (17.6 vs. 12.4 vs. 8.1%; $p < 0.001$). The older patients had higher scores on the CRUSADE scale (OA: 31.4 ± 12.9 ; MA: 24.5 ± 12.1 ; YA: 19.9 ± 10.4 ; $p < 0.001$) and GRACE scale (OA: 171.3 ± 27.3 ; MA: 146.3 ± 29.7 ; YA: 125.0 ± 29.6 ; $p < 0.001$). There were no differences in the rates of STEMI and percutaneous coronary intervention (PCI) by age group, but the use of conventional stents was significantly higher in the OA group. OA group presented a higher incidence of bleeding and need for transfusion during hospitalization. Despite of having greater indication of new antiplatelet agents (NAA), defined as CRUSADE < 40 and GRACE > 140 , OA group was less likely to be prescribed NAA than other groups. During follow-up, older patients had more bleeding events (12.2 vs. 5.6 vs. 4.1%; $p < 0.001$), need for transfusion (6.3 vs. 1.6 vs. 0.9%; $p < 0.001$), myocardial infarction (6.0 vs. 5.2 vs. 2.8%; $p = 0.069$) and death (23.2 vs. 7.2 vs. 3.2%; $p < 0.001$). The incidence of major ischemic events (death, myocardial infarction, stroke, stent thrombosis, or new PCI) was also higher in this group (31.7 vs. 17.6 vs. 11.7%; $p < 0.001$).

Conclusions: significant differences in baseline epidemiological characteristics and clinical features were found during hospitalization and long-term follow-up in

patients admitted for ACS according to age. Although PCI rates have equalized, the use of NAA remains lower among the elder patients.

P210

Are very elderly patients the same compared to the young elderly when acute coronary syndrome?

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Introduction: Elderly people in Europe is an important sector of medical attention, and this will be an upward trend in future decades. Consequently, the relative and absolute number of elderly with acute coronary syndrome (ACS) will increase.

Methods: Observational prospective study included consecutively all patients admitted to the Acute Cardiac Care Unit (ACCU) of our center in 2012-2015. The objective is to understand the differences between those 'young elderly' patients (80-85 years) and the 'very old' patients (≥ 85 years) admitted to the ACCU for SCA, regarding its clinical features, management and their evolution.

Results: A total of 1946 patients (p) were admitted in the ACCU, of which 267 p (13.72%) had SCA and were older than 80 years (young elderly -group A-: 69%; very old -group B: 31%). The average age was in A: 81.7 years and group B: 87.8 years. 60.9% of p were male (A) vs 56.6% (B) $p < 0.05$. 58.7% of admissions were for STEMI (A) vs 77.1% (B) $p < 0.05$. There were significant differences in DM: 37.5% (A) vs 26.5% (B); dyslipidemia 55.2% (A) vs 37.3% (B); and a history of AF 15.8% (A) vs 22.8% (B). Patients presenting with STEMI were subjected to primary PCI with symptoms-to-needle time of 476min (A) vs 200 min (B). 21% (A) vs 31% (B) had Killip class $\geq III$ ($p < 0.05$). There was less use of ACE inhibitors / ARBs, beta-blockers in group B. The need for vasoactive support was 18% (A) vs 24% (B). Drug eluting stent was implanted in 28.7% in group A vs 7.7% in group B ($p < 0.05$). Exitus rate was 7.1% (A) vs 8.4% (B) while staying at ACCU vs 2.2% of those patients under 80 years.

Discussion: A significant percentage of hospital admissions for ACS, in our case more than 13% are patients over 80 years. Differences in clinical characteristics and management are appreciated among the 'young' elderly about the 'very old' in terms of cardiovascular risk factors and treatment prescribed, although a high percentage undergo invasive interventionism. It is true that may be a confusion factor and patients over age 85 who admitted

are those biologically healthier and therefore a selection bias occurs, however a high percentage undergo invasive procedures, with a rate of exitus in ACCU clearly superior to that patients less than 80 years.

P211

Atrial fibrillation in the elderly with acute coronary syndrome: is it a relevant factor in clinical decision?

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Introduction: Elderly patients count for approximately one third of all patients with acute coronary syndrome (ACS). The treatment decision should weight not only the traditional risks and benefits but also the ones related to this population. Atrial fibrillation (AF) is a known independent predictor of mortality after ACS. In this group of patients its negative impact can be worse and can affect their treatment strategy.

Purpose: This study aims to evaluate whether or not AF at admission has a prognostic impact in patients over eighty years old with ACS and if it influences their treatment strategy and survival.

Methods: We evaluated 2076 patients included in the national registry of acute coronary syndrome over 80 years old and we compared the patients with AF at admission (Group A) with patients in sinus rhythm at admission (Group B). We compared: the treatment strategy, complications during hospital admission and one-year survival. Survival curves at one year and its significance were evaluated by cox regression. In a second analysis, we compared patients with AF at admission that had coronary angioplasty versus the ones that did not perform it. Its impact was evaluated in a multivariable analysis.

Results: Group A (n=339) had more complications during hospital admission: congestive heart failure (42.9% vs 31.6%, p<0.001), sustained ventricular tachycardia (4.7% vs 2.6%, p=0.034), cardiac arrest (4.4% vs 2.4%, p=0.038), stroke (3.0% vs 0.9%, p=0.004) and death (15.6% vs 10.4%, p=0.006). Group B (n=1737) had a significantly higher survival rate at one year (p=0.031). Nevertheless, after variables adjustment AF was not a one year independent death predictor (hazards ratio (HR) = 1.56; 95% CI 0.99 a 2.46). Patients with AF at admission are less referred for invasive strategy [57.5% (n=195) vs. 66.9% (n=1162), p<0.001]. From group A, the ones that had coronary angioplasty (n=127, 37.5%) had higher one year survival rates (p=0.013) without difference in the readmission for cardiovascular events in one year (p=0.264). The coronary angioplasty (OR = 0.24; 95% CI 0.08 a 0.70) reduced mortality during hospital admission. Whether the

patient had coronary angioplasty or not, invasive strategy (p=0.016) predicted a higher one year survival. Coronary angioplasty was an independent predictor of survival in these patients (HR = 0.45; 95% CI 0.21 a 0.95)

Conclusion: Like other age groups AF seems to have a negative impact in patients over 80 years old. Apart from the presence of this comorbidity and its risks, mainly the anticoagulation, this frail group seems to benefit from an invasive strategy and specially from coronary angioplasty.

P212

Cardiorenal syndrome: should we worry with mild-moderate renal impairment?

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Introduction: Renal dysfunction is highly prevalent amongst patients with Heart Failure with reduced ejection fraction (HF-REF) and has been shown to be as powerful and independent a maker of adverse prognosis as ejection fraction.

Purpose: The aim of the study was to evaluate the influence of renal impairment in HF-REF patient's death and find a Glomerular Filtration Rate (GFR) cut-off value with impact on death in stable HF-REF patients followed in an outpatient clinic.

Methods: Retrospective analysis of patients with advanced HF-REF. Clinical, laboratory and therapeutic variables were considered. ROC curve was performed in order to find a GFR cut-off value. A logistic regression model was performed to verify the impact of renal impairment on stable HF-REF patient's death.

Results: We evaluated 130 patients [99 (76.2%) men] with stable HF-REF whose mean age was 65.9 ± 14.8 years and mean follow up duration was 42±7.7 months. The 16 patients (12.3%) who died had more previous emergency department's admissions (7.6±5.2 vs 10.6±6.7; p=0.064). At laboratory findings, they had higher creatinine (104.0±34.8 vs 123.1±12.0 umol/L; p=0.025) and urea values (9.1±6.4 vs 13.9±12.0 mmol/L; p=0.010), leading to a lower GFR (MDRD calc: 70.0±25.5 vs 55.5±22.4 mL/min/1.73m²; p=0.018). ROC curve define the cut-off value 50 mL/min/1.73m² with best sensitivity/specificity relation. Multivariate analysis eliminate confounders and showed patient in GFR ≤ 50 mL/min/1.73m² had higher risk of death (OR: 4.53, IC95%: 1.09 – 18.87, p=0.038).

Conclusions: We confirm a strong impact of chronic kidney disease to predict the risk of death in patients with stable advanced HF-REF. According to the current data moderate reduced kidney function (GFR < 50 mL/min/1.73m²) is related with a fourfold increase in the risk of death.

P213

Clinical characteristics and prognosis of the elderly patients with chronic heart failure

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Purpose: In our department, the proportion of elderly population is increasing continuously. Elderly patients have become a main group of chronic decompensate heart Failure (CDHF). We sought to their clinical characteristics and prognosis.

Method: We enrolled 1900 patients with CDHF who were followed from 2013 to end of 2015. They were divided into two aged groups: ≥ 75 (group 1; N=443, 81.5 \pm 5.5 years) and between 60-75 years old (group 2; n=1457, 61.9 \pm 11.2 years)

Results: More patients in group 1 were female and non-smokers, and had co-morbid conditions such as hypertension and diabetes mellitus. The 3 common cause of CDHF were Ischemic heart disease (34.4%), hypertension (18.6%) and valvular heart disease (14.6%). On the other hand, those in group 2 were ischemic heart disease (27%), primitive dilated cardiomyopathy (26.1%) and valvular heart disease (47.8%). In group 1, NYHA functional class and cardiac biomarker (serum CKMB and serum Troponine) was higher. Echocardiographic finding were also similar in both group except E/e' (23.32 \pm 12.27 vs. 20.02 \pm 8.27, p=0.006). Less patients in group 1 were taking beta-blockers (37% vs. 48%, p<0.021) and calcium channel blocker (26.3% vs. 17.6%, p<0.028). The proportion of ACE inhibitor/ARB and diuretics use were similar. 2-year readmission rate due to ADHF of group 1 was not different (30% vs. 31%, p=0.828)

Conclusion: Current treatment of CDHF was similar in both aged group except beta-blocker usage. Elderly group showed high mid-term morbidity due to ADHF. More tailored therapeutic strategy may be required to improve long-term prognosis in elderly.

P214

Clinical features, management and evolution of nonagenarian patients admitted for infarction with ST segment elevation

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Introduction: The ageing of the population is a reality, so we face most often elderly patients with acute myocardial infarction.

Methods: A prospective and observational study including all patients (P) admitted at Coronary Care Unit (CCU) in our hospital from 2012 to 2015. Our aim was to determine the prevalence of P older than 90 years admitted at CCU for myocardial infarction with ST segment elevation (STEMI) and to analyze its clinical features, management and evolution.

Results: A total of 1946 P were admitted to CCU, 887 of them had STEMI, and 17p (1.9%) of them were older than 90 years. The mean age was 92.2 years, being the oldest one 98 years old. Patients were women (53%), HTA (82%), DM (6%), dyslipemic (12%) and smokers (12%). 29% of P presented a history of FA, 6% of ischemic heart disease and 23.5% of peripheral vascular disease. Among the analytical variables highlighted the mean creatinine was 1.35 mg/L and the mean hemoglobin 12.48 g/dl. All patients underwent primary percutaneous coronary intervention (pPCI) with time from symptoms to catheterization of 160min. 29% of P had Killip>III at admission. Administration of vasoactive amines was needed in 35% of P and NIV in 6% of them. The culprit vessel was most often the anterior descending artery (50%). Bare-metal stents were used in 94% of P. The mortality rate was 6% during their time in CCU.

Discussion: Currently a small percentage of the total P admitted in UCC are older than 90 years, the majority of them are admitted with STEMI. Most of the P do not exhibit the classic cardiovascular risk factors indicating their status as 'healthy' elderly. The P older than 90 years receive the same management as younger patients, except for the increased use of conventional stents with a mortality rate of 6% during admission at UCC. In our study all patients underwent PPCI, there may be a bias which tends to occur as nonagenarian patients admitted at UCC are biologically healthier likely to undergo invasive treatment whereas other elderly patients with more functional impairment are not admitted at UCC and the receive conservative treatment.

P215

Clinical features, management and evolution of very elderly patients admitted to a coronary care unit nowadays

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Objectives: In the field of Cardiology, older patients are the most frequently seen in clinical practice. Population in industrialized countries is aging progressively, so more often we treat elderly patients with cardiovascular disease that may require admission to a coronary care unit (CCU)

Methods: Observational prospective study included consecutively all patients admitted to the CCU of our center in 2012-2015. The main aim of study is to determine the prevalence of very elderly patients, meaning those over 85 years old, admitted to the CCU, clinical features, management, diagnosis and their evolution

Results: A total of 1946 patients (p) were admitted in CCU, of which 118 p (6%) were older than 85 years. The mean age was 88.2 years, the oldest patient being 98 years. 58.5% of p are male. 56% of p had ACS (43.2% for STEMI and 12.7% for NSTEMI), 28.8% arrhythmias (25.9% symptomatic bradyarrhythmias), 1% for acute HF, 2.5% for cardiac arrest and 1% for pericardial effusion. 89% were HBP, 25% DM, dyslipidemia 36.4%, 2.5% were smokers and 30.5% had history of AF. 19% had a history of ischemic heart disease and 16% peripheral vascular disease. Mean creatinine was 1.39mg / dL and hemoglobin 12.9 g / dl. Patients presenting with STEMI were subjected to PPCI with symptoms-needle delay of 200min. NSTEMI patients had a mean score on the GRACE score of 198 and CRUSADE score of 43. 29% had a Killip class \geq III. Management include the need for vasoactive support in 21%, invasive mechanical ventilation at 4.2% and noninvasive ventilation at 4.2%. In 91% of coronary interventionism uncoated stent was implanted. In 10% of the p conservative management was performed. Exitus rate was 7.6% while staying at CCU vs 2.1% of those p under age 80.

Discussion: A significant percentage of the income of a CCU (6%) are p over 85 years, with the principal diagnosis motivating admission ACS. In a high percentage undergo invasive interventions being 10% of patients managed conservatively, showing an exitus rate of 7.5% during admission to the CCU. It is true that there may be a selection bias and patients over age 85 who enter are those 'healthier' and therefore other patients with greater functional and / or cognitive impairment not admitted in CCU and management is initially conservative

Valvular heart disease

P216

A comparative study of long-term follow-up after percutaneous mitral valvuloplasty with single balloon (Balt) versus Inoue balloon techniques

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Percutaneous mitral balloon valvuloplasty (PMBV) has emerged as an alternative to surgical treatment for mitral stenosis.

Objective: This study aimed to demonstrate that mitral balloon valvuloplasty (MBV) with the Balt single balloon (BSB) has similar outcome and long-term follow-up (FU) than MBV performed with the Inoue worldwired accepted technique.

Methods: From 1987 to 2013 a total of 526 procedures were performed, being 312 with a FU, 56 (17,9%) with Inoue balloon (IB) and 256 (82,1%) with BSB. The mean FU in IB group was 33 \pm 27 (2 to 118) and 55 \pm 33 (1 to 198) months, p<0.0001. Univariate analysis (UA) and multivariate Cox analysis (MVA) were utilized to determine independent predict variables of survival and event free survival (EFS) in both techniques groups. The major events (ME) were death, cardiac surgery and new MBV.

Results: In IB and BSB groups there were, respectively: female 42 (75.0%) and 222 (86.7%); mean age 37.3 \pm 10.0 (19 to 63) and 38.0 \pm 12.6 (13 to 83) years, p=0.7138; sinus rhythm 51 (91.1%) and 215 (84.0%), p=0.1754; echo score (ES) 7.6 \pm 1.3 (5 to 10) and 7.2 \pm 1.5 (4 to 14) points, p=0.0528; echo mitral valve area (MVA) pre-MBV 0.96 \pm 0.18 and 0.93 \pm 0.21 cm², p=0.2265; post-MBV mean MVA (Gorlin) were 2.00 \pm 0.52 and 2.02 \pm 0.37 cm², p=0.9554; MBV dilatation area 6,09 \pm 0,27 and 7,02 \pm 0,30, p<0,0001. At the end of the FU, there were in IB and BSB groups, respectively: echo MVA 1.71 \pm 0.41 and 1.54 \pm 0.51 cm², p=0.0552; new severe mitral regurgitation in 5 (8.9%) and 17 (6.6%) patients, p=0.5633; new MBV in 1 (1.8%) and 13 (5.1%), p=0.4779; mitral valve surgery in 3 (5.4%) and 27 (10.4%), p=0.3456; deaths 2 (3.6%) and 11 (4.3%), p=1.000; cardiac deaths 1 (1.8%) and 9 (3.5%), p=1.000; ME 5 (8.9%) and 46 (18.0%), p=0.1449. In UA and MCA the BSB or IB technique do not predict survival or EFS. The independent risk factors to survival (MCA with 2 models with 5 and 6 variables) were: age <50 years (p=0.016, HR=0.233, 95% IC 0.071- 0.764), ES \leq 8 (p<0.001, HR=0.105, 95% IC 0.34 - 0.327), MBV dilatation area (p<0.001, HR 16.838, 95% IC 3.353 - 84.580) and no mitral valve surgery in the FU (p=0.001, HR0.152, 95% IC 0.050 - 0.459). Independent risk factors to EFS: no prior commissurotomy (p=0.012, HR=0.390, 95% IC 0.187 - 0.813) and post-MBV MVA \geq 1.50 cm² (p=0.001, HR=7.969, 95% IC 3.413-18.608).

Conclusion: MBV with BSB and IB were equally efficient, there were similar survival and EFS in the FU. Independent predictors of survival were: age <50 years, ES \leq 8 points, MBV dilatation area > 7 mm² and no mitral valve surgery in the FU. Independent risk factors of EFS were no prior commissurotomy and post-MBV MVA \geq 1.50 cm²

P217

Aortic valve resistance is related to contractile reserve in aortic stenosis

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Introduction: Aortic valve resistance (AVR) is a measure of severity in aortic stenosis (AS). It can be calculated by a ratio between mean transvalvular gradient and flow multiplied by a constant - 1333. Viability in dobutamine stress echocardiography (DSE) may be defined by an increase of stroke volume (SV) during peak stress. Predictors of SV improvement at peak stress are largely unknown. We aimed to evaluate the impact on left ventricle SV increase at peak DSE of rest AVR in patients with moderate to severe AS.

Methods: We conducted a retrospective observational study that included all patients with moderate to severe AS that performed a DSE between September/2011 and November/2014. Data regarding DSE, invasive hemodynamics, demographic, clinical and blood test parameters were collected in all patients. The primary endpoint was an increase of at least 20% in SV at peak stress.

Results: Between September/2011 and November/2014, 36 patients (29 males, mean age 72 ± 9,1 yr) with moderate or severe AS performed a DSE, to assess the severity of disease and/or myocardium viability. 33 patients performed a low dose dobutamine stress protocol and only 3 patients (all with moderate disease) performed a high dose dobutamine stress protocol to assess for coronary heart disease that might explain chest pain. 26 (72%) patients had good quality data that enabled the calculation of rest AVR. Medians of rest AVR were significantly different between patients that increased $\geq 20\%$ SV at peak stress (median 282 dynescm⁻⁵, IQR 199 - 419) and patients that did not increase SV at peak stress (median 154 dynescm⁻⁵, IQR 109 - 261) (Mann Whitney U 38,000, p=0,017). Area under the curve (AUC) was 0,774 (p=0,018), yielding moderate discriminate power. We considered the best cut-off point to be 150 dynescm⁻⁵ (sensitivity 92 and specificity 50). In a binary logistic regression model, a resting AVR equal or above 150 dynescm⁻⁵ is associated with a 11 times increase in the probability of increasing LV SV at peak stress for at least 20% (OR 11,0 95%CI 1,10 - 109,67).

Conclusions: A resting AVR equal or above 150 dynescm⁻⁵ is associated with an increase in the probability of increasing LV SV at peak stress for at least 20%.

P218

Aortic valve resistance performance with dobutamine stress in aortic stenosis with depressed ejection fraction

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Introduction: Aortic valve resistance (AVR) is a measure of severity in aortic stenosis (AS). It can be calculated by a ratio between mean transvalvular gradient and flow multiplied by a constant - 1333. Little is known about the discriminating power of basal and peak AVR in the assessment of the severity of aortic stenosis in patients with depressed ejection fraction (EF) who undergo dobutamine stress echocardiography (DSE). We aimed to: 1) compare basal and peak AVR between patients with definite moderate AS and those with definite severe AS with depressed EF 2) compare basal AVR with basal medium aortic gradient as a discriminator between patients with definite moderate AS and those with definite severe AS.

Methods: We conducted a retrospective observational study that included patients with moderate to severe AS with depressed EF (LVEF < 55%) that performed a DSE between September/2011 and November/2014. According to the results of DSE patients were classified between 1) definite severe AS with depressed EF and 2) definite moderate AS with depressed EF.

Results: Between September/2011 and November/2014, 30 patients (24 (80,0%) males, mean age 72 ± 9,1 yr) with moderate or severe aortic stenosis with depressed EF (LVEF < 55%) performed a DSE to assess the severity of disease and/or contractile reserve. Medians of basal AVR were significantly different between patients with definite severe AS (median 255 IQR 190 - 329) and patients with moderate aortic stenosis (median 112 IQR 74,7 - 156,7 dynescm⁻⁵) (Mann Whitney U 8,00, p<0,001). Medians of peak AVR were also significantly different between patients with definite severe AS (median 225 IQR 189 - 3328 dynescm⁻⁵) and patients with moderate AS (median 129 IQR 87 - 172 dynescm⁻⁵) (Mann Whitney U 13,0, p= 0,005). Area under the curve (AUC) for the basal AVR was 0,933 (95% CI 0,83 - 1,00 p= 0,001), which yield a good discriminate power and was significantly better than AUC for basal medium aortic gradient (AUC 0,657, 95%CI 0,335- 0,980) (p<0,05). We considerate the best cut off point for basal AVR to be 150 dynescm⁻⁵ (sensitivity 83% and specificity 80%). In a binary logistic regression model, a basal AVR equal or above 150 dynescm⁻⁵ is associated with a 15 times increase in the probability of being a definite severe AS (OR 15 95%CI 1,34 - 167,6).

Conclusion: In patients with moderate to severe AS and depressed EF who undergo DSE, a basal AVR equal or above 150 dynescm⁻⁵ is associated with a 15 times increase in the probability of being a definite severe AS.

P219

Left ventricle stroke loss performance in severe aortic stenosis with depressed ejection fraction

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Introduction: Left ventricle stroke loss (LVSL) reflects the amount of work expended by the left ventricle to keep the aortic valve open during systole compared to the amount of work resulting in effective forward blood flow. This measure reflects the intrinsic stiffness of the valve leaflets and therefore is less dependent on volume flow rate. There is scarce literature regarding the application of LVSL in patients in severe aortic stenosis and ejection fraction below 40%. We aimed to compare rest and peak left ventricle stroke loss between patients with severe aortic stenosis, low gradient and LVEF < 40% and patients with severe aortic stenosis, high gradient and LVEF < 40%.

Methods: We conducted a retrospective observational study that included all patients with severe aortic stenosis (AVA < 1,0 cm²) with LVEF < 40% that performed a dobutamine stress echocardiography (DSE) between September/2011 and November/2014. Data regarding DSE, invasive hemodynamics, demographic, clinical and blood tests parameters were collected in all patients.

Results: Between September/2011 and November/2014, 14 patients (10 (71,4%) males, mean age 72 ± 9,1 yr) with severe aortic stenosis (AVA < 1,0) with LVEF < 40% performed a dobutamine stress echocardiography, to assess contractile reserve. 11 patients (78,6%) had a rest low transvalvular gradient (< 40 mmHg) and only 3 (21,4%) patients had a rest high transvalvular gradient (≥40 mmHg). Medians of rest LVSL were significantly different between patients with low gradient (median 0,174, IQR 12,6% – 20,4%) and patients with high gradient (median 33,1% , 1Q 32,3%) (Mann Whitney U 27,00, p= 0,009). Medians of peak LVSL were also different between patients with low gradient (median 19,3%, IQR 12,8% – 26,2%) and patients with high gradient (median 38,9%, 1Q 34,1%) (Mann Whitney U 26,00, p= 0,018). However, the absolute increase in LVSL with stress was not significantly different between those groups of patients (low gradient median 2,1%, IQR 0,3 – 0,6 and high gradient median 5,4% 1Q 1,7%) (Mann Whitney U18,000, p= 0,48).

Conclusion: In patients with severe aortic stenosis with LVEF < 40%, rest and peak left ventricle stroke loss are significantly different between those with low gradient and those with high gradient. However the absolute increase of

left ventricle stroke loss with stress is not different between those groups of patients.

P220

Prognosis of Ischemic mitral regurgitation

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Introduction: Ischemic mitral regurgitation (IMR) is a common and a severe complication. It can be acute following an myocardial infarction (MI) or chronic occurring during the development of coronary artery disease. The aim of this work is to describe the clinical features determine the prognosis of patients with ischemic mitral regurgitation

Material and methods: we perform a retrospective study including 106 coronary hospital our department during the period from January 2008 to the month of December 2014, with an ischemic mitral regurgitation diagnosed in echocardiography

Results: The mean age of our patients was 65.36 ± 12 years with a male predominance. The main cardiovascular risk factors were smoking (72.6%), diabetes (50%) and hypertension (43.4%).

The MR was acute as a result of MI in 55.7% and chronic in the remaining cases.

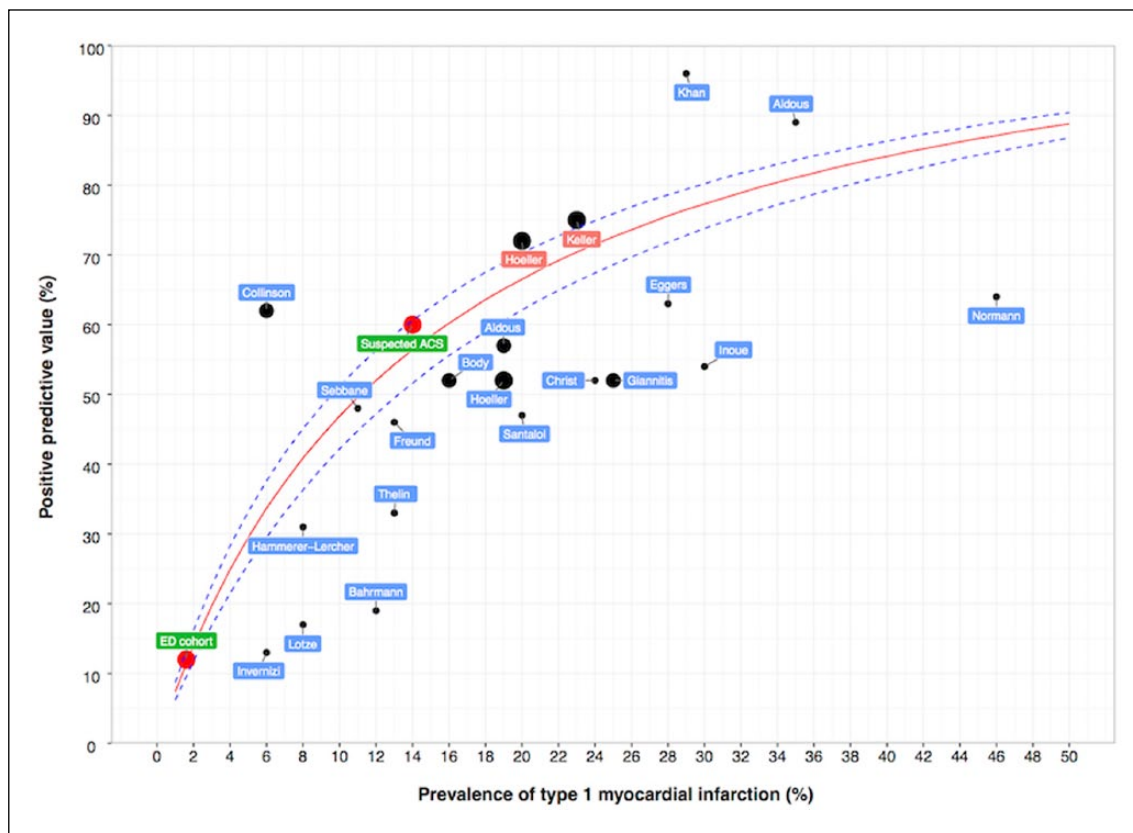
For patients with acute MI, headquarters of MI was mostly inferior (52.5%) with a basal extension in 18 cases, in 12 cases lateral and to the right ventricle in 9 cases. The presence of ischemic MR was associated to several arrhythmia and hemodynamic complications (cardiac failure (48.7%), atrial fibrillation (23.1%) and ventricular rhythm disorder (18%)).

The main mechanism of the MR was a restriction of the small valve (28.3%) followed by bivalvular restriction with tenting of the mitral valve (21.7%) and dilatation of the mitral annulus (11.3%). The IMR was moderate in 86.8% of cases and major (SOR > 20mm²) in 21% of cases . A LV dysfunction (LVEF ≤ 45%) was noted in 69 patients (65.7%) with high filling pressures in 43.8%. Only 73 patients underwent coronary angiography who had objectified a single vessel disease (17 cases), double vessels (24 cases) and three vessel disease (32 cases). The LDA was the main culprit artery (34.2%), the right coronary artery in 22.4% and the circumflex or marginal branches in 24.6%. During a mean follow-up of 17 months, the rate of MACCE was important (30.1%), mortality was 5.7% reinfarction (8.4%), TVR (8.4%), TLR (1 , 8%) and stroke (4.7%). Unfortunately only 5 patients underwent mitral valvuloplasty with an acceptable result. Some predictors of mortality were identified such as recurrent

MI (6 vs.3, $p = 0.008$, OR = 15.5 [2.56-93.8]) and TVR (7 vs.2, $p = 0.026$, OR = 6.57 [1.02-42.35])

Conclusion: Ischemic mitral regurgitation is a frequent and serious complication in patients with coronary disease, however this is generally not well managed because

of clear consensus lack and the frequent association to severe LV dysfunction limiting the possibility of surgery. The advent of new percutaneous mitral valve repair techniques would be a great contribution to the treatment of ischemic MR.



Figure

ACCA Research Prize - Saturday, 15 October 2016 - 14:00 - 15:30

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High-sensitivity cardiac troponin testing and the diagnosis of myocardial infarction

Study funded by the British Heart Foundation

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Background: Whilst cardiac troponin is integral to the diagnosis of myocardial infarction, cardiac troponin concentrations are often elevated in patients without acute coronary syndrome. As such, high-sensitivity assays may increase diagnostic uncertainty particularly if used without prior clinical assessment. We evaluate how troponin testing in unselected patients would impact on the diagnosis of myocardial infarction in the Emergency Department.

Methods: High-sensitivity cardiac troponin I was measured in two independent consecutive patient cohorts presenting to the Emergency Department: 1,054 unselected patients, and 5,815 patients with suspected acute coronary syndrome. The diagnosis of type 1 or type 2 myocardial infarction, or myocardial injury was adjudicated and the positive predictive value (PPV) of cardiac troponin for type 1 myocardial infarction determined in both cohorts.

Results: Cardiac troponin was elevated in 13.7% (144/1,054) of unselected patients with 17, 13 and 114 patients classified as type 1 myocardial infarction, type 2 myocardial infarction and myocardial injury respectively. The overall prevalence of type 1 myocardial infarction was 1.6% (17/1,054) with a PPV of 13.6% (95% confidence interval [CI] 8.0-19.7%). When testing was restricted to patients with suspected acute coronary syndrome, the prevalence and positive predictive value increased to 14.5% (843/5,815) and 59.7% (95% CI 57.1-62.2%) respectively (P<0.001 for both) (Figure). The PPV was highest in patients with suspected acute coronary syndrome presenting with chest pain (67.5% [95%CI 64.7-70.3]) compared to those without (34.1% [95%CI 29.0-39.2]).

Conclusions: In unselected patients presenting to the Emergency Department, elevated cardiac troponin concentrations are common. If high-sensitivity cardiac troponin testing is performed indiscriminately, interpretation will be challenging and may adversely impact the diagnosis of type 1 myocardial infarction.

Figure legend: Influence of prevalence on the positive predictive value (red line) and 95% CI (dashed blue line) of an elevated cardiac troponin concentration for the diagnosis of type 1 myocardial infarction. Red dots represent our cohorts of unselected patients in the Emergency Department

(n=1,054) and selected patients with suspected acute coronary syndrome (n=5,815). Black dots represent the reported positive predictive values for cardiac troponin by prevalence of type 1 myocardial infarction in previously published cohorts using high-sensitivity cardiac troponin T (blue) and high-sensitivity cardiac troponin I (red) assays.

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Shock waves regenerate ischemic myocardium via exosome release

Medizinischer Forschungsfonds Tirol (MFF) [project no. 220]

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Background: Regeneration of ischemic myocardium for patients with ischemic heart disease represents a major challenge in the field of cardiovascular research. Shock wave therapy (SWT) is developing a promising approach for the regeneration of soft tissue by induction of angiogenesis. However, the mechanism of action remains unknown. Exosomes are released by mechanical shear stress and have been shown to induce angiogenic effects.

Purpose: We hypothesized that SWT causes regeneration of ischemic myocardium by release of angiogenic exosomes.

Methods: Human umbilical vein endothelial cells (HUVECs) were treated with SWT. Exosomes were isolated subsequently from the supernatant and characterized by transmission electron microscopy and nanoparticle tracking analysis. In vitro assays were performed to analyze the angiogenic potential of released exosomes. Exosome content was evaluated via a miRNA sequencing array. To analyze in vivo effects, isolated exosomes were injected into subcutaneously implanted matrigel plugs in mice and in ischemic myocardium after left anterior descending (LAD) ligation. Perfusion of the plugs was measured via Laser Doppler perfusion imaging (LDPI), whereas myocardial function was evaluated via transthoracic echocardiography. Arterioles and capillaries were quantified histologically. In vivo imaging was performed to analyze functionality of the vessels.

Results: Supernatants of SW treated cells showed significantly higher concentrations of exosomes. Treatment of HUVECs with exosomes induced phosphorylation of AKT and ERK, caused increased tube formation (CTR 19.5 ± 7.79 vs. SWT 178.5 ± 31.14, p=0,004) and endothelial cell proliferation (CTR 0.59 ± 0,02 vs. SWT 0,77 ± 0,04, p=0,011). Pre-treatment with

exosome-release inhibitor GW4869 abolished the angiogenic effects of SWT. Sequencing array showed angiogenic miRNA cargo in exosomes released after SWT with increase of miR 301b-3p, miR 19a-3p, miR 19b-3p and miR 20a-5p. Injection of isolated exosomes into subcutaneously implanted matrigel plugs resulted in higher perfusion and increased number of capillaries (CTR $0,53 \pm 0,19$ vs. SWT $1,7 \pm 0,26$, $p=0,0006$) and arterioles (CTR $0,8 \pm 0,23$ vs. SWT $4,5 \pm 0,54$, $p<0,0001$). Treated hearts showed significantly improved left ventricular function and decreased fibrosis with increased numbers of capillaries and arterioles.

Conclusion: SWT of ischemic myocardium results in significantly improved cardiac function and myocardial regeneration. We show for the first time how the mechanical stimulus of SWT is translated into a biological response via the release of angiogenic exosomes. SWT could develop an innovative approach for the regeneration of ischemic myocardium.

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Pharmacologic depletion of platelet serotonin improves the outcome after myocardial reperfusion injury

Deutsche Forschungsgemeinschaft (DFG)

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Background: The inflammatory response during reperfusion after myocardial infarction leads to neutrophil migration into

cardiac tissue which contribute to lethal ischemia/reperfusion (I/R) injury. Serotonin (5-HT) is a mediator of neutrophil recruitment and inflammatory response is decreased in mice with genetic (Tryptophan hydroxylase 1 deficient; Tph1^{-/-}) or pharmacologic depletion of platelet serotonin.

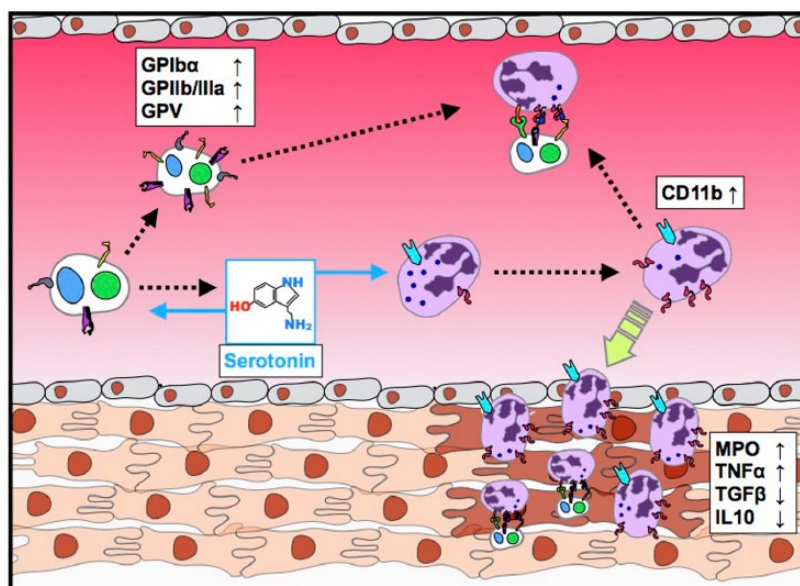
Methods: Myocardial infarction was induced for 30 minutes in C57Bl/6 (WT), WT mice chronically treated with the selective serotonin reuptake inhibitor (SSRI) fluoxetine, and Tph1^{-/-} mice followed by 24 hours of reperfusion. Integrin and selectin expression on circulating neutrophils and platelets was analyzed using flow cytometry. Infarct size was determined using monolite blue/TTC double staining and heart function was evaluated by echocardiography.

Results: Echocardiography showed better heart function in SSRI treated and Tph1^{-/-} mice compared to WT after surgery and a significant reduction in infarct size. We found a decreased expression of CD11b on neutrophils in SSRI treated and Tph1^{-/-} mice as well as a weaker activation state of platelets in terms of activated GPIIb/IIIa and GPIb α /GPV compared to WT mice.

In addition, neutrophil infiltration into the area at risk (AAR) was extenuated when platelet dense granules did not contain 5-HT.

We also found a correlation of plasma 5-HT and neutrophil CD11b in ACS patients.

Conclusion: Genetic or pharmacologic depletion of platelet serotonin greatly improves the outcome after I/R injury and leads to decreased infarct size and better heart function. It regulates neutrophil adhesion and migration and the activation state of platelets which influences neutrophil recruitment and infiltration. This opens new possible strategies to control the inflammatory aspect of reperfusion injury.



5-HT I/R injury Summary

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Impact of right-ventricular performance in patients undergoing extracorporeal membrane oxygenation following cardiac surgery

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Background: ECMO following cardiac surgery safeguards end-organ oxygenation in critically ill patients, but unfavorably alters cardiac hemodynamics. Along with the detrimental effects of cardiac surgery to the right heart, this might impact outcome — particularly in patients with preexisting right ventricular dysfunction.

Objectives: To determine the prognostic impact of right ventricular (RV) function and to improve established risk prediction models.

Methods: 111 patients with comprehensive echocardiograms at our institution prior cardiac surgery and ECMO implantation were included. In addition to standard measurements of morphology and function longitudinal systolic function was quantified by speckle-tracking strain imaging.

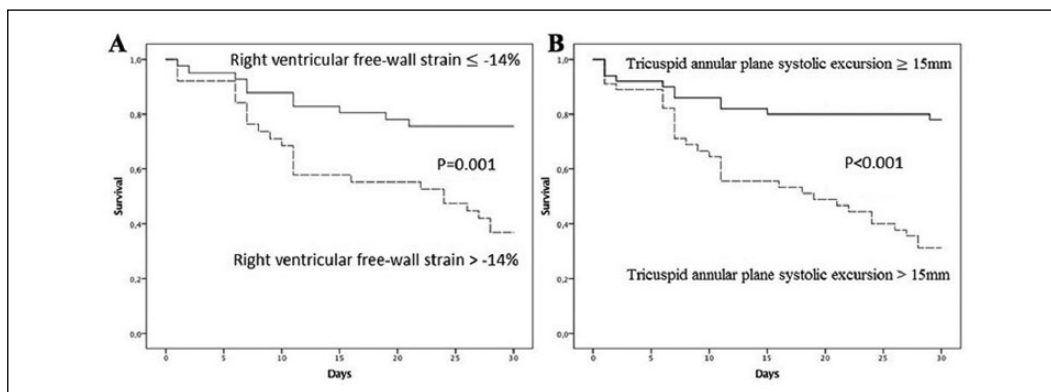
Results: During a median follow-up of 27 months (IQR 16-63 months), 75 patients (68%) died. Metrics of RV function were the strongest predictors of outcome, even stronger than left ventricular function (Table 1 and Figure 1). Specifically RV free-wall strain was the most powerful predictor: HR of 0.44 (95%CI 0.30- 0.66; P<0.001) for 30-day mortality with an AUC of 0.76 and a HR of 0.50 (95%CI 0.36- 0.69; P<0.001) for long-term mortality with an AUC of 0.74. The effect was even stronger after adjustment for clinical variables, SAPS-3 score, tricuspid regurgitation, and type of surgery with adj. HRs of 0.37 (95%CI 0.23-0.61; P<0.001) for 30-day mortality, and 0.47 (95%CI 0.33-0.69; P<0.001) for long-term mortality. Combined assessment of SAPS-3 score and RV free-wall strain improved risk classification by a net reclassification index of 74% for 30-day mortality (P=0.002) and 56% for long-term mortality (P=0.02) compared with the SAPS-3 score alone.

Conclusions: RV function is strongly linked to mortality, even after adjustment for baseline variables, clinical risk scores, and careful consideration of confounders. RV performance improves established risk prediction models for both: short-, and long-term mortality.

Table 1. Table 1: Multivariable Cox Model

| | SD | 30-day mortality | | Long-term mortality | |
|----------------------------------|----|-------------------|---------|---------------------|---------|
| | | Adj. HR (95% CI) | P-value | Adj. HR (95% CI) | P-value |
| Left ventricular EF, % | 13 | 1.54 (1.01- 2.34) | 0.04 | 1.40 (0.99- 1.97) | 0.06 |
| LV global longitudinal strain, % | -5 | 1.47 (0.95- 2.28) | 0.09 | 1.33 (0.94- 1.89) | 0.11 |
| RV function (semi-quantitative) | – | 1.58 (1.20- 2.10) | 0.001 | 1.62 (1.27- 2.07) | <0.001 |
| TAPSE, mm | 5 | 0.53 (0.35- 0.81) | 0.003 | 0.49 (0.34- 0.72) | <0.001 |
| RV free-wall long. strain, % | -6 | 0.37 (0.23- 0.61) | <0.001 | 0.47 (0.33- 0.69) | <0.001 |

Hazard ratios (HR) are adjusted for all variables in the clinical confounder model i.e. age, sex, SAPS-3 score, tricuspid regurgitation and type of surgery. LV=left ventricular, RV=right-ventricular, TAPSE=tricuspid annular plane systolic excursion.



Kaplan-Meier Estimates

Moderated Posters Session 2: ACS and PCI - Saturday, 15 October 2016 - 15:30 - 16:30

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Rule out myocardial infarction by admission limit of detection measurement using contemporary and high sensitivity troponin assays

UK Health Technology Assessment Program

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Objective: To compare admission measurement of troponin for the rule out myocardial infarction (MI) when more sensitive troponin assays are used for the diagnosis using the universal definition of myocardial infarction.

Methods: The study was a sub study of the point of care arm of the RATPAC trial (Randomised Assessment of Treatment using Panel Assay of Cardiac markers), set in the emergency departments of six hospitals. Prospective admissions with chest pain and a non-diagnostic electrocardiogram were randomised to point of care assessment or conventional management. Blood samples were taken on admission and 90 minutes from admission for measurement of a panel of cardiac markers. An additional blood sample was taken at admission and 90 minutes from admission, separated and the serum stored frozen until subsequent analysis. All patients were followed up to 30 days for major adverse cardiac events (MACE). Samples were analysed for cardiac troponin I (cTnI) by the Stratus CS (CS), range 30 to 50,000 ng/L 10% CV 60ng/L 99th percentile 70 ng/L; the Beckman AccuTnI enhanced (B) (Access 2, Beckman-Coulter) range 1 to 100,000 ng/L, 10% CV 30 ng/L, 99th percentile 40 ng/L, the Siemens Ultra (S) (ADVIA Centaur, Siemens Healthcare Diagnostics), range 6 to 50,000 ng/L, 10% CV 30 ng/L 99th percentile 50 ng/L. and cardiac troponin T (cTnT) by the Roche high sensitivity cardiac troponin T assay hs-cTnT, range 3 to 10,000ng/L, 10% CV 13ng/L, 99th percentile 14 ng/L. The universal definition of myocardial infarction (MI) utilising laboratory measurements of cardiac troponin performed at the participating sites together with measurements performed in a core laboratory was used for diagnosis. The use of limit of detection of the assay was used to classify patients using the admission sample only. Values below the limit of detection were classified as no MI.

Results: Samples were available from 813 /1132 patients enrolled in the study, 487 male age 23.7-92.8 years median 53.8 years. Limit of detection measured on admission allowed accurate exclusion of MI in 98.5-99.2% of patients with a final diagnosis that excluded MI corresponding to 70.6-80.8% of all patients presenting. In those who ruled out based on a single admission

measurement major adverse events occurred in 0.2-0.6% and comprised readmission with suspected acute coronary syndrome and 1 myocardial infarction on follow up.

Conclusion: In low risk chest pain patients, troponin below the limit of detection measured with a sensitive or contemporary sensitive assay identified a very low risk group who can be considered for immediate further investigation or discharge.

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Early rule-out of acute myocardial infarction by copeptin and troponin in low-risk patients with suspected ACS in the emergency department: first data from clinical routine

Thermofisher

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Background: The safety and efficiency of a rule-out protocol for acute myocardial infarction (AMI) by a combined marker strategy using copeptin and troponin at admission has been proven in the BIC-8 trial in a randomized, controlled setting.

Purpose: The BIC-19 proCore registry aims to investigate the safety and efficiency of the early rule-out algorithm under clinical routine conditions.

Methods: Patients for the BIC-19 proCore registry will be recruited in several centers all over Europe and recruitment is still running. This analysis is based on patients who were already recruited at one campus of the Charité University Medicine Berlin (n=300). In low-risk patients with signs and symptoms suggestive for an acute coronary syndrome (ACS), the early rule-out algorithm was applied as part of the clinical routine assessment and copeptin and troponin were measured simultaneously at admission. According to the algorithm, patients tested negative for both markers could be discharged into ambulant care while patients tested positive for one or both markers should receive further clinical assessment.

Results: Of all patients treated with the new algorithm, 48.7% (n=146) were male, the median age was 45 years (min/max: 18/93). Chest pain was the cardinal symptom in the majority of patients (71.9%; n=216). Symptom onset time was < 3 hours in 16% (n=48), 3-6 hours in 11.3% (n=34), 6-12 hours in 9.3% (n=28) and >12 hours in 42% (n=126). Overall, 79.7% (n=239) were copeptin negative at admission and 79% (n=237) were negative for both markers

and thus ruled out by the new algorithm. Of these, 89.9% (n=213) were discharged from the ED or chest pain unit (CPU). 24.4% (n=52) of them had a cardiac ED diagnosis, but 0% (n=0) of them an ACS. In comparison 28.7% (n=25) of the patients who were not ruled out, had a cardiac ED diagnosis and 16.1% (n=14) an ACS. The 1-year-mortality among patients who were ruled out was 0% (n=0; nmiss=2), while patients who did not receive the rule-out had a 1-year-mortality of 0.7% (n=2; nmiss=5).

Conclusion: The early rule-out algorithm led to patient discharge from ED or CPU in more than two thirds of all patients. Those patients received a cardiac ED diagnosis in fewer cases than patients who were not ruled out. No patient in the rule-out group was diagnosed with an ACS. The 1-year follow-up for mortality showed no deaths among patients who were ruled out and discharged and hence proves the safety of the instant rule-out concept by troponin/copeptin in these patients.

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Improving the characterisation of patients with type 2 myocardial infarction and myocardial injury

British Heart Foundation

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Introduction: Type 2 myocardial infarction occurs due to myocardial oxygen supply and demand mismatch in the context of an alternative acute illness, and is distinguished from myocardial injury by the presence of symptoms or signs of ischaemia. Both conditions are common, associated with a poor prognosis, and may be challenging to distinguish from type 1 myocardial infarction in practice.

Methods: We identified consecutive hospitalised patients with elevated cardiac troponin I concentrations, irrespective of presenting complaint (n=2,122). A diagnosis of type 1 myocardial infarction, type 2 myocardial infarction or myocardial injury was adjudicated by two cardiologists independently. Logistic regression models were constructed including clinical co-variables determined a priori to identify features associated with type 2 myocardial infarction or injury versus type 1 myocardial infarction.

Results: The adjudicated diagnosis was type 1 myocardial infarction in 55.2% (1,171/2,122), type 2 myocardial infarction in 20.2% (429/2,122) and myocardial injury in 24.6% (522/2,122). Patients with type 2 myocardial infarction or injury were older (Figure 1), more likely to have hypertension, previous stroke, anaemia or renal impairment, and less likely to have ischaemic heart disease, hyperlipidaemia, prior coronary revascularisation or to smoke cigarettes (Table 1).

Table 1.

| | Type 2 Myocardial Infarction or Myocardial Injury |
|--|---|
| Age (years) (per 10 unit increase) | 1.16 (1.06 - 1.27)*** |
| Sex (Male) | 1.05 (0.85 - 1.29) |
| Haemoglobin (g/L) (per 10 unit decrease) | 1.21 (1.15 - 1.27)*** |
| Corrected eGFR (ml/min) (per 10 unit decrease) | 1.09 (1.05 - 1.14)*** |
| Ischaemic Heart Disease | 0.71 (0.55 - 0.91)** |
| Previous PCI / CABG | 0.54 (0.38 - 0.75)*** |
| Hypertension | 1.43 (1.15 - 1.78)** |
| Stroke | 1.50 (1.09 - 2.08)* |
| Peripheral Vascular Disease | 0.91 (0.61 - 1.36) |
| Diabetes Mellitus | 1.09 (0.83 - 1.42) |
| Hyperlipidaemia | 0.68 (0.54 - 0.85)*** |
| Current Smoker | 0.50 (0.38 - 0.64)*** |

Odds ratios with 95% confidence intervals. ***p < 0.001, **p < 0.01, *p < 0.05

Conclusions: Whilst differentiation between patients with myocardial injury or infarction is challenging in clinical practice, the absence of established coronary artery disease or associated risk factors may help identify patients without type 1 myocardial infarction.

70

Autoimmune diseases in acute coronary syndrome: implications for management and prognosis

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Background: Patients with autoimmune diseases (AID) have a high burden of cardiovascular disease. However it is unclear if it is due to a higher prevalence of cardiovascular disease, to a worse case fatality or to a different management after an index event.

Purpose: The aim of the study is to assess the prognostic implications of the presence of AID both during the hospitalization and after discharge after an acute coronary syndrome (ACS) and to assess the prevalence of AID in patients with ACS, their clinical profile and the management of this index event.

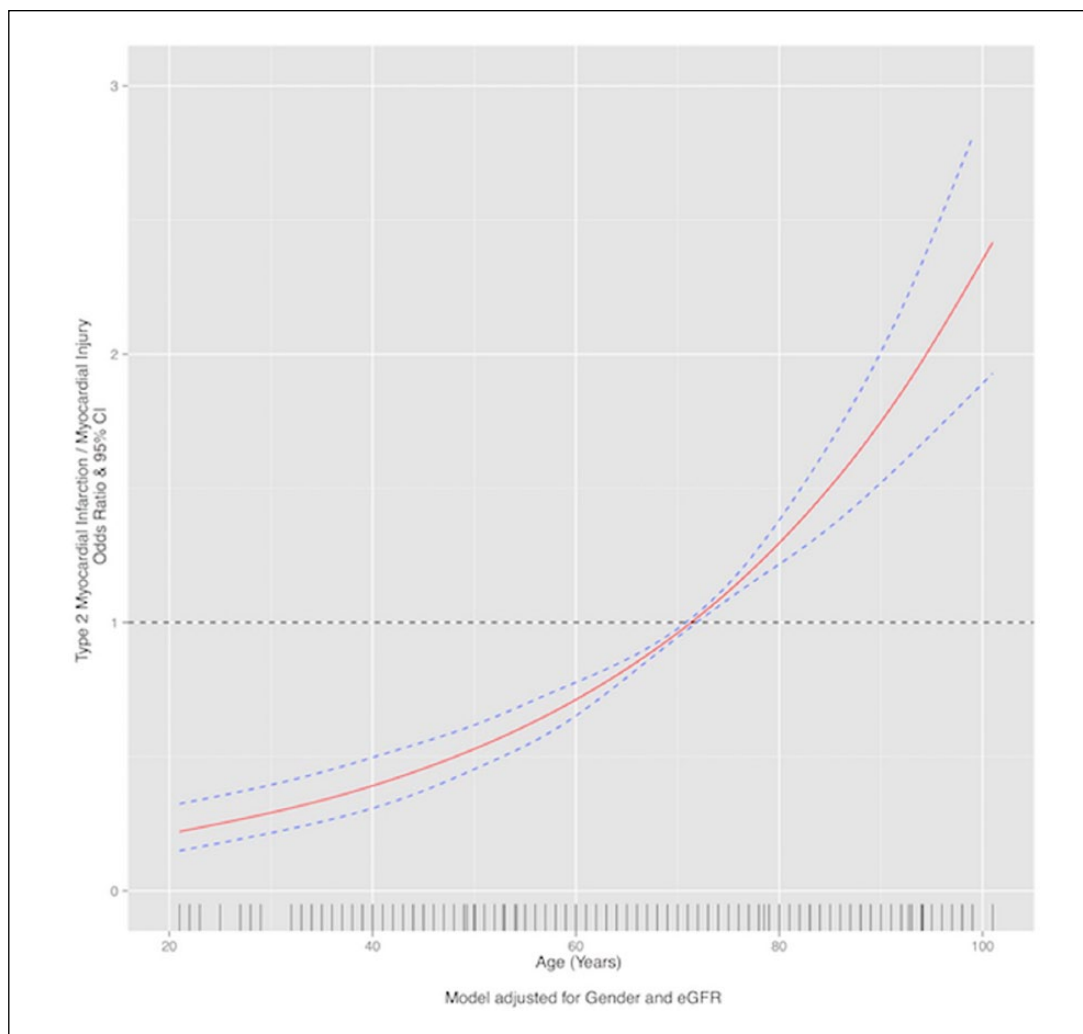


Figure 1

Methods: The study included consecutive patients admitted after ACS from January 2011 to December 2015, to our University Hospital. For AID patients, in-hospital management and ACS presentation was compared to non-AID patients. We also compared in-hospital and major adverse events during follow-up (death, recurrent non-fatal myocardial infarction, stroke and major bleeding, between groups). A multivariate Cox regression model was performed to assess the independent role of of AID in the occurrence of the events of interest.

Results: Of 2236 patients included with ACS, 74 had AID (3.3%). The rheumatoid arthritis was the most common AID (24 patients, 33%). Mean age of AID patients was 67 ± 13 years and median evolution of the disease was 10 [4-14] years. 70% of AID patients were taking corticosteroids. No significant differences were found in baseline characteristics between groups except for a higher percentage of atrial fibrillation and

chronic obstructive pulmonary disease in AID patients. Compared to non-AID patients, AID patients had similar clinical ACS presentation and no differences were found with respect to revascularization strategies or medical treatment at discharge. The rate of adverse events during hospitalization were similar (10% vs 10%, $p=0.920$) with no statistically significant differences in any single event studied. After a follow-up of 397 [375-559] days, AID patients had higher rate of combined adverse events (44% vs 28% $p<0.001$). After multivariate adjustment the presence of AID was associated with increased total mortality (hazard ratio 2.1, 95% CI 1.2 to 3.7, $p=0.008$) and it was also a borderline risk factor for higher bleeding complications (hazard ratio 2.2, 95% CI 0.9 to 5.5).

Conclusions: The presence of AID did not change ACS presentation and clinical management. Although AID is not associated with worse outcomes during hospitalization it is independently linked to higher

total mortality and a trend to an increased risk of major bleeding during follow-up.

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SuPAR levels in cardiovascular patients are predictive of readmissions and mortality in the acute care setting

The implementation of suPAR in routine use was supported by a grant from Markedsmodningsfonden

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Background: The plasma level of soluble urokinase receptor (suPAR) is associated with disease presence, severity, and outcome. In recent years, suPAR has been shown to be an independent marker of new cardiovascular events, development of kidney disease, and overall mortality in cardiovascular patients.

Purpose: To determine the predictive value of suPAR levels with regard to 30-day readmission and 30-day mortality in cardiovascular disease (CVD) patients in the acute care setting.

Methods: Our study included patients seeking acute care between 18th of November 2013 and until 30th of September 2015. Previous or current CVD was identified using ICD-10 coding. Follow-up for outcome variables was carried out for 30 days after index admission using national registries. Multivariate cox regression analysis included age (per year older), male sex, CRP (log2 transformed), and suPAR (log2 transformed).

Results: A total of 17,312 patients in the Emergency Department (ED) had suPAR measured. Of these, 3129 (1425 women and 1704 men) had a CVD diagnosis. Median suPAR in CVD patients was higher than in non-CVD patients (3.8 ng/ml vs. 2.6 ng/ml, respectively, $p < 0.001$). With regard to readmission, 598 CVD patients (19%) were readmitted during the 30-day follow-up. In multivariate analysis including age, sex, CRP, and suPAR, only suPAR significantly predicted readmission with a Hazard Ratio (HR) of 1.36 (95%CI: 1.21-1.52) for every doubling in suPAR. Among the CVD patients, 234 died within the 30-day follow-up period. In multivariate survival analysis including age, sex, CRP, and suPAR, the HR for age was 1.04 (95%CI: 1.03-1.06), male sex 1.10 (0.84-1.43), CRP 1.31 (1.23-1.40), and for suPAR 2.13 (1.79-2.54).

Conclusions: In the ED setting, patients with previous or current cardiovascular disease have elevated suPAR levels. The higher the suPAR level, the higher the risk for 30-day readmission and mortality.

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Results of left main percutaneous coronary intervention with zotarolimus eluting stent at a very long-term follow-up

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Introduction: Drug eluting stents (DES) have improve the results of percutaneous coronary intervention (PCI) in terms of safety and effectiveness in left main coronary artery (LMCA) disease. Treatment indications are changing progressively although its results with second generation DES in this subgroup of high-risk coronary lesions are unclear.

Purpose: The main objective of this study was to evaluate the efficacy and safety of zotarolimus eluting stent (ZES) in LMCA disease at 10 years follow-up.

Methods: We prospectively included 242 consecutive patients (69 ± 12 years, 73.4% male) with LMCA disease treated with PCI and ZES between June 2006 and April 2015. We evaluated the occurrence of major adverse cardiovascular events (MACE) defined as cardiac death, nonfatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis, after 10 years clinical follow-up (median 40.8 months).

Results: 52.9% of patients had stable coronary disease and 47% acute coronary syndrome (34.4% Non-STEMI and 12.6% STEMI). 40.5% were diabetic patients and 39.6% presented moderate-severe left ventricular systolic dysfunction with 13.6% in Killip class 3-4 at presentation. 6.3% were protected LMCA and 92.1% bifurcated lesions. An intra-aortic balloon pump was needed in 6.2% of the cases. Medium logistic EuroSCORE was 5.74% and Syntax score was ≥ 23 in 68.8% of patients. The most frequently bifurcation technique employed in LMCA was 'provisional stenting' in 68.2% of cases with an angiographic success of 99.2%. Complication rate in the procedure was 4.1% with one intraoperative death. During follow-up, MACE rate at 10 years was 14.3% (9.2% cardiac death, 0.5% nonfatal myocardial infarction, 4.1% TLR and thrombosis rate 0.5%). We observed significant differences in the occurrence of MACE in patients with moderate-severe left ventricular systolic dysfunction ($p < 0.001$), ≥ 2 coronary vessels disease associated ($p = 0.05$) and patients in which we didn't perform final kissing balloon ($p = 0.004$). 17.8% of patients had an angiographic follow-up.

Conclusions: PCI treatment with ZES in LMCA disease is safe and effective with a low rate of immediate complications and a low rate of mayor cardiac events at very long-term follow-up.

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Early angiography and coronary intervention in comatose survivors of out of hospital cardiac: Can the 12-lead ECG be the gate-keeper?

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Background: Emergency coronary angiography in comatose survivors of out of hospital cardiac arrest (OHCA), in the absence of STEMI criteria on a post-resuscitation ECG, is controversial. Our institution has adopted early involvement of a specialist team, consisting of an interventional cardiologist, emergency care physician and intensive-care anaesthetist, to initiate early assessment of patients. All survivors of OHCA, without an obvious non-cardiac aetiology, are transferred to the cardiac catheterisation laboratory for emergent angiography and intervention, if indicated, irrespective of presenting ECG, before admission to intensive care.

Methods: We retrospectively analysed the clinical data, ECG characteristics and coronary angiograms of all survivors of OHCA admitted to our institution between October 2012 and October 2015 to identify factors associated with improved survival and assess the association between post resuscitation ECG and the presence of acute coronary culprit lesion.

Results: We obtained data for 217 patients (80 % male, average age 62 years). The prevalence of significant coronary artery disease (>70% stenosis in at least one coronary artery) was 77% in our cohort. Immediate PCI was undertaken in 123 (57%) cases. 42% of patient who underwent urgent PCI did not have ST elevation on post resuscitation ECG.

Our overall survival to discharge rate was 58% and the 6-month survival rate was 54%. The majority of patients (93%) had good neurological outcome (cerebral performance category 1 or 2) with 81% of survivors discharged home.

In a univariate analysis basic life support (BLS), witnessed arrest, initial rhythm of VF/VT, downtime of < 30 min were associated with improved 6-month survival. There was a strong trend of improved survival in patients who underwent PCI (P 0.075). Multi-variable analysis identified BLS, initial rhythm VF/VT and downtime of < 30 min to be associated with improved survival.

Further analysis was performed to assess factors associated with acute coronary culprit lesion. Multi-variable analysis identified ST elevation and ischaemia on ECG (ST depression, ST elevation, LBBB, and T wave inversion) to be independently associated with the presence of a culprit lesion.

Conclusion: Our data confirm that ST elevation is strongly associated with the presence of a culprit lesion in OHCA patents. However, a significant proportion of patients who benefit from

PCI do not have a ST elevation on their initial ECG. Moreover PCI seems to be associated with an improved survival rate.

Therefore, our results support an early invasive strategy with immediate coronary angiography and PCI if appropriate in comatose survivors of cardiac arrest without an obvious non-cardiac aetiology regardless of the presence of ST elevation on post arrest ECG.

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Safety of bioresorbable Vascular Scaffold in patients with acute myocardial infarction - results for medium term angiographic follow up

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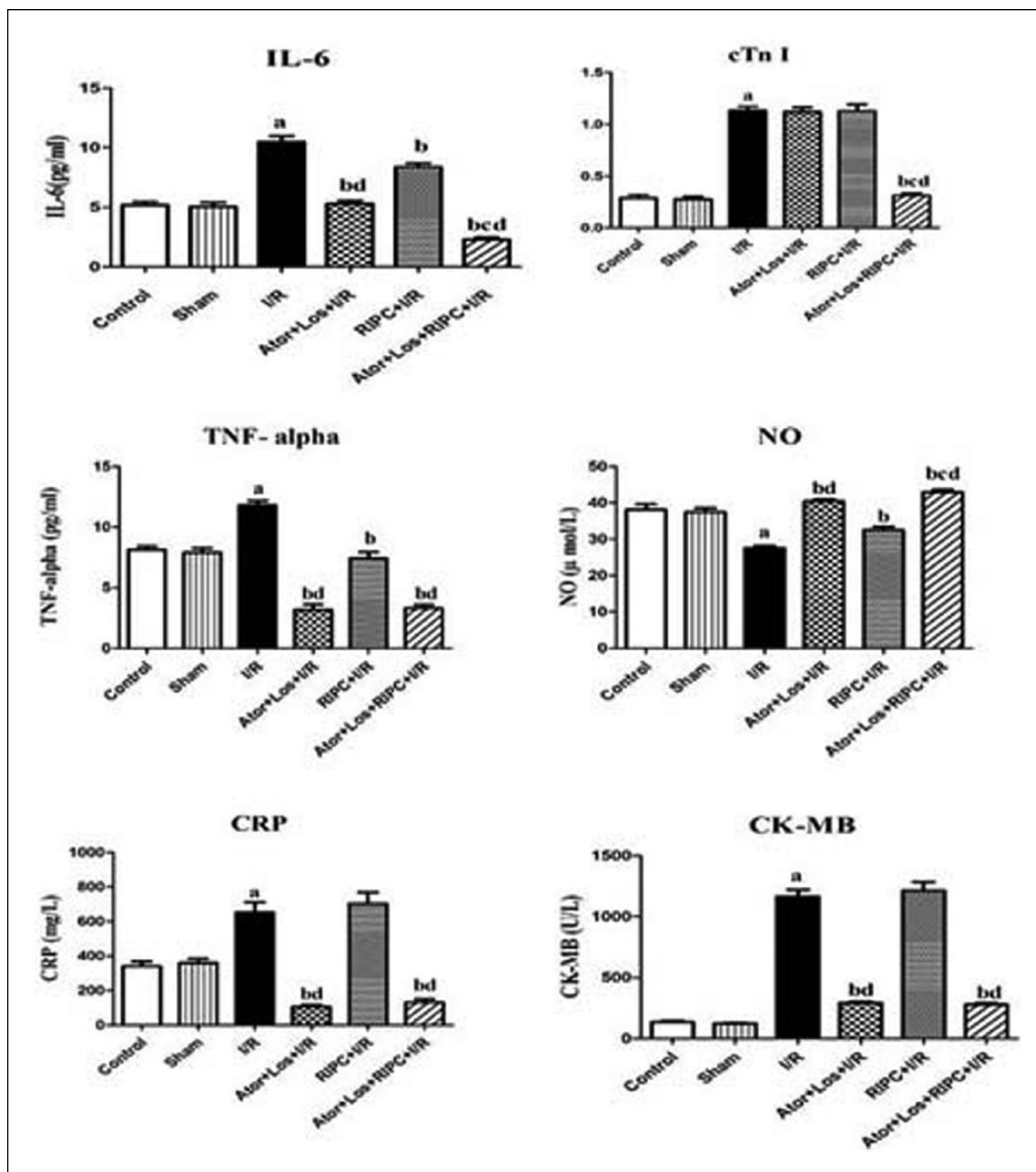
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Background and purpose: Late in-stent restenosis as well as late and very late stent thrombosis still represent unresolved problems of drug eluting stents (DES). The Absorb bioresorbable vascular scaffold (BVS) is a completely resorbable device designed to provide short-term vascular scaffolding while leaving no permanent implant behind. The aim of this study was therefore to assess the safety and efficacy of BVS in daily use in a real-world Infarct-patients population.

Methods: Between March 2013 and September 2014, 224 patients (233 lesions) were treated with BVS at a tertiary care center. Patients underwent follow-up coronary angiography 3-6 months after implantation. Patients were divided into two groups according to the clinical presentation with (n=76) versus without (n=148) Acute Myocardial Infarction (AMI). The primary study endpoint was the occurrence of Major Adverse Cardiac Events (MACE) within 3-6 months after implantation.

Results: Procedural success was obtained in all patients at the time of intervention. In the AMI group, there were 3 in-hospital deaths not related to the BVS implantation. In the non-AMI group, there were 2 deaths during the follow up period due to BVS thrombosis (3.9% in AMI group vs. 1.4% in non-AMI group, p=0.217, OR 3.000, 95% CI 0.490 – 18.352). BVS thrombosis was insignificant between the 2 groups (1.3% in AMI group vs. 4.1% in non-AMI group, p=0.248, OR 0.316, 95% CI 0.037 – 2.670). There was only one case of BVS restenosis in the non-AMI group. The cumulative incidence of MACE showed no significant difference between the two groups treated with BVS (5.3% in AMI group vs. 4.7% in non-AMI group, p=0.547, OR 1.119, 95% CI 0.317 – 3.948).

Conclusions: In the setting of AMI, mid-term follow-up after implantation of BVS suggests a satisfactory safety profile and low restenosis rate.



effect of preconditioning on biomarkers

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Synergistic cardioprotective effect of losartan, atorvastatin with remote ischemic preconditioning on the biochemical changes induced by ischemic/reperfusion injury in a clinical and experiment study

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Background: atorvastatin and losartan at therapeutic doses have beneficial cardiovascular protective effects. The aim of the study was to investigate possible cardio-protective effect of these drugs alone or in combination with remote ischemic Preconditioning (RIPC) on the biochemical changes induced by ischemic/reperfusion (I/R) injury in a combined prospective study with a clinical and experimental animal arm. **Methods:** forty consecutive patients undergoing elective percutaneous coronary intervention (PCI) were recruited. Patients were divided into 4 groups (10 each): Group 1: control group which includes patients without any preconditioning.

Group 2: patients who were maintained on atorvastatin at a dose 80 mg /day and Losartan at a dose of 50-100 mg/day for at least one month before PCI. Group 3: as control group but RIPC was done before PCI. Group 4: as group 2 but RIPC was done before PCI. 60 adult male New Zealand white rabbits weighing 1500 – 2500 grams have been used in the experimental arm of the study. The rabbits were divided into 6 groups (n=10): group I (control), group II (sham), group III (I/R as 30 min ischemia followed by 120 min reperfusion), group IV (combination of atorvastatin 10 mg/kg and losartan 20 mg/kg for 40 days orally followed by I/R), group V (as group III but with RIPC before I/R), group VI (as IV but with RIPC before I/R). Biochemical parameters reflecting cardiac damage due to I/R were measured in blood for all clinical

and experimental groups for comparison. Including: tumor necrosis factor- α (TNF- α), interleukin-6 (IL-6), nitric oxide (NO), troponin I (cTnI), creatine kinase MB (CK-MB) and C-reactive protein (CRP).

Results: Clinical and Experimental part: the groups with RIPC combined with pre-drug treatment showed the best synergistic protective effect against I/R injury as evidenced by significant reduction ($P < 0.001$) in the levels of TNF- α , IL-6, CK-MB and CRP while the level of NO was significantly ($P < 0.001$) increased compared with other groups.

Conclusions: Pretreatment with atorvastatin and losartan combined with RIPC can exert a synergistic cardioprotective effects by reducing the possible biochemical changes related to ischemic reperfusion injury

Poster Session 2 - Saturday, 15 October 2016 - 14:00 - 17:30

Clinical Cases Area

P221

Double thrombolysis in a case of recurrent deep venous thrombosis associated with resistance to acenocoumarol due to multiple hereditary mutations

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Case report: A 61 years old male, with hypertension, type 2 diabetes mellitus, a left scapular fibrosarcoma (surgically removed in 1992, recurrence free) and chronic venous insufficiency, was admitted due to a deep venous thrombosis (DVT) came after a long travel by car. Compression venous ultrasonography confirms his left ilio-femoral deep vein thrombosis. The treatment with intravenous unfractionated heparin was initiated but the persistence of DVT and the progression to phlegmasia cerulea dolens prompted us to the administration of thrombolysis with Streptokinase in the fifth day with significant reduction of thrombus dimensions, and clinical status improvement. After another 7 days of heparin administration we had attempted to overlap with the initiation of a vitamin K antagonist (AVK, Acenocoumarol), but after 3 days of dual anticoagulant therapy, when heparin was stopped, the venous thrombotic phenomenons reoccurred, despite a switch to a higher target INR. A second thrombolysis was performed with Alteplase 100 mg, followed by low molecular weight heparin administration (Enoxaparine). We suspected an 'AVK failure' and the patient were discharged with the indications to continue with twice daily low molecular weight heparin administration (Enoxaparine). Another possible approach to a patient with coumarine resistance is fondaparinux because of the convenience of once daily dosing. After 3 months of treatment the patient was evaluated for thrombophilic panel. The patient was homozygous for PAI-1 675 4G/5G gene deletion (associated with high risk of thromboembolic disease), heterozygous for MTHFR C677T gene mutation, tested positive for lupus anticoagulants and had a heterozygous (G/A), with a single copy of allele A of the gene VKORC1-1639 G/A, associated with a low expression of VKORC1 enzyme. VKORC1 (Vitamin K epoxide Reductase subunit 1) has been identified as the gene encoding the target protein for coumarin derivates. Our patient was then switched (after this 3 months assessment) on non-vitamin K antagonist oral anticoagulants with favorable evolution afterwards.

Conclusion: This case reminds the importance of incorporating genotype-guided therapy in improving anticoagulation control.

P222

Double mechanical complication after acute myocardial infarction managed by ECMO as bridge to heart transplantation. A case report

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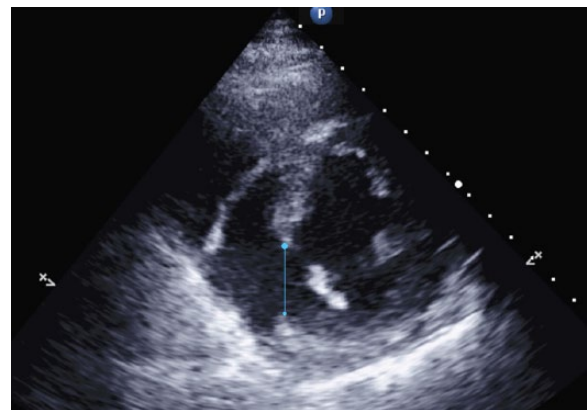
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We present the case of a 62 year old man who complains for prolonged chest pain at the emergency department.

No family history of ischemic heart disease or sudden death has been reported. Among his personal medical background, diabetes mellitus type 2 and arterial hypertension were the only remarkable issues.

It was served in the emergency room of a secondary center, referring retrosternal oppressive chest pain, which remains constant over the last 14 hours. An electrocardiogram was performed, and it showed a Q wave in inferior leads (II, III, aVF) with 2 mm ST segment rise and specular changes in lateral side (I and aVL).

Coronary angiography was performed showing complete occlusion of the proximal right coronary artery and moderate lesion in the anterior descending artery. Due to the presence of sinus tachycardia and systolic murmur it was decided to perform ventriculography which showed a spherical neocavity. The contrast fluid flew from the left ventricle into it, and thence into the right ventricle. Given the high suspicion of mechanical complication an intra-aortic balloon pump was implanted and the patient was transferred to the coronary care unit.



2D echocardiography. VSD

An urgent echocardiogram showed a non-dilated left ventricle with a ventricular septal defect (VSD) at the posterior part of the septum, which has left-right flow and diameters of 30x23mm. At that level, the wall shows severe thinning suggesting the presence of a ventricular pseudoaneurysm or contained rupture. No pericardial effusion or valve disease was observed, and right ventricular function was preserved.

Because of the extent and location of the VSD, the risk for a reconstructive surgery was considered too high to perform it at this moment. Instead, the implantation of an extracorporeal membrane oxygenation (ECMO) device was suggested and performed by surgical veno-arterial cannulation, and the patient was included in heart transplantation waiting list with the maximum priority level.

Three days after, it appeared a compatible donor and orthotopic heart transplantation was performed. The study of the explanted heart confirmed the echocardiographic findings. The patient had an uncomplicated postoperative and was discharge in NYHA class I.

Discussion: There are two remarkable points that make this one a case of interest. First, as far as we know this is the first time that a posterior septal ventricular defect is managed by ECMO implantation as bridge to heart transplantation. We suggest that this is an interesting alternative given the high mortality rate of the emergent reconstructive surgery, especially in big ones. The second issue we want to report is the uncommon presentation of two mechanical complications after acute myocardial infarction in the same patient at the same time. This patient had a ventricular septal defect combined with a contained free wall rupture what was the key point to decide that heart transplantation was the best treatment option.

P223

IABP ameliorates right ventricular-arterial coupling: a report of two cases

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Introduction and scopes: Intra-aortic balloon pump (IABP) support is considered a first line treatment in patients with acute heart failure following emergency heart surgery with cardio pulmonary bypass (CPB) [1]. IABP is demonstrated to improve coronary flow and to reduce left ventricular afterload. Right ventriculo-arterial coupling (rVAC), defined as the ratio of end-systolic elastance (rEmax) to pulmonary arterial elastance (rEA) is considered a valid and sensitive method to assess right heart performance [2]. We aimed to assess the effect of IABP on rVAC.

Methods: Two patients requiring IABP assistance following three vessels emergency coronary revascularization were

monitored via pulmonary artery catheterisation (PAC). rVAC was measured as the ratio rEA to rEmax. Right ventricular end systolic volume (rESV) was calculated as a difference of end diastolic volume (assessed by PAC) and stroke volume (SV). rEA was calculated as the difference between mean pulmonary pressure (mPAP) and pulmonary capillary wedge pressure (PCWP) divided by the SV, and rEmax as dicrotic notch PAP divided by rESV [3]. All measurements were taken before and every 30 minutes after IABP placement for 12 hours.

Results: The two patients showed acute heart failure with cardiogenic shock following CPB: right ventricular uncoupling (rVAC > 2.8 ± 0.9) was present in both patients before IABP placement.

IABP allowed weaning from CPB and transfer to the intensive care unit. After IABP placement rVAC was significantly reduced in both cases (1.1 ± 0.8 p = 0.047) and was found unchanged after 12 hours.

Conclusion: In two patients following IABP placement after emergency heart surgery right heart performance as assessed by rVAC improved. Although IABP is considered a sole treatment for the failing left heart, it might have an effect on the right side as demonstrated by rVAC reduction, a sensitive index of right heart performance. We speculate this might be related to an improvement of ventricular interdependency via left heart unloading due to IABP placement. However this needs to be further evaluated in a large study.

P224

Extracorporeal membrane oxygenation system (ECMO) as a bridge to reparative surgery in ventricular septal rupture complicating acute myocardial inferoposterior infarction

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Introduction: Ventricular septal rupture (VSR) is a rare but lethal complication of acute myocardial infarction. Optimal surgical repair of VSR requires a presurgical healing period, but to stabilize patients until surgery continues to be a challenge.

Clinical case: A 55-year-old man with no previous medical history, attended the emergency-room 12h evolution of chest pain and strong anginal pain 7 days-ago.

TA 96/70, systolic murmur over the precordium without crackles.

EKG, sinus rhythm 110bpm, elevation ST and Q in inferoposteriores leads.

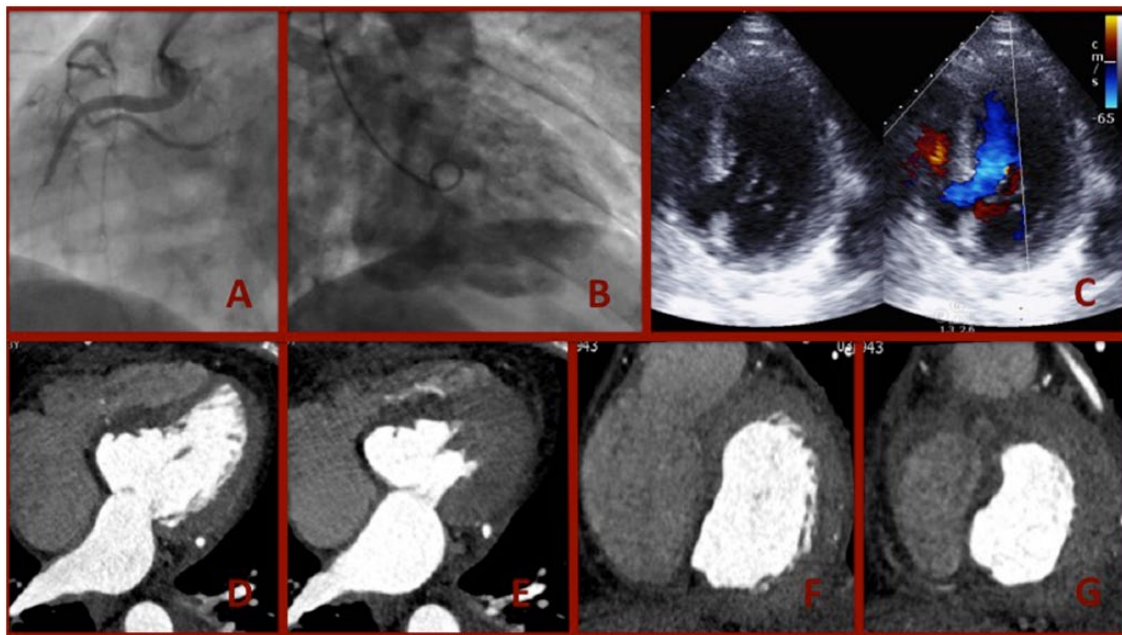


Fig 1. A-C Presurgery. D-G Postsurgery.

Echocardiogram showed inferoposterior akinesia, posterior-basal septal rupture (2x2cm) with left-right shunt. Fig 1 C.

Suspecting VSR in inferoposterior AMI evolved, we performed emergency coronariography with 3-vessel disease and mid right-coronary subacute occlusion. And ventriculography with VSR Fig 1 A-B.

He was rejected for heart transplantation because of his age. Due to clinical stability, delayed surgical treatment is decided, we implant IABC.

4th day of admission suffered hemodynamic instability so venoarterial ECMO is implanted as a bridge to reparative surgery. 9th day double bypass, interventricular defect repair with double pericardium patch and withdrawal of ECMO is performed.

The patient evolved favorably and with good clinical and image outcome in review after 3 months. Fig 1 D-G.

Conclusion: ECMO as a bridge to reparative surgery in postinfarction VSR is an adequate option to maintain patients until surgery.

P225

New neurologic drug with cardiologic side effect

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Introduction: Conduction disturbances are known side effect of various drugs. We will describe an unusual case of conduction disturbance that was induced by the new drug Fingolimod for treatment of Multiple Sclerosis (MS).

Case presentation: A 46 years old women was admitted to neurologic department because progressive MS despite the treatment with interferon beta. A new oral drug Fingolimod was started under heart rhythm monitoring because of rare side effect of heart block. Baseline ECG was normal. Shortly after oral dose the patient developed first degree AV Block, with progression to 2:1 AV Block and to complete AV Block. The patient was stable with sufficient escape rhythm and narrow QRS complexes. The treatment was stopped. The AV Block resolved completely after 96 hours. The patient was discharged in good clinical condition.

Discussion: Fingolimod is a new oral disease-modifying drug for MS treatment. It acts as sphingosine-1-phosphate receptor (S1PR) modulator in various tissues.

This effect on conduction cardiac system is linked to S1PR-dependent activation ventricular, septal, and atrial myocytes and results in hyperpolarization and a temporary reduction in excitability, explaining the transient nature of bradycardia at treatment initiation or re-starting. Shortly after activation fingolimod down-regulates S1PRs and terminates bradycardic response.

Rare cases of unexplained sudden death have been reported that probably linked to conduction disturbances.

Extra precaution is required when starting the treatment and awareness of dangerous complications.

P226

Successful treatment using ECMO for a case of massive pulmonary thromboembolism with hemodynamic collapse

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Introduction: Pulmonary thromboembolism (PTE) is a common clinical condition related to increased mortality. Furthermore, patients with PTE presenting with hemodynamic instability or right heart thrombus show higher mortality due to rapid hemodynamic deterioration. Various treatment methods of massive PTE have been developed and therapeutic approaches discussed.

Case Description: A 59-year-old man was admitted to Vilnius University Hospital Santariskiu Klinikos emergency room complaining of severe dyspnea, pain in the lower part of the chest and subfebrile fever. Further investigation findings in CT angiography showed massive PTE with thrombus in the right heart and deep vein thrombosis (DVT). Standard anticoagulation and thrombolytic therapies were initiated. The patient developed a hemodynamic collapse. Consequently mechanical ventilation and veno-arterial-venous extracorporeal membrane oxygenation (ECMO) at the flow rate of 3.4 L/min were introduced. ECMO was successful for blood oxygenation and stabilization of the cardiopulmonary function. Later the patient developed a bleeding from arterial cannula and upper respiratory tract; heparin was discontinued and blood cells transfusions were initiated. A catheter-directed embolectomy was performed with no effect. Hemodynamics was stabilized and ECMO was changed from veno-arterio-venous to a veno-venous. A CT angiography showed no thrombus in the main pulmonary arteries and heart chambers, ultrasonography of the lower limbs revealed no signs of DVT. Once the bleeding from the upper respiratory tract stopped oral anticoagulants were introduced together with the low molecular weight heparin. The patient was successfully weaned of ECMO after 45 days once the blood oxygen saturation was stabilized. ECMO system was changed three times during the treatment. The patient was weaned of mechanical ventilation after 48 days. The patient stayed for 81 days in a critical care unit.

Conclusions: We suggest that extracorporeal membrane oxygenation may be an effective treatment option for patients who have massive pulmonary thromboembolism with circulatory collapse even when thrombolysis and thrombectomy have failed and conventional anticoagulant therapy is contraindicated due to active bleeding.

P227

An uncommon cause of stroke in the young patient

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Stroke is a rare and possibly devastating in young patients. Transthoracic echocardiography, complemented, when needed, by transesophageal echocardiography is an important diagnostic test in this context, identifying or excluding possible sources of embolus.

We present the case of a 33 year old man, brought to the emergency room for sudden hemiparesia while smoking cannabinoids.

An angioCT was performed, identifying a 'stop' in the M1 segment of the right middle cerebral artery, suggesting an endoluminal thrombus. Therefore the patient was submitted to thrombolysis.

Initial transthoracic echocardiogram showed a mass in the ventricular side of the aortic valve.

A transesophageal echocardiogram was then performed, identifying a round shaped pedunculated mass, adhering to the non-coronary cusp of the aortic valve, measuring 9 x 6.3 mm.

The patient remains clinically stable, surgical removal of the delayed for 23 days by the presence of possible petechia in the cranial CT.

The mass was surgically excised without complications and the patient remains clinically well.

Pathology confirm it was a papillary fibroelastoma.

In conclusion, this case illustrates the importance of echocardiography in the etiological investigation of stroke in young patients.

P228

Pulmonary embolism and cardiac tamponade- coincidence or consequence?

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Introduction: Cardiac tamponade and pulmonary embolism are potentially lethal conditions and relatively common complications of malignancy, but association of the two conditions are rare for non-malignancy etiology. Their simultaneous presentation are a diagnostic challenge because each of them can cause of tachyarrhythmia, chest pain, dyspnea, and hypotension.

Case presentation: A 67-year-old woman with previous history of diabetes mellitus, chronic obstructive lung disease and hypertension was admitted to our hospital with complaints of exertional dyspnea, pleuritic chest pain and palpitations for the previous two days. On physical examination she had tachypnea, rapid atrial fibrillation, low blood pressure of 90/60 mm Hg and hypoxemia. Two-dimensional echocardiography showed a large pericardial effusion and marked diastolic collapse of the right atrium and right ventricle with significant respiratory variation in mitral and tricuspid flow velocity. Emergency pericardiocentesis was performed via a subxiphoid approach. After the removal of 800 ml of fluid, clinical symptoms improved, but the patient remained hypoxemic with a rapid atrial fibrillation. It should be noted that two weeks previously she had been admitted to another department for acute pericarditis. Due to these complicating factors, we continued the investigation. A computed tomography scan was performed and revealed pulmonary embolism without any other pathological process. Laboratory results showed inflammation only. The patient was treated with enoxaparin and became hemodynamically stable.

Conclusion: The patient presented with large pericardial effusion and tamponade signs, and yet also had pulmonary embolism. Pulmonary embolism and pericardial effusion are common complications of malignancy, but their association is extremely rare in acute pericarditis. This case did demonstrate diagnostic challenge. The case highlights the importance of physician awareness of possible comorbid conditions when a patient remains symptomatic and hemodynamically unstable after definitive treatment for a potentially dangerous clinical syndrome. In this case the cardiac tamponade was treated, and the continuing hemodynamic instability lead to further testing and revealed the comorbid pulmonary embolism.

P229

Coronary perforation with severe pericardial effusion during percutaneous coronary intervention in a patient with coronary

artery ectasia

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Background: Coronary perforation is a rare but potentially fatal complication of percutaneous coronary intervention (PCI). We report a clinical case which demonstrates the complexity regarding the management of this entity.

Clinical report: An 83-year-old male was admitted to our Institution due to unstable angina. Physical examination did not show any pathological finding. Blood simple test showed a mild renal impairment with creatinine level of 1.4 mg/dl. Electrocardiogram displayed a sinus rhythm with a slight ST-segment rectification in the anterolateral leads. A transthoracic echocardiogram exhibited a preserved left ventricular ejection fraction with no wall motion abnormalities.

He was intended for coronary angiography. Severe and generalized coronary arteries ectasies were demonstrated. Likewise, a stenosis at proximal left anterior descending (LAD) coronary artery was found to be significant. A drug-eluting stent of 5.0/13 mm was deployed.

Soon thereafter, a free perforation of the vessel was proven, with free contrast extravasation into the pericardium (Type III perforation, according to Ellis classification). To solve this complication, a prolonged inflation of a 5.0 mm diameter balloon was performed. Nevertheless, a persistent extravasation of contrast was proven. Then, a coated stent was deployed within the previous stent to seal the rupture. After this, cessation of blood extravasation was confirmed.

Notwithstanding, an echocardiogram identified severe pericardial effusion, with signs suggestive of early-stage cardiac tamponade. Percutaneous pericardiocentesis was performed on site, and the patient was delivered to the



Coronary ectasia and LAD perforation.

Coronary Care Unit hemodynamically stable. He was discharged few days later.

Discussion: Coronary perforation is a rare complication of PCI. Mortality is reported to range from 5.9 to 7% and occurs mainly due to acute myocardial infarction and cardiac tamponade. Some of the possible factors predicting its appearance are advanced age, renal impairment, chronic-occlusions, eccentric calcification, use of atherectomy devices, stiff and hydrophilic wires, high-pressure stent post-dilatation as well as increased balloon to artery ratio.

Currently, there is not an established gold-standard treatment for this life-threatening condition. Reversal of the anticoagulation with protamine, prolonged balloon inflation, and coated stent implantation are effective techniques that might restore perforation.

After the acute complication has been solved, many collateral complications should be taken into consideration, such as the risk of stent thrombosis if anti-platelet treatment is discontinued for some period of time, and the high restenosis occurrence after a coated stent deployment.

Conclusion: In the case we report, severe coronary artery ectasia might have facilitated oversizing of the stent deployed. Fortunately, early identification and management of the complication may have avoided a more severe outcome.

P230

Primary percutaneous coronary intervention in patient with ectopic origin of the coronary arteries

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Percutaneous coronary intervention (PCI) of coronary arteries with ectopic origin can be technically difficult because selective cannulation of the vessel may not be easy. The procedure would be more difficult to achieve when it is about myocardial infarction with time constraint to open the culprit lesion.

We report the success of primary PCI in two patients with ectopic coronary origin. The first case is about 65 year's old man, heavy smoker, who was admitted for basal STEMI, diagnosed at the 7th hour. The coronary angiogram was performed, and we hardly succeed to cannulate the circumflex selectively. It originates from the right cusp, close to the right coronary. We perform PCI using a LIMA guiding catheter with anchoring balloon technique to improve the support. We succeeded finally to open the culprit lesion.

The second patient is a 52 year's old diabetic man, who was admitted for inferior myocardial infarction. We cannulated selectively the right coronary originating from the left cusp.

The PCI was performed using an EBU guiding catheter with the parallel wires technique to get a better support.

Primary PCI of ectopic coronaries is feasible by an experimented operator. The main step to perform in such PCI is to well select the guiding catheter and try to improve the support by different tips.

P231

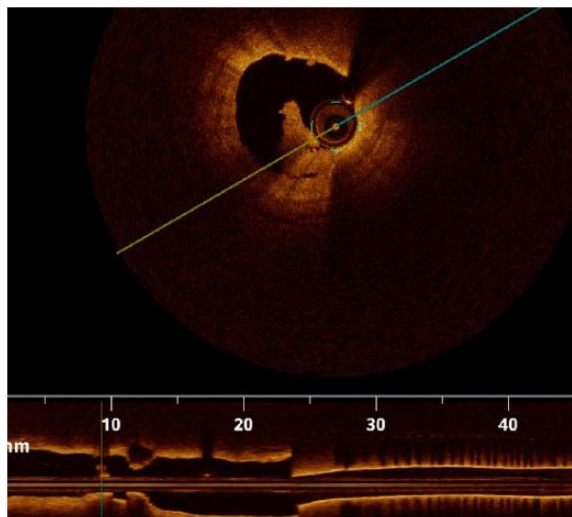
Chronic thrombosis in coronary artery - when morphology overcomes physiology

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Female, 55 years, was presented to cath lab due chest discomfort. Onset of symptoms was three years ago, they gradually increased over time. Patient had positive family history for coronary artery disease (CAD), hypertension, dyslipidemia, and she was smoker. Echocardiography revealed no wall abnormalities.

Coronary angiography revealed Medina(1,1,1) bifurcational lesion in mid segment of LAD, with 60% of lumen reduction both in LAD and ostial DG. LCx was without stenosis. RCA showed regular luminogram in LAO projection, no angiographically significant stenosis were spotted, but some irregular filling defects with some luminal haziness were present in LAO/CRA projection. Operator decided to evaluate ischemic potential of LAD/DG lesion. FFR was performed and it was negative (0.88 in LAD, 0.86 in diagonal, 0.2 mg of NTG and 200 mcg of i.c. adenosine boluses were used to provoke maximal hyperemia). Since we did not discovered cause of angina complaints in left system, we decided to perform FFR of RCA. After administration of 0.2 mg of NTG and 200 mcg of adenosine i.c., FFR was 0.93 in RCA. One might be seduced to overlook



some irregularity in prox RCA but we decided to complete investigation with performing RCA OCT diagnostics. First OCT run was huge surprise, showing organized thrombus formation and presence of wall dissection in prox part of RCA. At 10 mm bookmark in longitudinal view, you can appreciate protruding intraluminal thrombi with low signal attenuation. Respectively, decision was made to perform manual thromboaspiration using 6 Fr catheter, and we performed another OCT run that showed significant reduction in fibrin cloth presence. Next step was to implant DES 3.5x16 mm at 15 atm. OCT control showed adequate expansion of stent struts with minimal presence of thrombus masses protruding intraluminally.

Conclusion: FFR is considered the gold standard for invasive assessment of coronary stenosis, it has IA recommendation in identifying hemodynamically relevant coronary lesion(s) when evidence of ischemia is not available. Also, value of FFR in evaluating significance of non-culprit stenoses in patients with recent ACS is appreciated. OCT is a valuable tool for better understanding coronary anatomy, allowing close insights into vessel structure and tailoring treatment. Comparing to FFR, role of OCT is not well established and recognized in current guidelines, and IVUS or OCT may be considered to characterize lesions, and recommendation is IIb class, level of evidence B.

Our case clearly showed that in some scenarios detection of vulnerable plaque can not be achieved using only evaluation of coronary physiology. If we strictly followed guidelines, we could easily overlooked significance of chronic thrombosis as a cause of angina complaints. Those thrombotic burden did not caused significant pressure gradient, but its instability and fragility evaluated by OCT caused patients angina complaints.

P232

The heart in an air bubble

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Pneumopericardium complicating bronchogenic carcinoma is considered exceptional.

Pericardial or cardiac fistulae are part of the differential diagnosis of dyspnea and thoracic pain in patients with bronchogenic carcinomas. Prompt recognition of pneumopericardium in the emergency department and intensive vigilance of haemodynamic stability is crucial for patient management.

We report the case of a 50-year-old man with previous history of poorly differentiated epidermoid lung carcinoma,



stage IV, under palliative chemotherapy, that presented to the emergency department with progressive worsening of dyspnea for the last three days associated with left anterior chest discomfort.

On admission, the patient was haemodynamically stable, tachycardic, polypneic, afebrile and acyanotic. Heart and lung auscultation revealed no abnormalities. ECG showed sinus tachycardia and there were no marked abnormalities in laboratory and blood gas analysis.

The chest radiograph showed a radiolucent band of air partially surrounding the heart (halo sign). A thoracic computed tomography confirmed the presence of severe pneumopericardium produced by a bronchopericardial fistula secondary to the bronchogenic carcinoma. The patient did not present clinical manifestations of cardiac tamponade, so conservative treatment was decided on. The pneumopericardium was partially reabsorbed, the chest pain improved with analgesic treatment and the patient was safely discharged within a week.

P233

Hypertrophic cardiomyopathy without apical aneurysm mimicking inferior ST segment elevation myocardial infarction

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Matos¹ and D Martins¹

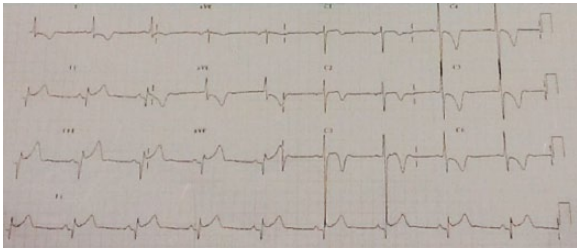
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Chronic ST segment elevation has been occasionally described in patients with hypertrophic cardiomyopathy complicated with apical necrosis and aneurysm formation. However, chronic inferior ST segment elevation has not been described in patients with uncomplicated hypertrophic cardiomyopathy. This condition can be misdiagnosed as acute myocardial infarction, resulting in unwarranted thrombolytic therapy

or emergency angiography. We believe this case report is important as a reminder that acute myocardial infarction is not the only cause of ST-segment elevation.

A 51-year-old man, with previous history of smoking habits, presented in the emergency department with a 12h history of retrosternal chest pain, radiating to the left arm. He referred typical chest pain with moderate efforts in the last three months. On admission, he was asymptomatic, haemodynamic and electrically stable, without remarkable changes on physical examination.

The electrocardiogram revealed normal sinus rhythm and left ventricular hypertrophy by voltage criteria. There was ST-segment elevation associated with Q waves in I, II, and aVF; ST segment depression and T-wave inversion in I and v2-v6 leads. No previous ECGs were available for comparison. Emergent transthoracic echocardiogram showed non-dilated left ventricle, with asymmetric hypertrophy of basal and mid segments of anterior and anterior septum walls, without intraventricular gradient. Left ventricular function was preserved and there were



no regional wall motion abnormalities at rest. Chest radiograph and laboratory data, including serial cardiac troponin I levels, were within the normal range. Non-emergent coronary angiography performed during hospital stay showed bridging of first obtuse marginal artery (3mm vessel) and excluded coronary artery disease. Cardiac magnetic resonance (CMR) confirmed the diagnosis of non-obstructive hypertrophic cardiomyopathy, revealing marked asymmetric hypertrophy basal and mid segments of anterior and anterior septum walls. Contrast-enhanced CMR showed extensive subepicardial delayed hyperenhancement at the hypertrophied segments.

P234

Diagnostic challenges in a young athlete with acute myocardial injury - the role of cardiac resonance imaging

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Introduction: Young athletes with clinical presentation of acute myocardial infarction are still an important diagnostic challenge. An appropriate diagnostic approach is essential in such cases, with medical, social, and financial important consequences. Case presentation. A 28 year-old bodybuilding man was admitted in the intensive coronary care unit for compressive chest pain and dyspnea, at rest. In the last 6



months, he added subcutaneous administration of anabolic androgen steroids, testosterone enanthate and nandrolon, to his current strenuous training. After an episode of respiratory infection that occurred two months ago, he developed fatigue gradually. ECG showed ST segment elevation in the antero-lateral leads and ischemic changes in the inferior leads (fig. 1a); myocardial enzymes were elevated two times higher than the normal values. Transthoracic echocardiography revealed hypokinetic inferior, posterior, and lateral left ventricular walls, with mild systolic left ventricle dysfunction (ejection fraction of 40%), and moderate mitral regurgitation. Consequently, diagnosis of acute myocardial infarction was established, and coronary angiography was performed immediately, revealing normal coronary arteries, with no bridge or other anomalies. Toxicological tests for illicit drugs were negative. Therefore, patient was sent for a cardiac magnetic resonance, which showed sub-epicardial and intra-myocardial contrast enhancement in the inferior and lateral walls of the left ventricle (fig. 2), advocating the diagnostic of acute myocarditis. Laboratory tests indicated a mild inflammatory syndrome and a positive result for recent infection with Coxsackie Virus B4, with negative result for the anti-myocardium antibodies. Symptoms of acute heart failure resolved in one week on non-steroidian anti-inflammatories, while left ventricular function became normal after one month, with normalization of the ECG (fig 1b). The progressive appearance of heart failure after a relatively long delay from the respiratory infection, but under continuous administration of anabolic androgen steroids, along with the rapid resolution of symptoms after cessation of their administration, is raising the hypothesis of an aggravating contribution of these drugs to myocardial injury. Conclusion. This case highlights the diagnostic pitfalls in young patients with clinical presentation of acute myocardial infarction, with the importance of emergent imagistic tools, such as CMR, for the identification of real causes of acute heart damage. It also raises the attention on a possible aggravating effect of anabolic androgen steroids in the progression of a myocardial injury.

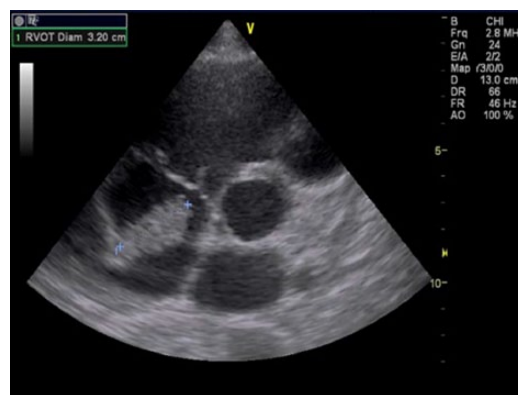
P235

Exuberant eustachian valve endocarditis diagnosed on transthoracic echocardiography: a rare case report

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Eustachian valve endocarditis (EVE) is a distinctly rare and underdiagnosed entity. We report an exuberant case of EVE by methicillin sensitive *Staphylococcus aureus* diagnosed on transthoracic echocardiography (TTE).



A 23-year-old man presented to the emergency department with a four-week history of progressive fatigue and fever.

The patient had history of intravenous drug use, chronic C hepatitis and two previous episodes of tricuspid valve infective endocarditis (February 2010 and December 2012), complicated by septic pulmonary embolism, with persistence of aseptic vegetation documented in transoesophageal echocardiogram performed in January 2013. His vital signs included a temperature of 38°C, a heart rate of 110 bpm, a blood pressure of 120/70 mmHg. There were multiple needle marks without signs of inflammation. Findings on cardiac examination were unremarkable, as were the results of the remainder of the evaluation.

Laboratory data showed hemoglobina 9.5g/dL; mean corpuscular volume 80.1fL; Mean corpuscular hemoglobin 26.4pg; white blood cell count $16.95 \times 10^3/uL$; neutrophil 15.39; platelets $69 \times 10^3/uL$ and C-reactive protein 33.67 mg/dl. Results of electrocardiography (ECG) and chest radiography were normal. A set of three peripheral blood culture from different sites were made. Transthoracic echocardiography (TTE) showed a 4.2 cm (major diameter) hyperechoic and hypermobile mass attached to the Eustachian valve, occupying most of the right atrium and protruding in diastole to the right ventricle. The tricuspid valve was morphologically normal, without masses attached; Doppler evaluation showed a central moderate tricuspid regurgitation. There were no other remarkable findings.

The patient was treated empirically with vancomycin and gentamicin. Methicillin-susceptible *Staphylococcus aureus* was isolated in the blood cultures collected and antibiotherapy was subsequently changed to intravenous flucloxacillin 12g/day. The patient had an unremarkable clinical course and was safely discharged after 6 weeks of hospital admission.

P236

Type I Brugada pattern disclosed by propofol: a Brugada Syndrome case report

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The Brugada Syndrome is an autosomal dominant genetic disorder with variable expression characterized by abnormal findings on the surface electrocardiogram (ECG) in conjunction with an increased risk of ventricular tachyarrhythmias and sudden cardiac death.

Three Brugada ECG (Br-ECG) patterns have been described, however the Brugada Syndrome diagnosis is made only when a type 1 Br-ECG is observed. The repolarization changes are dynamic and may appear spontaneously or triggered by external factors (including ionic imbalance and drugs) acting synergistically with the genetic defect and modifying the myocyte action potentials.

A 26-year-old man was admitted in the emergency department in cardiopulmonary arrest due to ventricular fibrillation. There was no previous history of syncope, palpitations or nocturnal agonal respiration. There was no family history of sudden cardiac death.

After successful cardiopulmonary resuscitation, hypokalaemia correction was started and preliminary diagnostic work-up was initiated. Blood gas analysis showed mixed metabolic and respiratory acidosis with severe hypokalaemia (pH 7.166; PCO₂ 30.3mmHg; PO₂ 113.7mmHg; HCO₃⁻ 10.7mmol/L; O₂ Peripheral Saturation 97.4%; K⁺ 2.58mmol/L); Electrocardiogram excluded ST segment elevation myocardial infarction and Transthoracic Echocardiogram excluded cardiac tamponade or massive pulmonary thromboembolism. After haemodynamic and respiratory stabilization the patient was submitted to cranial Computerized Tomography scan that revealed signs of anoxic encephalopathy.

To optimize patient/ventilator adaptation a low, dose propofol was started. A few hours later, the ECG changed, revealing a type-1 Br-ECG pattern and establishing the diagnosis of a Brugada Syndrome. Propofol infusion was stopped and the electrocardiographic changes reversed.

Hypokalaemia aetiology was subsequently studied and a preliminary diagnosis of primary hyperaldosteronism was revealed (plasmatic renin activity 0.81ng/ml/h; plasmatic aldosterone 30.8ng/dL; plasmatic aldosterone/ plasmatic renin activity ratio 37,5ng/mLxh). Final aetiology of hypokalaemia was not further pursued due to severe neurologic sequelae of anoxic encephalopathy.

The authors present a case report of a young male patient, with a previously normal electrocardiogram, admitted in the emergency department in ventricular fibrillation associated with severe hypokalaemia, where a short, low dose of propofol disclosed a type-1 Br-ECG pattern. This case report highlights the dynamic nature of repolarization changes in Brugada syndrome, where external factors

(hypokalaemia and propofol) played a key role unveil an otherwise hidden type-1 Br-ECG pattern.

P237

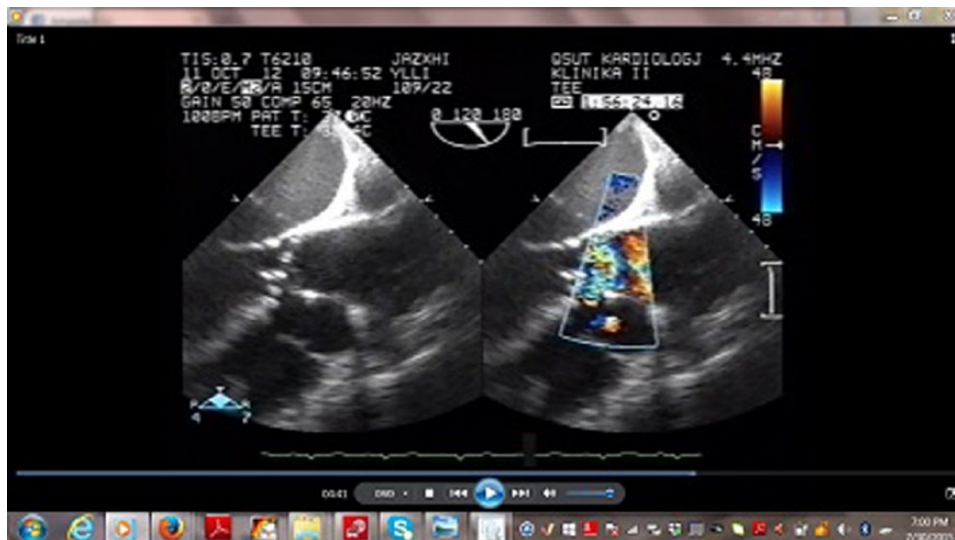
Pseudoaneurysm of valsalva sinus in a brucella infected native aortic valve

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Background: Worldwide, endocarditis occurs in less than 2% of patients with brucellosis; however, in endemic areas, it may affect 7-10% of patients. The aortic valve is affected in 75% of patients, and 50% of affected valves were previously healthy. Endocarditis is responsible for most of the mortality associated with brucellosis. Pseudoaneurysms of a native sinus of Valsalva are exceedingly rare. Acquired pseudoaneurysms of the sinus of Valsalva are a result of medionecrosis, syphilis, arteriosclerosis or endocarditis. Echocardiography and CT-scan are valuable non-invasive diagnostic approaches.

Case: A 60 year old man was admitted to the cardiology unit with shortness of breath. He denies any history of cardiac disease or trauma. The patient was recently discharged from the Infective Disease Unit after being treated for Brucellosis. On examination a systolic-diastolic murmur over the left sternal border was noted. In the metabolic panel it was noted elevated ALT, AST, LDH and Brucella serologic titers were significantly high. A transthoracic and subsequently a transesophageal echocardiogram were obtained and revealed a bicuspid aortic valve with severe regurgitation with dilation of ascending aorta. A small mass consistent with a vegetation was attached to the right coronary cusp and a large pseudoaneurysm of the right Valsalva sinus with a diameter 30 mm was noted (Fig). The cardiac chambers were dilated and it was estimated a left ventricular ejection fraction of 45% and a moderate mitral and tricuspid regurgitation. The estimated systolic pulmonary artery pressure was elevated 70mm Hg. There was no evidence of vegetations on the mitral, tricuspid and pulmonary valve. An aortic CT scan confirmed a right coronary sinus pseudoaneurysm and dilated ascending aorta. Considering the case as a Class I, Level B indication for surgery, the patient underwent urgent aortic valve replacement. A bicuspid calcified aortic valve with small vegetations and a pseudoaneurysm of the right coronary sinus, on the right aspect of the right coronary ostium were identified. The neck of the pseudoaneurysm was closed with a Dacron patch. The aortic valve was excised and replaced with a St Jude Regent Nr. 21, mechanical prosthesis. The postoperative course was uneventful.



shunt and the pseudoaneurysm

Discussion: We presented a case report of subacute infective endocarditis with a rare complication: pseudoaneurysm of right coronary sinus. This great destructive approach is probably related more to a delayed diagnosis than to the supposed virulence of the bacteria. Pseudoaneurysms of valsalva sinus imply high morbidity in view of their tendency to rupture. A good outcome can be obtained by prompt diagnosis and surgery.

Conclusion: We emphasize the importance of echocardiography and computed tomography as important diagnostic tools in patients with positive serology for brucella and also recommend close follow ups after discharge to early diagnose an infective endocarditis.

Acute coronary syndrome - ST-elevation myocardial infarction

P239

A novel automatic algorithm can detect the severity of ischemia in patients with st elevation myocardial infarction

Sponsored by the Rigshospitalet Research Foundation, Regional Research Foundation in Region Sjælland and the Edith and Henrik Henriksen's Mindelegat

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Background: The Sclarovsky-Birnbaum ischemia severity score (SB-score) is based on quantitative 12-lead electrocardiogram (ECG) criteria to estimate severity of ischemia and predict the rapidity of necrosis progression over time in patients with ST Elevation Myocardial Infarction (STEMI). This score identifies patients where reducing time to reperfusion therapy is important for salvage achievement. However, due to the complexity of the score, its manual interpretation is time consuming and has not been applied in clinical practice. Automation of the score could facilitate clinical application. Therefore, we aimed to develop and validate an automatic algorithm for the SB-score.

Methods: Severity of ischemia was determined by the presence or absence of terminal QRS distortion (tQRSd) in leads with ST segment elevation. tQRSd was defined as: 1) Absence of an S-wave below the TP-PR isoelectric line in ≥ 2 adjacent leads that usually have a terminal S configuration (leads V1 to V3); or 2) In all other leads, ST-J point amplitude $\geq 50\%$ of the R-wave amplitude measured from the TP-PR baseline in ≥ 2 adjacent leads. Severe ischemia (+SI) was defined as tQRSd in ≥ 2 contiguous leads while non-severe ischemia (\pm SI) had absence of tQRSd. An algorithm to automatically detect and measure SB-score was developed. The algorithm was designed using 50 ECGs. Each ECG lead (except aVR) was manually scored according to SB-score (+SI or \pm SI) by two independent experts (Exp1 and Exp2) and automatically by our designed algorithm (Auto-score). An adjudicated manual score (Adj-score) was determined

between Exp1 and Exp2. The inter-rater reliabilities (IRR) between Exp1 vs Exp2, and Adj-score vs Auto-score was assessed by kappa analysis for SB-score.

Results: Severe ischemia was found in 15 (30.0%) and 9 (20.5%) ECGs by Adj-score and Auto-score, respectively. The IRR between Adj-score and Auto-score was $\kappa = 0.71$, $p < 0.0001$. Severe ischemia was obtained in 13 (27.7%) vs. 17 (37.8%) ECGs by Exp1 and Exp2, respectively. The IRR between Exp1 and Exp2 was $\kappa = 0.80$, $p < 0.0001$.

Conclusion: The reliability of the automatic algorithm for measurement of the acuteness of ischemia was acceptable. However, more adjustments are needed to improve the measure of agreements between manual score and the automatic algorithm, before introduction in daily clinical practice.

P240

Activity of the kallikrein-kinin system in the course of myocardial infarction

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Background: The study of reaction activity kinin blood system (KBS) on the development of myocardial infarction (MI) is a special clinical interest in the development of tactics of treatment of myocardial infarction, developed as the background of essential hypertension (EH) – 1st group and without it - 2nd group.

Purpose: The study of the activity of the kallikrein-kinin system of blood during myocardial infarction.

Material and methods: The study included 90 patients with myocardial infarction. The average age of patients - from 35 to 65 years. The patients were divided into two groups: one group of 38 patients with MI + EH (men - 18, women - 20). In 2nd group, 52 patients with myocardial infarction (men - 38, women - 14). The values of blood pressure in the development of myocardial infarction in the 1st and 2nd groups are: $(151 \pm 6) / (89 \pm 2)$ and $(108 \pm 6) / (67 \pm 2)$ mm Hg. The diagnosis was made according to WHO recommendations. In addition to the accepted methods of cardiologic study we determined serum kallikrein and kallikreinogen on 1-3 days, 8-12 days and 20-30 days for all patients MI.

Results: Analysis of synchronous changes kallikrein content in the blood (KCB) and blood pressure show that the high activity of KBS ($KCB > 50$ kU / L, against the norm for healthy - 29 ± 3 kU / L) defines a stable low level of blood pressure in the range of 110/70 mm Hg in 2nd groups. At the same time, in the 1st group observed a complex dynamic relationships between parameters: elevated blood pressure at the beginning of myocardial

infarction associated with reduced activity of KBS ($KCB = 33 \pm 7$ kU / L) almost to the level of the norm; lowering of blood pressure in the subacute period is largely determined by the increased activity of the KBS ($KCB = 58 \pm 6$ kU / L); by the end of inpatient treatment KBS activity is reduced and there is a real opportunity to increase blood pressure and the development of hypertensive crises.

Conclusion: Obviously, KBS performance dynamics during treatment indicates the presence of sufficient reserves in the biochemical mechanisms of regulation of blood pressure in the 1st group. The absence of this dynamic and stable high activity KBS at the 2nd group say the possibility of using these data to prevent further threatening complications of MI.

P241

Acute coronary syndrome without obstructive epicardial coronary disease. Prevalence, characteristics and in-hospital outcome

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Purpose: Among patients admitted at catheterization laboratory with suspicion of acute coronary syndrome (ACS) a minority has non-significant epicardial coronary stenosis (<70%). The characterization of this subgroup remains unclear. The aim is to characterize the subgroup of ACS patient without obstructive epicardial coronary disease.

Methods: Retrospective analysis of patients admitted with first episode of ACS at a tertiary centre, from 2005 to 2015. Patients were divided according to angiography characteristics: G1 - without obstructive coronary artery disease; G2 - with obstructive coronary artery disease. Clinical, electro and echocardiographic characteristics were compared between study groups.

Results: From 3796 ACS patients admitted during study period, 487 (12.8%) had non-significant coronary stenosis and were included in G1. These patients were younger (40.1 ± 34.3 vs 45.4 ± 31.6 ; $p = 0.001$), more women (50.7% vs 27.7%; $p < 0.001$), less smokers (23.0% vs 40.8%; $p < 0.001$), with lower prevalence of hyperlipidemia (40.9% vs 46.3%; $p = 0.025$) and diabetes (16.4% vs 23.9%; $p < 0.001$), but with slight higher prevalence of hypertension (65.5% vs 60.9%; $p = 0.053$). Symptoms at presentation were significantly different between group ($p < 0.001$). In G1 patients had more atypical angina

(12.4% vs 7.3%), syncope (2.2% vs 1.9%) and heart failure (4.2% vs 1.6%). Left bundle branch block was more frequent in G1 (6.8% vs 25%; $p < 0.001$) as well as T wave inversion (20.9% vs 10.3%; $p < 0.001$). Left ventricular ejection fraction (LVEF) was higher in G1 (LVEF > 50%: G1 73.4% vs G2 64.3%; $p < 0.001$). In hospital mortality was not significantly different between groups (5.3% vs 3.6%; $p = 0.062$).

Conclusion: Patients admitted with suspicion of ACS without significant coronary stenosis had more frequently atypical presentation such as syncope or heart failure, suggesting another etiology for symptoms rather than coronary disease. Left bundle branch block was also more frequent in this group reflecting the difficulty to attribute a real ischaemic meaning to this finding in EKG in patients with chest pain. Surprisingly there was no significant difference in hospital mortality.

P242

Acute myocardial infarction with ST segment elevation in patients younger than 50 years

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Introduction: ST segment elevation myocardial infarction (STEMI) is an entity with low prevalence in adults under the age of 50 years ($I < 50$). Despite younger patients have a better prognosis in the short term with regard to older people, may have high mortality in the long term in the absence of secondary prevention.

Purpose: To characterize the population of patients under the age of 50 years with STEMI admitted on a Cardiology Department. Determine the predictors of left ventricular dysfunction (LVD), hospital readmission and mortality in one year follow-up.

Methods: We performed a retrospective, descriptive and correlational study, encompassing all patients younger than 50 years with STEMI admitted in a cardiology department, in the period between 1st October 2010 and 31st August 2014. A 1 year follow-up was done by appointment or telephone contact made by a Cardiologist. Then, we did a univariate and multivariate analysis with the possible factors associated with the occurrence of left ventricular dysfunction during hospitalization and hospital readmission in the first year.

Results: In the time period indicated, were admitted 204 patients under the age of 50 years with STEMI. 119 patients (79.9%) were male and 30 (20.1%) female, with average

age of 43.8 years. Hospital mortality was 1% (2 patients) and no deaths occurred in the follow-up.

The average left ventricular ejection fraction (LVEF) was 54.5%. 75.5% of the patients presented conserved LVEF (over 50%) and 24.5% of the patients had LVD. Associated to the occurrence of LVD were more elevated Killip-Kimball class at presentation ($p < 0.01$), not conducting coronariography ($p = 0.041$) and not performing coronary angioplasty ($p = 0.018$). The history of prior heart attack ($p < 0.01$) and increased wait time between the onset of symptoms and the first medical contact ($p = 0.035$) were independent predictors of LVD.

In one year follow-up, hospital readmission occurred in 12.8% (19 patients) and there were no deaths. We did not find any independent predictors of hospital readmission in this group of patients.

Conclusions: In this population of patients younger than 50 years and STEMI, the independent predictors of LVD were the existence of a history of myocardial infarction and the biggest delay between onset of symptoms and the first medical contact. There were only two deaths during hospital stay and none in the follow-up. There were no independent predictors of hospital readmission.

P243

Acute ST-segment elevation myocardial infarction in young adults: series of nine cases

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Background: Acute myocardial infarction (AMI) occurs mainly in individuals over 40 years of age, but can affect young adults, this condition considered when it affects those aged ≤ 40 years. In these major risk factors (RF) are smoking, family history of premature coronary artery disease (CAD) and hypercholesterolemia. The most common clinical presentation is AMI with ST segment elevation (STEMI). Compared to older individuals, there is a predilection for involvement of the anterior descending coronary artery and CAD in a single vessel.

Materials and methods: A prospective, descriptive study of an observational case series, of patients aged 18 to 40 years old hospitalized from October 2013 to January 2016, in a private tertiary hospital, with STEMI. We evaluated the following variables: clinical presentation, gender, RF for CAD, number and specification of the affected arteries, in-hospital mortality and re-infarction.

Results: 09 patients were admitted with STEMI aged ≤ 40 years, 8 (88%) men. The main RF was smoking (55%). In 8 (88%) of them, we identified a single artery responsible for AMI; 2 (22%) showed moderate to severe

coexistence of two or more lesions in the arteries. Most (88%) had typical chest pain. One patient showed only sweating and numbness in the right upper limb. As for the Killip classification, 88% evolved in class I and one in class IV. All patients underwent primary angioplasty with stent implantation. The main affected artery was the left anterior descending (55% of cases). Only one patient had a re-infarction, due to acute stent thrombosis and underwent new coronary angioplasty successfully. One patient, the only one with severe multivessel disease, evolved to death in the acute phase of AMI, while performing the primary angioplasty. All others were discharged from the hospital in good clinical conditions and remain so to date, with normal left ventricular function and in NYHA class I.

Conclusions: Although STEMI is an uncommon entity in young adults, it is a striking problem in terms of public health, for its potential devastating effect, affecting individuals in the most productive phase of their lives. However, if diagnosed and treated early, it has good prognosis, as seen in the series presented here,

P244

Adherence to clinical practice guidelines in elderly patients with acute coronary syndrome

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Background: Elderly patients are not usually represented in clinical trials in acute coronary syndrome (ACS) and is a clinical dilemma choosing treatment, especially in relation to an invasive management.

Purpose: We analyze the clinical features and therapeutic management in elderly patients admitted with ACS

Methods: Prospective, observational study included patients aged ≥ 70 years admitted in our hospital for ACS

Results: Between June 2014 and June 2015, a total of 117 patients were recorded in our study (45 women, age 78 ± 6 years [70-97 years]). 30.8% were STEMI (50% of anterior). In 77.8% of this, primary angioplasty was performed and a conservative attitude was chosen in 19.4%. Gp IIb-IIIa inhibitors were used only in 3.3% of elderly patients. In patients with NSTEMI, a conservative management was chosen in 22.2%. Coronary artery bypass surgery was the final treatment in 5.2% of patients. The overall hospital mortality was 9.4%. At discharge (median hospital stay 7 [4-14 days]) prescribing aspirin was 88% with dual

antiplatelet therapy in 72.9% (clopidogrel 59%). The use of beta-blockers, even at low doses, was 76.6%.

Conclusions: In elderly patients with ACS there is a tendency to use a conservative approach prescribing less antiplatelet agents. Clopidogrel antiplatelet remains the second most used.

P245

Admission platelet count is an independent predictor of in-hospital cardiovascular mortality following acute myocardial infarction

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Introduction: Platelet activation has a major role in the pathophysiology of atherothrombotic events, which are deeply associated with the development of acute myocardial infarction (AMI). However, the knowledge on the prognostic implications of the number of circulating platelets in AMI remains limited.

Purpose: Evaluation of the prognostic impact of admission platelet count in patients admitted with acute myocardial infarction.

Methods: We retrospectively analyzed 2627 patients who were admitted to our coronary care unit with AMI. Two groups were defined based on the platelet count using a cutoff level of $\geq 244 \times 10^3/\mu\text{L}$, corresponding to the 75th percentile. Clinical and laboratory features, treatment and adverse events were compared in each group of patients. The primary endpoint was in-hospital cardiovascular mortality.

Results: Patients with higher platelet count were younger (62.3 ± 0.5 vs 64.3 ± 0.3 years, $p < 0.001$), less frequently of the male gender (70.4 vs 80.0%, $p < 0.001$), and with increased prevalence of type 2 DM (31.4 vs 26.1%, $p = 0.007$) and atrial fibrillation (6.3 ± 0.5 vs $3.8 \pm 0.7\%$, $p = 0.01$) and lower prevalence of hypertension (60.5 ± 1.9 vs $64.8 \pm 1.1\%$, $p = 0.048$) and BMI (26.9 ± 0.2 vs 27.4 ± 0.1 , $p = 0.02$). On admission, patients with higher platelet count presented more frequently with higher leukocyte count (12336 ± 312 vs $10408 \pm 245 /\mu\text{L}$ $p < 0.001$), higher NT-proBNP (3935.4 ± 343 vs 2562 ± 130.1 pg/mL, $p < 0.001$), and lower hemoglobin levels (13.5 ± 0.0 vs 13.9 ± 0.1 g/dL, $p < 0.001$). Higher platelet count was associated with increased incidence of signs and symptoms of heart failure (33.7 vs 28.1%, $p = 0.006$), lower left ventricle ejection fraction (44 ± 0.4 vs $46 \pm 0.2\%$, $p < 0.001$) and a worse clinical course, namely higher incidence of Killip > 1 evolution (34 vs 28%, $p = 0.005$), cardiogenic shock (6.2 vs

4.3%, $p=0.047$), mechanical complications (3.7 vs 1.3%, $p<0.001$) and ischemic stroke (1.7 vs 0.6%, $p=0.012$). The in-hospital cardiovascular mortality rate was higher in the group with higher platelet count (OR 2.9; 95% CI (1.70-4.94), $p<0.001$). In multivariate analysis, after adjusting for significant predictors of CV mortality (age, gender, BMI, smoking, NT-proBNP, troponin I, Killip class), an admission platelet count $\geq 244 \times 10^3/\mu\text{L}$ remained as an independent predictor of in-hospital cardiovascular mortality in AMI patients (OR 2.35; 95% IC 1.11 – 4.96, $p = 0.024$)

Conclusion: A higher platelet count ($\geq 244 \times 10^3/\mu\text{L}$) is an independent predictor of in-hospital cardiovascular mortality in patients admitted with AMI.

P246

Anaphylactic shock and allergic infarction: characteristics, management and evolution

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Introduction: Kounis syndrome (KS) was described in 1991 by Kounis and Zavras as the simultaneous occurrence of acute coronary events and allergic anaphylactic or anaphylactoid reactions. The SK is underdiagnosed and more studies to better understand the epidemiology, clinical features and diagnosis are needed, as well as to better define preventive and therapeutic measures

Methods: Observational prospective study included consecutively all patients requiring admission to a critical care unit due to anaphylactic shock during the period 2007-2015. The goal is to determine the prevalence of patients with Kounis syndrome, clinical features, management, diagnosis and their evolution.

Results: A total of 18 patients (p) are included with anaphylactic shock who required ICU admission, of which 6 p (33%) had symptoms compatible with allergic myocardial infarction. The average age was 63 years. 50% of p were male. 33% of patients had hypertension, DL or were smokers. None were diabetic. A single patient had coronary history. All had transient ST elevation. 50% initially needed vasopressor support. All patients underwent deferred coronary angiography objectifying no coronary lesions in 84% of p. There were no significant differences in the different variables in those who had no allergic myocardial infarction, except age, being younger those who did not have Kounis syndrome (49 years). There were no patient died during hospitalization or long-term.

Conclusion: A significant percentage of patients with severe anaphylactic shock which requires admission to

an ICU present a consistent clinical setting with allergic infarction (33%). This patients were younger but there were not significant differences in other variables. 100% have transient ST elevation, requiring coronary angiography to rule out significant coronary obstruction. The vast majority of patients are classified as type I Kounis syndrome (without CHD) being clinical secondary at coronary spasm. The short and long term prognosis is excellent.

P247

Anemia on admission as a risk factor for complicated in-hospital course in patients with acute myocardial infarction with persistent ST elevation - a retrospective analysis of a single center

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Introduction: Preexisting anemia is associated with an increased risk of mortality in patients with acute myocardial infarction with persistent ST elevation (STEMI). However, its impact on the in-hospital course and cardiovascular complications associated with acute myocardial infarction remains uncertain.

Purpose: To evaluate the incidence of anemia and its impact on the early in-hospital outcomes in patients with STEMI.

Methods: We performed a retrospective analysis of 447 consecutive patients with STEMI, including 138 (30.9%) females, mean age 64.6 ± 12.1 years. Anemia was defined based on hemoglobin values on admission (<120 g/L for females, <130 g/L for males).

Results: Anemia was diagnosed in 68 (15.2%) patients (15.9% of males and 13.9% of females). The anemic patients were older (69 ± 12 vs 63 ± 11 years, $p < 0.0001$) and had a lower BMI (26 ± 3.8 vs 28 ± 5.1 kg/m², $p = 0.006$), worse renal function (GFR 53.8 ± 25 vs 68.9 ± 20 ml/min/1.73m², $p < 0.0001$), higher hsCRP (42.5 ± 60 vs 18.8 ± 34 mg/L, $p = 0.005$), lower LDL-C (2.9 ± 1.09 vs 3.9 ± 1.18 mmol/l, $p < 0.0001$), but no significant difference in the HDL-C values and baseline hsTnI levels (6.79 ± 12.3 vs 6.03 ± 16.1 , 99th percentile < 0.04 ng/ml, $p = 0.712$) despite significantly more patients presenting after 24 hours of symptom onset in the anemia group (27.9 vs 13.8%, $p = 0.006$). The stay in hospital was similar in both groups. Reperfusion therapy with PCI was carried out significantly less in the anemia group - 58 (85.3%) vs 363 (94.4%), $p = 0.009$. Patients with anemia had signs of heart failure more often (36.6 vs 23.5%, $p = 0.03$) and in-hospital worsening of HF was also more frequent (38.2 vs 20.4%, $p = 0.003$) despite similar

LVEF (47±11 vs 48±11%, p=0.225). In-hospital course was more complicated in the anemia group - conduction disorders (30.9 vs 14.3%, p=0.002), need of invasive mechanical ventilation (32.4 vs 9.3%, p<0.0001) or IABP implantation (14.7 vs 4.2%, p=0.003) with similar rates of arrhythmia or need of renal-replacement therapy. There was no significant difference in the rate of bleeding events (19.1 vs 14%, p=0.27) as anemic patients were significantly less likely to receive oral antiplatelet drugs (aspirin - 94.1% vs 98.9%, p=0.021; P2Y12 inhibitors - 83.8% vs 96.6%, p<0.0001) with similar rate of administration of GP IIb/IIIa inhibitors (33.8 vs 35.2%, p=0.891) or parenteral anticoagulants (97.1 vs 99.5%, p=0.112). The overall in-hospital mortality was higher in the anemia group: 16 (23.5%) vs 30 (7.9%) in non-anemia group (p<0.0001). The mortality in the PCI-treated group was also higher in the anemia group: 8 (14%) vs 20 (5.6%) in the non-anemic group (p=0.04).

Conclusion: Anemia on admission is associated with increased risk of in-hospital death and cardiovascular complications in patients with STEMI and should be considered as an additional risk factor.

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Angiography-guided PCI versus Ischaemia-guided PCI versus Medical Therapy in the Management of Significant Disease in Non-Infarct related Arteries in STEMI patients with Multivessel Coronary Disease

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Background: In STEMI patients with multivessel disease, after primary PCI, emerging evidence suggests that significant disease in non-infarct-related coronary arteries should be routinely stented. Whether these significant stenoses should be tested for ischaemia prior to stenting is unclear.

Methods: All STEMI patients treated with primary PCI between 1/1/2005 to 31/12/2012 at a tertiary interventional centre were reviewed. Inclusion criteria: patients with at least 70% stenosis in non-IRAs. There were three groups: 1) Angio-guided multivessel PCI 2) Ischaemia-guided PCI 3) Medical therapy. Primary endpoints: all-cause mortality and major cardiovascular events (MACE) including death, acute coronary syndrome, revascularization or stent thrombosis. Event free survivals were compared using multivariate Cox Proportional Hazards analysis. A propensity score adjusted analysis was also performed.

Results: 447 STEMI patients had >70% stenosis in at least one non-IRA. For all-cause mortality, the three strategies do not differ. For MACE, ischaemia-guided PCI yields the lowest event rates. Medical therapy gives the highest MACE rate, driven mainly by death and myocardial infarction. Angio-guided MV-PCI/Ischaemia guided: HR 2.23 (95% 1.11-4.48, p = 0.02); Medical Therapy/Ischaemia guided: HR 1.72 (95% 1.08-2.74, p = 0.02); Angio-guided MV-PCI/Medical Therapy: HR 0.63 (95% 0.38-1.01, p = 0.06). Propensity score-adjusted analysis yields similar results.

Conclusion: After primary PCI, complete revascularization in STEMI-MVD patients gives lower MACE rates than medical therapy. However, revascularization should be guided by ischaemia testing rather than angiography alone.

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Antithrombotic therapy in STEMI patients in Bulgaria. a subanalysis from real world information on cardiovascular drug management patterns in acute coronary syndrome patients trial

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Purpose: The RE-ACT is a multi-center, prospective, non-interventional study aimed to describe the real-world short-term antithrombotic management patterns (AMPs) in Bulgarian patients with acute coronary syndrome (ACS) – STEMI and NSTEMI – and evaluate the determinants of AMP choices.

Methods: The patients were enrolled at discharge following hospitalization for ACS. Data collected at this point included demographics, medical history, administration of emergency care (medical management, coronary procedures and interventions, antithrombotic therapy before and during the hospitalization) from the onset of symptoms for the index event and treatment prescribed at discharge. At the first month, the status of the antithrombotic medications prescribed was followed up. Descriptive statistics included frequency tables. To evaluate the determinants of AMP choices, p-values were calculated using Pearson's chi-squared test for the group comparisons and Wald's chi-squared test for the multiple binary logistic regression models. P-values less than 0.05 were considered significant.

Results: A total of 814 patients from 16 centers (95.6% with catheterization laboratories) were enrolled in the study, and 792 had follow-up data; 81% of the patients were diagnosed with STEMI and 19% with NSTEMI. STEMI patients were younger – 61.8 (sd 12.21) vs 64.9 (sd 12.4) years; p=0.005.

NSTEMI patients had more risk factors and comorbidities. Percutaneous coronary intervention (PCI) was performed in over 90% of patients. Time to first medical contact and time to hospital admission were similar in both subgroups. More STEMI patients were admitted without signs of heart failure, but cardiogenic shock was presented at admission only in the STEMI subgroup. The choice of ticagrelor as second antiplatelet therapy was more prevalent for STEMI patients (59.2% vs 34.8%; $p < 0.00001$) and clopidogrel for NSTEMI patients (55.5% vs 37.5%; $p < 0.00001$). The GP IIb/IIIa inhibitors were added for almost half of the STEMI patients. The only significant negative determinant for ticagrelor choice in STEMI and NSTEMI subgroups was age 75 years and above. Significant positive determinant for clopidogrel choice in NSTEMI patients was 75 years and above. The antiplatelet therapy was interrupted in only 8 STEMI patients (2 patients interrupted ASA and 6 ticagrelor) and in 2 NSTEMI patients (1 ASA and 1 ticagrelor) during the follow-up period.

Conclusions: RE-ACT was the first real-world study that describes short-term AMPs in ACS patients in Bulgaria. We found significant differences in terms of antithrombotic therapy between STEMI and NSTEMI subgroups despite the similar recommendations in the guidelines. These differences in antiplatelet therapy might reflect differences in both populations in terms of age, comorbidities, and angiographic findings. Adherence to the antiplatelet therapy in Bulgarian patients with ACS during the short follow-up period was excellent.

P250

Apolipoprotein B as a prognostic predictor in patients with acute coronary syndrome

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Introduction: The Apolipoprotein B (ApoB) was described as a predictor of poor prognosis in patients with acute coronary syndrome (ACS) but more studies are needed to better clarify this relationship. The ApoB / ApoA ratio has been highlighted as one of the most powerful predictors of acute myocardial infarction (MI).

Methods: Retrospective study of a population from a national registry from Oct 2010 to Oct 2014. We evaluated 11,113 P diagnosed with ACS and values of ApoB and ApoA. The population was divided into terciles of ApoB (≤ 84 mg /dl; 84-111 mg / dl; > 111 mg / dl), terciles of ApoB / ApoA ($\leq 0,687$; 0.687 to 0.908; > 0.908). Occurrence of adverse events were evaluated (death, reinfarction (RI), heart failure (HF), combined endpoint (death / HF / RI)).

Results: Most of the p were male (68.1%) with mean age of 68 ± 14 years. 46.1% were diagnosed with ST segment elevation MI and 41.1% with non-ST segment elevation MI. Lower levels of apoB (≤ 84) were associated with more cardiovascular risk factors, lower lipid profile, higher grace score and higher rate of hospitalar events (see table I). ApoB didn't proved to be an independent predictor of adverse events. The lowest tercile of ApoB / ApoA ($\leq 0,687$) was protective for severe coronary disease (OR: 0.43 95% CI [0.21 to 0.91]).

Conclusion: We concluded that Apo B was not an independent predictor of ACS. Interestingly we found that higher levels of ApoB have shown a trend towards a better prognosis. The relationship ApoB / ApoA demonstrated prognostic value in severe coronary disease, with the lowest values (≤ 0.687) being protector for severe coronary disease.

Table 1.

| | ApoB ≤ 84 | ApoB: 84-111 | ApoB > 111 | Age (years) |
|---------------|----------------|---------------|--------------|--|
| 71 \pm 13 | 68 \pm 13 | 64 \pm 14 | <0,001 | High blood pressure |
| 81% | 70,9% | 63% | <0,001 | Diabetes mellitus |
| 34,3% | 31,9% | 22,5% | 0,008 | Total cholesterol at admission (mg/dl) |
| 138 \pm 26 | 170 \pm 27 | 212 \pm 41 | <0,001 | LDL at admission (mg/dl) |
| 77 \pm 20 | 102 \pm 25 | 139 \pm 116 | <0,001 | Triglycerides at admission(mg/dl) |
| 109 \pm 105 | 151 \pm 125 | 169 \pm 116 | <0,001 | Grace score |
| 147 \pm 4 | 136 \pm 40 | 127 \pm 34 | <0,001 | RI |
| 1,9% | 0,4% | 1,5% | NS | HF |
| 39,8% | 32% | 28,8% | 0,022 | Death |
| 7,1% | 3,6% | 2,3% | 0,019 | Combined endpoint |
| 40,5% | 32,7% | 29,5% | 0,023 | |

Differences between terciles of ApoB

P251

Arrhythmic complications in ST-segment elevation myocardial infarction: differences according to the myocardial infarction location and prognosis

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Introduction: In ST-segment elevation MI (STEMI) patients (pts), the occurrence of arrhythmic complications (AC) can impair prognosis, not only due to the arrhythmia but also due to the location of MI itself.

Purpose: Characterization of population of pts with STEMI who develop significant AC according to the MI location - Anterior vs. Inferior - and its potential impact on in-hospital morbi-mortality

Methods: From 5739 pts with STEMI diagnosis from a Multicentric National Registry, we studied 453 pts (7.89%) with STEMI who developed high-grade atrioventricular block (AVB) and/or sustained ventricular tachycardia – (VT). Two groups were defined: 1) Pts with Anterior MI; 2) Pts with Inferior MI. Recorded demographic data, medical history, inpatient therapy, coronary angiography and revascularization performed. Defined the following in-hospital adverse events (IHAE): mortality, re-infarction, stroke, heart failure (HF), cardiogenic shock (CS), resuscitated cardiac arrest (RCA), major bleeding (MB). A multivariate analysis was performed to identify if MI location is an independent predictor of IHAE.

Results: Group 1 has 129 pts (28.5%). AVB was more common in pts in group 2 (43.4 vs 82.1, $p<0.001$) and VT in group 1 (65.1 vs 25.4%, $p<0.001$). There were no differences in gender (male – 64.3 vs 66.2%, $p=0.429$) or age (70 ± 15 vs 68 ± 13 years; $p=0.175$). Group 1 pts were more likely to have previous history of stable CAD (18.3 vs 9.3%, $p=0.008$) and HF (7 vs 1.9%, $p=0.01$) and without differences in CV risk factors. They were more likely to evolve in Killip II-IV (48.1 vs 29%, $p<0.001$) and presenting right bundle branch block (17.2 vs 8.7%, $p=0.01$). There were no differences in the proportion of pts who received primary PCI (93.6 vs 90%, $p=0.268$), rate of radial access (45.6 vs 46.6%, $p=0.865$) or the presence of multivessel disease (57.7 vs 50.6%, $p=0.233$). Group 1 pts were more likely to have severe depressed LV function (ejection fraction $<30\%$ - 31.3 vs 3.6%, $p<0.001$), need of invasive ventilation (27.1 vs 10.5%, $p<0.001$) and non-invasive ventilation (10.9 vs 4.9%, $p=0.02$) but were less likely to receive a temporary pacemaker (27.1 vs 47.8%, $p<0.001$). Group 1 pts had higher incidence of HF (63.6 vs 38.4%, $p<0.001$), CS (38 vs 25.5%, $p=0.008$) and RCA (38 vs 18.9%, $p<0.001$) but without differences

regarding re-infarction (1.6 vs 2.2%, $p=1.0$), stroke (3.9 vs 2.2%, $p=0.336$) or MB (6.2 vs 5.6%, $p=0.795$). Pts in group 1 had higher in-hospital mortality (41.9 vs 16.7%, $p<0.001$). By multivariate analysis, the Anterior location of MI (vs. Inferior) was an independent predictor of HF (OR 1.92 [1.0-3.39], CI 95%; $p=0.025$) and mortality (OR 4.14 [1.61-10.68], CI 95%; $p=0.003$).

Conclusions: In pts with STEMI who develop AVB and/or VT during hospitalization, the location of MI has clinical and prognostic impact. Anterior MI is associated with more depressed LV function, need for mechanical ventilation and in-hospital morbimortality, being an independent predictor of in-hospital mortality and HF.

P252

Characterization and long term outcomes of patients under 35 with ST-segment elevation myocardial infarction

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Background: ST-elevation myocardial infarction (STEMI) in young patients is an uncommon entity. These patients may have different risk profiles and prognosis.

Purpose: To characterize epidemiology, clinical features and longterm outcomes of young patients with STEMI.

Methods: We evaluated clinical characteristics of patients <35 years with STEMI between July 2003 and December

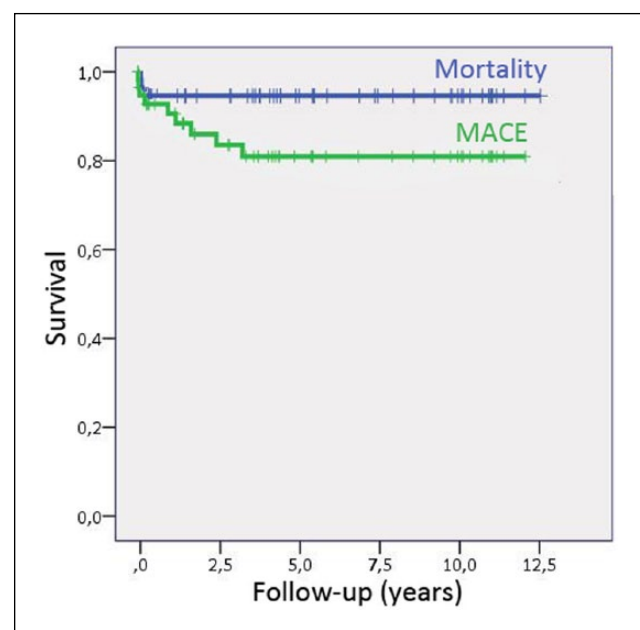


Table 1.

| | | |
|--|----------------------------|------------------------------|
| Sex (male vs. female) | | 52 (88%) vs. 7 (12%) |
| Age | | 32±2,5 |
| Risk factors | Hypertension | 10 (6%) |
| | Diabetes Mellitus | 9 (15%) |
| | Smoking | 44(74%) |
| | Dyslipidaemia | 18(30%) |
| | Body mass index | 27±5 |
| | Drugs | 16(27%) |
| | Previous vascular disease* | 0(0%) |
| | Hypercoagulable states** | 6(10%) |
| GRACE ischemic risk score | | 106±30 |
| CRUSADE bleeding risk score | | 12±10 |
| Killip class on admission (I,II,III, IV) | | 51(86%), 4(7%), 0(0%), 4(7%) |
| Culprit artery (Lef ascending, Righ coronary, Circunflex, Normal coronaries) | | 39(66%),14(24%),5(8%),1(2%) |
| Stent implantation (bare metal vs. drug eluting) | | 14(24%) vs. 36 (61%) |
| Peak troponin I | | 120±160 ng/mL (max. 0,05) |
| Left ventricular ejection fraction | | 51%±12 |

*Myocardial infarction, Aortopathy or Stroke;** Neoplasia, reumatic disease, coagulation abnormalities, hormonal contraceptives

2015. We gathered follow-up data from medical history and phone interviews.

Results: We retrieved 59 consecutive patients. Mainly male, smokers and overweight, (table). 16(27%) are drug consumers. 54(92%) presented with chest pain, 4 with cardiogenic shock and 1 with cardiac arrest. Thrombotic and bleeding risk scores depicted a low risk profile. Diagnostic workup revealed 2 antiphospholipid syndrome and no neoplasms. 3 patients died during admission. 1 suddenly died 3 days after discharge and the remainder are alive at 5,3±4,4 years follow-up. Only 6 suffered major adverse cardiovascular events: 1 stroke, 4 STEMI, 2 non-STEMI (figure), all during the first years.

Conclusion: STEMI in the young has several modifiable predisposing factors, a low clinical risk profile, and excellent prognosis after treatment.

P253

Choosing clopidogrel as a preferred ADP receptor blocker in primary percutaneous coronary intervention: Patient profile and predictors of use

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Purpose: Current guidelines for primary angiography (PPCI) recommend the administration of dual antiplatelet therapy with aspirin and preferably novel antiplatelet drugs, leaving clopidogrel when prasugrel or ticagrelor are either not available or contraindicated. In our Infarct Code Registry we observed 32.8% use of clopidogrel in PPCI patients. Our aim is to describe the characteristics of this group of patients and evaluate predictors of choosing clopidogrel as a preferred ADP-receptor blocker.

Methods: We analyzed 450 consecutively enrolled patients with PPCI indication, attended in our Infarct Code Program between 01/2015 and 01/2016. Two groups were analyzed, one with clopidogrel (CLGR, 148 patients) and other with ticagrelor or prasugrel (NAGR, 302 patients).

Results: Clopidogrel use was significantly more frequent in older patients, with initial Killip class ≥3, minor LVEF, anterior infarction or multivessel disease. The CLGR had more patients with patient delay >6 hours and system delay >120 minutes. The procedural success was reached in less CLGR patients (86.4 vs 94.5, p 0.007). No significant difference by sex. The CLGR group had worse in hospital outcome with major incidence of hemorrhagic complications and stroke. The concomitant use of oral anticoagulation was observed in 28% of CLGR patients (24.8% vitamin K antagonist, 3.2% NACO). CLGR patients had significantly lower proportion of beta-blockers,

Table 1. Clopidogrel in PPCI. Patient profile

| | GRNA | GRCL | p | | GRNA | GRCL | p |
|------------------|-----------|-----------|-------|-------------------------------|------|------|-------|
| Women (%) | 21.2 | 20.8 | 0.5 | Patient delay >6 hours (%) | 12.2 | 24.6 | 0.017 |
| Age (mean±SD) | 59.7±11.6 | 72.4±13.9 | 0.000 | System delay <120 minutes (%) | 65.7 | 47.4 | 0.004 |
| Age <50 years(%) | (76.6) | 16.9 | 0.000 | ≥2 vessel disease,% | 42.9 | 58.8 | 0.012 |
| LVEF (mean±SD) | 54.3±9.9 | 49.5±11.9 | 0.000 | Vitamin K antagonist (%) | 0.4 | 24.8 | 0.000 |
| Killip ≥III (%) | 4.7 | 12.9 | 0.005 | Beta-blokers (%) | 87.9 | 77.6 | 0.008 |
| Anterior MI (%) | 39.1 | 51.2 | 0.016 | Statins (%) | 96.5 | 91.2 | 0.03 |

statin and proton pump inhibitors (95.2 vs 98.4, p 0.04) at discharge. After adjustment for clinical factors the unique predictor for increased use of novel antiplatelet drugs was age <50 years. The probability of receiving novel antiplatelet drugs decreased with age (OR 0.76 (0.62-0.94), p 0.012).

Conclusion: We observed an elevated use of clopidogrel in PPCI patients in our environment predominantly in older patients, with worse initial clinical profile and worse in-hospital evolution. This fact was not justified by concomitant use of oral anticoagulants, but may be justified by basal frailty of the patients considering their hemorrhagic and cerebral complications.

P254

Clinical features, management and mortality in patients presenting with ST-segment elevation myocardial infarction treated with primary percutaneous coronary Intervention on responsible left main lesi

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Objectives: Our aim was to evaluate the profile and the future course of a group of patients treated with primary percutaneous coronary Intervention (PPCI) on acute unprotected left main disease that is a rare situation, a very high vital risk and an under-represented illness in clinical trial and registers.

Methods: We performed a descriptive and observational study of patients (P), that have the features described above, treated at a single medical center with a primary percutaneous coronary intervention programme between the years 2006 and 2015.

Results: Out of 1.216 PPCI, 15 (1.2%) patients presenting with ST-segment elevation myocardial infarction underwent primary percutaneous coronary Intervention which clearly showed a significant lesion of left main with angiographic data that prove to be the infarct-related artery. The average age was 70,4±14,9, with a clear male predominance (13 patients, 86,7%). 5 cases (33,3%) were diabetics, 60% were hypertensives, 33,3% had dyslipidemia and 75% were smokers. The large majority of cases (13 patients, 86,7%) was the first appearance of the disease: its debut. Angiographically, 33% of cases had total occlusion of left main and all other patients had a critical lesion, a different flow of TIMI III, a suggestive image of thrombus or a complicated plaque without another responsible lesion. The bifurcation was affected in 9 cases (60%), 13 cases had right dominance and there were severe lesions affected coronary vessels that were different from main left in half of the cases (53,3%). Clinically, 10 cases (33, 3%) showed signs of shock.

The procedure was done with urgency within the expected time limits according to a regional primary angioplasty protocol and the radial approach was the method of access in half of the cases (53%). Intra-aortic counter-pulsation balloon (IABC) was used in two patients. Ultrasound intracoronary guided procedure was used in only two patients and it was used intravenous abciximab in 73, 3% of P. Stenting was achieved in all P. The technique mainly used (13 cases / 86, 7%) was the implanted of a single Stent, mostly drug eluting stents (DES) (11 cases / 73%) and in all other cases bare metal stents (BMS). Mortality rate during hospitalization was 33, 3% (5 cases). Patients who survived had an average stay of 12, 1+-6, and 9 days.

Conclusions: Left main lesion is a rare cause of ST-segment elevation myocardial infarction. It's more frequent in men and as a first manifestation of coronary artery disease. It has a high rate of cardiogenic shock and a high likelihood of hospital mortality despite the fact of a successful stenting in primary percutaneous coronary Intervention and in spite of the use of a medical technology as simply and easily as possible.

P255

Clinical spectrum of acute coronary syndromes due to coronary artery embolism

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Purpose: Coronary artery embolism (CAE) resulting in acute myocardial infarction (AMI) is an infrequent but potentially life-threatening occurrence. To date, there are few data in the literature regarding this entity. Our aim is to describe the clinical presentation and management of these patients at our hospital.

Methods: We carried out a prospective, observational study of a cohort of 5 patients with AMI, admitted from January 2011 to January 2014, who underwent percutaneous coronary intervention (PCI) and CAE was observed.

Results: Five patients (3 male, 2 female) with a mean age of 50 ± 7 years were included in the study. We report the five cases and shown the angiogram of each one. 60% suffered from hypertension and diabetes and 20% dyslipidemic. All of them presented with acute chest pain to the emergency room. Underlying diseases predisposing to coronary emboli included: atrial fibrillation (known 40%, not known 80%), valvular heart disease (20%) and myocardial pathology (20%). Sub-therapeutic or interrupted anti-coagulation therapy was common. All emboli involved the left coronary artery. Patients were treated with thrombus aspiration and some of them received abciximab or bivalirudin. Regarding to hospital complications: two patients suffered heart failure, one had a femoral pseudoaneurysm, 4 patients atrial fibrillation and a patient was admitted after ventricular fibrillation and cardiac arrest, there were no mechanical complications and none of them died. All patients were discharged with oral anticoagulants. In addition, two of them received an antiplatelet and one was doubly antiaggregated. Exception to a patient, all presented left ventricular systolic dysfunction at discharge.

Conclusions: Embolic myocardial infarction is a rare entity but can occur in predisposed groups, especially in those with atrial fibrillation. A high prevalence of atherosclerosis risk factors is observed. Heart failure is a common complication, probably because of a high rate of left ventricular systolic dysfunction. There is still no consensus regarding the optimal therapeutic algorithm for embolic myocardial infarction.

P256

Correlation of increasing levels of glycemia at admittance with in-hospital mortality

in STEMI patients, and its impact on the outcome of revascularized patients

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Background: Hyperglycemia is associated with poor prognosis in patients with Acute Myocardial Infarction (AMI) with or without Diabetes Mellitus (DM). On the other hand revascularization in patients with ST-Segment Elevation Myocardial Infarction (STEMI) has considerably decreased mortality and complications independently of glycemia at admittance.

Objective: To evaluate the impact of increasing levels of glycemia on mortality in STEMI patients, with or without DM, and how it affects mortality in revascularized patients.

Method: We enrolled all patients admitted at our Coronary Care Unit (CCU) from February 2012 until February 2016 presenting with STEMI within the first six hours of symptoms, who were treated conservatively, with thrombolysis or with Primary Percutaneous Coronary Intervention (PPCI). We collected data for all patients regarding their glycemia at admittance (dividing them into three glycemic groups of <125 mg/dL, 125-180 mg/dL and >180 mg/dL), DM, smoking, age, gender, race, hypertension and we studied their in-hospital (CCU and ward stay) mortality.

Results: We followed 877 patients in total, out of which 257 (29.3%) were diabetics. The average glycemia in diabetic and non-diabetic patients was 265.95 ± 125.7 mg/dL and 176.48 ± 91.6 mg/dL, respectively. Mortality in diabetic patients was 15.6%, whereas in non-diabetic patients it was 8.8%. We observed that increasing glycemia was associated with increasing mortality in both groups (diabetic and non-diabetic patients), and the increase in mortality due to increasing glycemia was greater in non-diabetic patients (0%, 5.72%, 18.2% vs. 1.9%, 6.9%, 26.8% in diabetic and non-diabetic patients and according to three glycemic groups mentioned above, respectively) (Table 1). The average mortality in the total population was 10.8%, being 4.8% in the revascularized group vs. 16.4% in the conservative treatment group. From the binary logistic regression analysis it resulted that an increase in glycemia by 1 mg/dL leads to an increase in mortality odds by 1% (OD=1.01, CI 95%,1.001-1.13). We observed that there was a statistically significant correlation between glycemia and mortality ($p<0.001$) and that the impact of different treatment options in mortality is statistically significant ($p<0.001$). Of note, despite obvious increased mortality in conservative patients compared to revascularized patients, mortality in glycemias >180 mg/dL compared to mortality in glycemias <125 mg/dL and 125-180 mg/dL is increased

several times more in revascularized patients (11.8% vs 0.7% and 1.5% respectively) compared to conservatively treated patients (28.6% vs. 3.4% and 11.8% respectively).

Conclusions: The increasing level of glycemia at admittance is associated with increasing mortality of patients with STEMI, with or without Diabetes Mellitus, and it negatively affects the outcomes of revascularized patients.

P257

Culprit coronary artery in ST-segment elevation myocardial infarction: is it associated with time delays?

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Introduction: Clinical factors associated with time delays in ST-segment elevation myocardial infarction (STEMI) have been widely identified. However, angiographic variables such as culprit artery (CA) have not been thoroughly investigated. We aimed to evaluate the effect of culprit artery location on patient's delay (PD) and health system's delay (HSD) in patients with STEMI who underwent percutaneous coronary intervention (PCI).

Methods: 1.577 consecutive patients with STEMI underwent primary PCI at our University Hospital from March 2006 to April 2016. We excluded 113 patients because of left main or intermediate coronary artery culprit lesion, non-revascularizable disease or normal study or incomplete data. Patients included were divided into 3 groups according to CA location: left anterior descending artery (LAD), left circumflex artery (LC) or right coronary artery (RCA) and associations with time delays were assessed.

Results: Baseline characteristics are summarised in table 1. Angiography revealed that the RCA was the most frequent CA (43.2%), followed by LAD (41.3%) and LC (15.5%). The LC group showed significantly ($p=0.017$) longer HSD (145 minutes) compared with the others groups (122 [LAD] and 106 [RCA] minutes) and a trend toward a longer PD ($p=0.90$) among the 3 groups (119 [RCA] vs 121 [LAD] vs 133 [LC] minutes). Despite a longer total ischemic time in the LC group, in-hospital mortality was higher in patients with a LCA lesion (2.9%) than in the others groups (2.6% [RCA] vs 0.6% [LC]). Logistic regression analysis revealed that the LC CA was an independent predictor for HSD >120 minutes (odds ratio, 2.1; 95% confidence interval, 1.01 to 4.2; $p = 0.048$)

Table 1. Table 1. Demographic, clinical and proce

| | |
|---|-------|
| Hypertension | 60.4% |
| Diabetes mellitus | 26.3% |
| Dyslipidaemia | 37.2% |
| Smoking | 41.9% |
| Femoral Access | 84.5% |
| Multivessel disease | 50.7% |
| Left ventricle ejection fraction (mean) | 48.5% |

Conclusions: According to our data, LC CA is associated with longer patient's and health system's delay. In fact, it is an independent predictor of health system's delay > 120 minutes. This finding could be probably explained because of difficulties in diagnosing STEMI when the LC is the CA.

P258

Culprit-vessel vs. multi-vessel percutaneous coronary intervention in ST-segment elevation myocardial infarction

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Introduction: Patients (pts) with ST-segment elevation myocardial infarction (STEMI) frequently have significant coronary lesions in other vessels besides the culprit one. The optimal revascularization strategy for these pts is currently unknown. The aim of this study is to assess the characteristics and prognosis of STEMI pts who undergo culprit-vessel percutaneous coronary intervention (CVPCI) only and those who are submitted to multi-vessel percutaneous coronary intervention (MVPCI).

Methods: Prospective analysis of consecutive pts with STEMI and multi-vessel disease in a single tertiary cardiology centre in 2005-2014 who underwent primary angioplasty. Pts were stratified according to the chosen revascularization strategy: CVPCI and no further revascularization during that hospital stay; or MVPCI, whether the complete revascularization was made during the index procedure or later during the same hospitalization. A subanalysis was made comparing pts who were submitted to MVPCI in the first procedure or ad-hoc during the same hospital stay.

Results: 491 pts were analyzed (78.4% male, mean age 66.20 ± 10.96). 34.4% (n=159) underwent MVPCI, of which 71.3% were completely revascularized during the first procedure. CVPCI pts were more frequently female (25.2% vs. 14.8%

p 0.008), but there was no difference in the remaining baseline characteristics, such as age, comorbidities, cardiovascular risk factors, previous medication, type of presentation, Killip class and left ventricular ejection fraction. Posterior infarction was more common in CVPCI (1.2% vs. 4.1% p 0.039), although the overall incidence was low. CVPCI pts had more complications during hospital stay (65.7% vs. 56.2% p 0.042), at the cost of more ventricular tachycardia (4.3% vs. 0.6% p 0.022), ventricular fibrillation (6.8% vs. 2.4% p 0.036) and acute renal failure (9.0% vs. 4.1% p 0.049), but less minor bleeding (0.3% vs. 2.4% p 0.031). In-hospital mortality was also increased in pts who were submitted to CVPCI only (9.9% vs. 4.1% p 0.024). There was no difference in a composite endpoint of all-cause mortality, hospital readmission of cardiovascular cause, angiography, percutaneous coronary intervention (PCI) and cardiac surgery at 1 year between the two groups (16.9% vs. 17.2% p 0.709), although there was a trend towards more PCI at 1 year in the CVPCI group (6.3% vs. 2.3% p 0.069). No significant differences in prognosis were found when comparing pts who received complete revascularization during the first procedure or later during the same hospital stay.

Conclusion: In this population, pts who were submitted to CVPCI only suffered more in-hospital complications and death. However, prognosis at 1 year remained similar when compared to patients who underwent MVPCI, although a tendency for more PCI was noted. In patients submitted to MVPCI, it seems there is no difference in achieving complete revascularization during the first procedure or later during the same hospital stay.

P259

Definite stent thrombosis in a real world population - incidence and clinical outcome

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Background: Stent thrombosis (ST) is a highly morbid complication of percutaneous coronary intervention (PCI), which manifests commonly as ST-segment elevation myocardial infarction (STEMI), being associated with 30-day high mortality rates.

Purpose: To evaluate the prevalence of stent thrombosis among STEMI patients and its outcome.

Methods: We analysed retrospectively 2531 patients (pts) admitted, consecutively, in our coronary care unit with acute coronary syndrome, from July 2009 to December 2014 and we selected those who presented with STEMI (n=1234). They were divided in two groups: group 1 – pts with angiographically confirmed stent thrombosis (n=27, 2.2%); group 2 – pts with no stent thrombosis (n=1207,

97.8%). For each group we compared clinical features and adverse events. Primary endpoint was the occurrence of cardiovascular death at 1 year; follow-up was completed in 96% of patients.

Results: It was not observed statistically significant differences in gender, age or in the prevalence of conventional cardiovascular risk factors between groups. Patients with stent thrombosis had higher prevalence of previous myocardial infarction (92.6% vs 7.8%; p<0.001), angina (25.9% vs 7.8%; p=0.005) and percutaneous coronary intervention (100% vs 4.6%; p<0.001). On admission, they tended to present more often malignant arrhythmias in the first 24h (33.3% vs 23%; p=0.052). There were no statistically significant differences on the location of infarct-related artery, time symptoms-reperfusion or in the percentage of patients revascularized. Patients with stent thrombosis were more treated with glycoprotein IIb/IIIa inhibitors (48.1% vs 20.3%; p=0.001), presented more frequently post-infarction angina (33.3% vs 2.5%; p<0.001) and re-infarction events (37% vs 0.9%; p<0.001). We identified 37% (n=10) of acute ST; 18.5% (n=5) of subacute ST; 7.4% (n=2) of late ST and 37% (n=10) of very late ST. Analysing the previous implantation, 85.2% occurred in STEMI, 3.7% in NSTEMI and 11.1% in stable angina contexts. Left anterior descending anterior were involved in 51.9% (n=14) of cases, right coronary artery in 40.7% (n=11) and circumflex artery in 7.4% (n=2). Mid segment was the most involved (51.9%; n=14). Patients with ST were treated with balloon-angioplasty in 74.1% (n=20); drug eluting stent (DES) in 3.7% (n=1) and balloon plus DES in 22.2% (n=6). Considering in-hospital mortality, there was no difference between groups, but patients with ST had higher cardiovascular mortality (7.7% vs 1.8%; p=0.034); OR 4.85 [1.12 - 20.94] at one-year follow-up.

Conclusion: Stent thrombosis accounts for 2.2% in our cohort of patients. The more frequent clinical presentation was acute and very late stent thrombosis, the last mainly due to 1st generation drug eluting stents. Patients with definite stent thrombosis did not have poorer in-hospital survival, but had higher cardiovascular death at one-year follow-up.

P260

Dependence of concentrations of heart failure biomarkers on ultrasound indicators of remodeling in subjects with myocardial infarction

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Purpose: To estimate the content of galectin-3 and its relationship with ultrasound indicators of remodeling in

comparative aspect with N-terminal natriuretic propeptide (Nt-proBNP).

Materials and methods: We examined 87 subjects admitted with the diagnosis of ST-elevated myocardial infarction (STEMI). All the subjects underwent standard diagnostic methods in MI, including coronary angiography (CAG). On the 10th - 14th days of MI all the subjects underwent echocardiography under standard modes with left ventricle (LV) ejection fraction (EF) estimation and remodeling parameters such as LV end-diastolic dimension (EDD), LV end-systolic dimension (ESD). Galectin-3 was estimated by immunoenzyme method in blood serum in all the subjects on the 1st - 2nd days of the disease and in 81 subjects it was estimated in dynamics on the 10th - 14th days. The allowed values of this biomarker in blood serum are 0.0-2.28 ng/ml. Nt-proBNP level was estimated in 81 subjects on the 1st - 2nd days of MI and in 78 subjects on the 10th - 14th days of the disease. Reference range of this indicator in subjects younger than 75 years old is up to 125 pg/ml, older than 75 years old – up to 450 pg/ml. We used standard statistical methods of data processing.

Results: Evaluation of instrumental indicators showed that subjects with LV dilatation are characterized by higher ($p=0.01$) values of galectin-3 estimated on the 10th - 14th days of the disease (26.1 [11.9;42.9] ng/ml and 10.6 [9.1;28.9] ng/ml respectively). These data were also confirmed by conducting a correlation analysis, thus we noted a positive correlation of galectin-3 estimated on the 10th - 14th days of MI with the values of LVEDD ($r=0.39$; $p=0.01$) and LVESD ($r=0.4$; $p<0.01$). The presence in subjects of a reduced LVEF less than 40% was associated ($p=0.01$) with the increased value of galectin-3 on the 10th - 14th days of MI which was 45.6 [44.8;52.8] ng/ml as compared to subjects with the preserved LVEF – 15.5 [9.9;35.9] ng/ml. Nt-proBNP level didn't show any significant association with echocardiographic parameters.

Conclusions: Galectin-3 is more sensitive to ultrasound markers of acute myocardial remodeling as opposed to Nt-proBNP.

Acute coronary syndrome - Non ST-elevation myocardial infarction

P261

Acute heart failure, diabetes and cardiogenic shock are independent predictors for in-hospital mortality in patient admitted with non-ST elevation myocardial infarction

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Despite aggressive intervention, morbidity and mortality of patients with acute coronary syndrome (ACS) remain high. Various clinical condition may contribute to the outcomes during acute phase. The aim of this study was to analyze clinical parameters that predict in-hospital mortality of ACS patient

We examined 1315 consecutive patients admitted with ACS in CVCU of our National Cardiovascular Center in 2015. Multivariable logistic regression was used to analyze predictors for in-hospital mortality.

Among 1315 patients, 786 (59.8%) were STEMI and 529 patients were UA/NSTEMI. Most of them are male (82.4%), below 65 years old and smoker (59.1%). Overall in-hospital mortality were 5.7% (76 of 1315), including 47 patients with STEMI and 29 with UA/NSTEMI. STEMI patients who failed to survive during hospitalization more likely have diabetes, suffered from acute heart failure (AHF) and cardiogenic shock (CS). However, after multivariable risk adjustment, only AHF and cardiogenic shock remain independent predictors for in-hospital mortality (odds ratio 7.64; 95%CI 3.41-17.13 and 11.45; 95%CI 5.61-23.36 respectively). Almost similar findings were observed in UA/NSTEMI population, with AHF and CS as strong predictor for in-hospital mortality (odds ratio 24.2; 95%CI 8.5-68.27), and those who underwent early revascularization were survive (odds ratio 0.361; 95%CI 0.131-0.994). We also observed no significant differences in mortality between cardiogenic shock patients who had IABP implantation and those without IABP.

In conclusion, we observed AHF and cardiogenic shock as predictors for in-hospital mortality among STEMI and UA/NSTEMI population. Early revascularization but not IABP implantation predicted survival for NSTEMI patients during hospitalization.

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Baseline and early changes in high sensitivity troponin T for predicting 1 year mortality in type 2 acute coronary syndrome

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Background: High-sensitivity cardiac troponin T (hs-cTnT) is useful for predicting mortality in type-1 acute coronary syndromes (ACS), however the prognosis role

Table 1. Discrimination of Hs-cTnT and GRACE

| | AUC (CI 95%) | P |
|---|------------------|-------|
| Baseline hs-cTnT (pg/ml) | 1.06 (1.03-1.08) | ref |
| Baseline hs-cTnT (pg/ml) + absolute changes (pg/ml) | 0.64 (0.53-0.75) | >0.05 |
| Baseline hs-cTnT (pg/ml) + relative changes (%) | 0.69 (0.59-0.78) | >0.05 |
| GRACE risk score (point) | 0.75 (0.66-0.84) | ref |
| GRACE risk score (point) + baseline hs-cTnT (pg/ml) | 0.76 (0.68-0.85) | >0.05 |
| GRACE risk score (point) + absolute changes (pg/ml) | 0.75 (0.67-0.84) | >0.05 |
| GRACE risk score (point) + relative changes (pg/ml) | 0.75 (0.66-0.84) | >0.05 |

of early changes in hs-cTnT in type-2 ACS has not been studied.

Purpose: to assess the prognosis value of hs-cTnT at presentation in pts with type-2 ACS; and to evaluate whether early changes in hs-cTnT add prognosis information to baseline hs-cTnT in this scenario.

Methods: retrospective analysis of a prospective registry including 243 consecutive pts with type-2 ACS admitted to the cardiology department of a tertiary hospital between January 2012 to January 2015. Blood samples were collected to measure hs-cTnT at presentation and within 6 hours of admission in an unblinded fashion. Pts with <2 hs-cTnT measurements were excluded (12%). GRACE risk score was calculated in 92% of cases. Pts were clinically followed and 1-year vital status was recorded by 3 trained cardiologists in all.

Results: A total of 215 type-2 ACS pts (72±12 years, 54% male) were included. Most common causes of type-2 ACS were tachyarrhythmias (33%), heart failure (14%) and hypertensive emergency (13%). During follow-up, 37 (17%) patients died. Baselines hs-cTnT levels (OR×100 pg/ml, 1.11 95%CI 1.02-1.20; p=0.015) and GRACE risk score (OR×point, 1.03 95%CI 1.02-1.05; p<0.001) were associated with an increased mortality, whereas absolute and relative hs-cTnT changes did not (p>0.05). As shown in Table 1, early changes in hs-cTnT did not add prognostic information to hs-cTnT at presentation (both p>0.05). ROC analyses also showed that neither hs-cTnT at presentation nor changes in hs-cTnT levels improve the predictive ability of GRACE risk score (all p>0.05). In reclassification analyses the results remains the same (all p>0.05).

Conclusions: High baseline hs-cTnT levels, but not hs-cTnT changes, are associated with higher 1-year mortality in type-2 ACS pts. Neither baseline levels nor changes in hs-cTnT add information to GRACE risk score for predicting 1 year mortality in pts with type-2 ACS.

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Beta-blockers in non-ST elevation acute coronary syndrome: is there any benefit?

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Background and purpose: Beta-blockers (BB) are a mainstay of acute coronary syndrome (ACS) treatment, especially in patients (P) with reduced left ventricle systolic function (LVEF), to reduce mortality and cardiovascular events. However, the benefit of BB in P with normal or mild reduced LVEF, compared to current therapies, is not yet established. Our aim was to evaluate the impact of BB on mortality, re-infarction and major adverse cardiac events (MACE) in P with a non-ST elevation SCA plus normal or mildly reduced LVEF.

Methods: We enrolled 424 consecutive P with a non-ST elevation ACS, admitted to our Cardiac Care Unit, along 4 years. P were divided in two groups regarding the prescription of BB at discharge. A clinical follow-up (25±9 months) was performed targeting mortality, re-infarction and MACE.

Results: Seventy-three percent of P were admitted with non-ST elevation acute myocardial infarction (NSTEMI) and the remaining with unstable angina. BB were prescribed in 80% of patients at discharge. Comparison of groups characteristics is presented in table 1. Mortality and MACE were similar in both groups, however the re-infarction rate was higher in P without BB. After adjustment of confoundable variables with Cox regression, older age was the only independent predictor of mortality (HR 1.1, P<0.01) and MACE (HR 1.1, P<0.01), and the absence of BB therapy (HR 1.9, P=0.04) and older age (HR 1.1, P<0.01) were re-infarction independent predictors. Survival analysis of both groups is presented in figure 1.

Conclusion: According to our data, BB prescription after a non-ST -elevation ACS with normal or mildly reduced LVEF decreased the re-infarction rate, but had no effect on long-term mortality.

P264

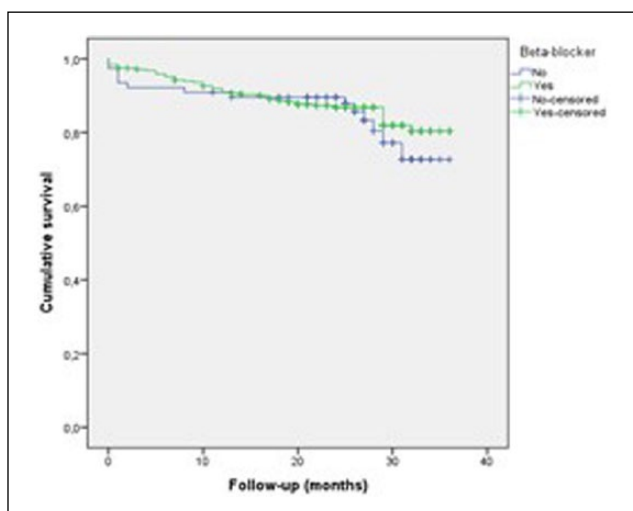
Characteristics of patients with acute coronary syndrome and nonobstructive coronary artery disease

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Table 1.

| | No beta-blocker | Beta-blocker | P |
|---------------------------------------|-----------------|--------------|-------|
| Age (years) | 71±12 | 66±13 | 0.003 |
| NSTEMI (%) | 65 | 75 | 0.066 |
| Grace risk score | 125±45 | 119±48 | 0.318 |
| Multivessel disease (%) | 35 | 44 | 0.147 |
| Percutaneous coronary angioplasty (%) | 84 | 76 | 0.173 |
| Killip-kimball evolution ≥ II (%) | 19 | 17 | 0.661 |
| Maximum troponin (ng/mL) | 12±23 | 12±27 | 0.900 |
| Mortality (%) | 19 | 14 | 0.277 |
| Re-infarction (%) | 20 | 9 | 0.010 |
| MACE (%) | 35 | 29 | 0.262 |



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Purpose: to assess short outcomes of acute coronary syndrome (ACS) in patients with nonobstructive coronary artery disease.

Methods: The study is nonrandomized and opened. We presents subanalysis of this study for data of ACS patients admitted at the emergency cardiology department during 2010 year. Inclusion criteria: age ≥ 18 years at time of randomization (18 years and older), nonobstructive coronary artery disease (normal coronary artery/atherosclerotic plaques <50%) confirmed by the invasive coronary angiography. Exclusion criteria were patients previously underwent revascularization of coronary artery, severe comorbidity. Primary outcomes were hospital mortality, incidence of recurrent ischemia, stroke, and as final diagnosis acute myocardial infarction, unstable

angina, Takotsubo syndrome, and myocarditis. Descriptive statistics used for analysis of data.

Results: It was 33 (3.5%) patients with ACS and nonobstructive coronary artery disease among 943 patients hospitalized due to ACS. The average age was 54.5±7.2. All patients were discharged from hospital. 14 (42%) subjects had STEMI and 19 (58%) - NSTEMI-ACS. Acute myocardial infarction as final diagnosis was in 12 (36%) among STEMI patients, and in 9 (27%) patients with NSTEMI-ACS. Those remaining STEMI patients in 1(3%) case were diagnosed hypertension and another case probable antiphospholipid syndrome. Only 9(27%) patients presenting with NSTEMI-ACS had finally myocardial infarction, 4(12%) had unstable angina, cardiomyopathy Takotsubo diagnosed in 1 (13%), arrhythmic scenario of myocarditis confirmed in 1(3%), myocarditis mimicking acute coronary syndrome was in 1(3%) and hypertension was in 3(9%).

Conclusions: The proportion of patients with acute coronary syndrome and nonobstructive coronary artery disease was 3.5%. One third cases completed by the myocardial infarction in both STEMI and NSTEMI-ACS. Those remaining presented heterogeneous patients with hypertension, unstable angina, Takotsubo syndrome, and myocarditis.

P265

Cholesterol paradox in acute coronary syndrome

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Introduction: Hypercholesterolemia, particularly an increase in the low-density lipoprotein cholesterol (LDL-C) level, is a well-established risk factor for coronary heart disease and cardiovascular mortality. However, observational studies have suggested a relationship between lower serum LDL-C levels and higher risk of adverse outcomes in patients (pts) with heart failure or acute coronary syndrome (ACS).

Aim: To study the association between lower serum LDL-C and in-hospital mortality in the context of ACS.

Methods: Retrospective study based on a sample of 2519 pts consecutively admitted in the coronary care unit with ACS over 5 years. We excluded pts with a prior diagnosis of dyslipidemia and/or those treated with statin (n = 1512), with a total of 1007 eligible pts. Serum lipid protein panel was measured at admission. Pts were stratified into 2 groups according to their admission/first 24h LDL-C levels: group 1 = LDL-C ≤ 100 mg/dl and group 2 = LDL-C > 100 mg/dl. The primary endpoint was in-hospital mortality.

Results: Participants mean age was 62.0 ± 13.9 years and 78.7% were men. Most pts (55.4%) were admitted for ACS with ST elevation. The pts with lower LDL-C levels were older (67.2 ± 15.0 vs 60.5 ± 13.1 years, $p < 0.001$) and had a higher prevalence of hypertension ($p = 0.002$), chronic kidney disease ($p = 0.003$), stroke ($p = 0.003$) and atrial fibrillation ($p = 0.006$).

Group 1 pts had, at admission, higher levels of creatinine ($p < 0.001$) and NT-proBNP ($p < 0.001$) and lower levels of hemoglobin ($p < 0.001$). This group had lower levels of total cholesterol (145.8 ± 24.3 vs 202.4 ± 33.1 mg/dl, $p < 0.001$) and triglycerides (112.5 ± 62.8 vs 155.1 ± 89.4 mg/dl, $p = 0.01$); HDL-cholesterol levels were similar between groups.

In echocardiographic evaluation, group 1 pts had a higher prevalence of depression of right ventricular systolic function ($p = 0.006$), left ventricular systolic function $\leq 40\%$ ($p = 0.01$) and mitral regurgitation (grade $> II/IV$) ($p = 0.03$).

Pts with lower LDL-C levels underwent less often coronary angiography ($p = 0.01$) and revascularization ($p = 0.01$) and were more often treated with diuretics ($p < 0.001$), inotropic drugs ($p < 0.001$) and mechanical ventilation ($p = 0.01$). Group 1 had a higher prevalence of in-hospital complications: heart failure ($p < 0.001$), cardiogenic shock ($p < 0.001$), de novo atrial fibrillation ($p = 0.001$) and respiratory infection ($p = 0.009$). The in-hospital mortality was also higher in this group (3.8% vs 1.0%, $p = 0.002$), however, the presence of lower LDL-C levels was not an independent predictor of this event.

Conclusion: The present study demonstrated that lower LDL-C levels were related to worse clinical outcomes, however weren't an independent predictor. Lower LDL-C may be a result of increased metabolic stress; thereby, the cholesterol paradox in pts with ACS may be associated with several confounders and it may constitute only a marker of severity.

P266

Impact of impaired glomerular filtration rate and revascularization strategy on one-year cardiovascular events in non-ST elevation acute coronary syndrome

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Background: Approximately 30-40% of individuals presenting with non-ST elevation acute coronary syndrome (NST-ACS) also have an estimated glomerular filtration

rate (eGFR) <60 ml/min/1.73m² and, thus, a poorer prognosis. In this population, the optimal revascularization strategy remains uncertain, as many patients with impaired eGFR were excluded from trials.

Purpose: We aimed to assess the impact of an invasive versus conservative strategy in patients with NST-ACS and impaired eGFR, on the long-term prognosis.

Methods: Prospective data of 344 consecutive patients, admitted in a single coronary unit, between October 2009 and September 2014, with NST-ACS and eGFR <60 ml/min/1.73m². They were divided in 2 groups according to the adopted strategy during hospitalization: group A - patients submitted to an invasive strategy (n=260; 58.8% men); group B - patients submitted to a conservative strategy (n=84; 51.2% men). The primary composite endpoint (PCE) was defined as re-infarction, stroke and cardiovascular death at one year of follow up.

Results: Patients in group B were older (A: 73.0 ± 8.5 vs B: 80.2 ± 8.4 years, $p < 0.001$) and had higher prevalence of previous myocardial infarction (A: 26.2% vs B: 36.9%, $p = 0.041$) and chronic heart failure (A: 11.2% vs B: 19.0%, $p = 0.050$). There were no statistical differences regarding other baseline characteristics. At admission, patients within group B, presented with less typical symptoms (A: 81.2% vs B: 65.5%, $p = 0.003$), with higher GRACE score (A: 148.1 ± 33.1 vs B: 171.8 ± 31.8 , $p < 0.001$) and with more Killip class > 1 (A: 28.1% vs B: 51.9%, $p < 0.001$). eGFR was lower in group B (A: 43.2 ± 12.5 vs B: 36.9 ± 13.6 , $p < 0.001$). Regarding in-hospital management, group B was less prescribed with aspirin (A: 98.1% vs B: 92.9%, $p = 0.029$), clopidogrel (A: 97.7% vs B: 84.5%), beta-blockers (A: 50.4% vs B: 23.8%, $p < 0.001$) and statins (A: 91.2% vs B: 82.1%, $p = 0.022$). During hospitalization, group B presented a higher incidence of cardio-respiratory arrest (A: 4.2% vs B: 11.9%, $p = 0.015$), mortality (A: 5.0% vs B: 16.7%, $p = 0.001$) and PCE (A: 7.7% vs B: 20.2%, $p = 0.002$). The occurrence of contrast nephropathy or hemorrhagic complications was similar in both groups. At 1-year follow-up, group B evidenced higher mortality (A: 16.9% vs B: 48.8%, $p < 0.001$) and PCE rates (A: 21.9% vs B: 51.2%, $p < 0.001$).

Conclusion: Patients who were submitted to a conservative strategy were much less likely to undergo other evidence-based therapy, despite their worse cardiovascular risk profile. They presented a worse prognosis with higher mortality and PCE at 1-year follow-up.

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Invasive versus conservative strategy in patients aged 80 years or older with non-ST-elevation myocardial infarction: influence on prognosis and quality of life

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Introduction: Both morbidity and mortality are higher in elderly patients making it difficult to implement recommendations in the management of patients over 80 years old with non-ST-elevation myocardial infarction (NSTEMI-ACS).

Purpose: The aim of this study was to analyze the therapeutic strategies developed in octogenarians with NSTEMI-ACS and determine its impact in intra and extra-hospital evolution.

Methods: This was a retrospective observational study of all patients aged ≥ 80 years with NSTEMI-ACS admitted to the Department of Cardiology at the Miguel Servet Hospital in Spain between April 2013 and December 2015. They were assigned into two groups: conservative strategy (CS) versus invasive strategy (IS); the mean follow-up time was of 24.7 ± 5.72 months. The quality of life questionnaire (EuroQol 5D and EQ-5D-5L index value) was administered via telephone survey and statistical analysis was done using SPSS Statistical Analysis System 18.

Results: Among 224 octogenarians with NSTEMI-ACS, 113 were managed using a conservative approach and 111 using an invasive strategy. Invasive strategy was associated with longer average length of stay (11 ± 8 vs. 8 ± 9 days, $p < 0.001$). Patients in the conservative group had a higher prevalence of stroke, chronic respiratory disease, cognitive impairment, Charlson index, renal failure and dependence on self-care ($p < 0.05$). During admission, there were major differences between both groups in preserved LVEF (67.6% IS vs. 41.6% CS; $p = 0.025$). In-hospital mortality was significantly lower in octogenarians in the invasive group (8.1% IS vs. 18.6% CS, $p = 0.017$). Invasive strategy was associated with lower rates of HF (IS 24.3% vs CS 40.7%; $p = 0.004$). During the follow up, the invasive strategy group had reduced death rates on longer-term follow up (IS 27.9% vs 57.5% CS, $p < 0.001$); Combined events (death, stroke, revascularization, bleeding) were significantly decreased with the invasive strategy (36.9% IS vs 64, 3% CS, $p < 0.001$). In the multivariate analysis, we did not identify statistically significant predictors of mortality. Higher hemoglobin concentration > 12 g/dl was a protective factor against mortality in this cohort (HR 0.217 (95% CI 0.074 to 0.638, $p = 0.005$)) and finally the invasive strategy was associated with better quality of life (EQ-5D-5L index value: 0.79 ± 0.15 IS vs 0.72 ± 0.15 CS; $p = 0.014$).

Conclusions: Compared with a conservative approach, an invasive strategy in octogenarians with NSTEMI-ACS

is associated with reduced rates of mortality and major cardiovascular events and a better quality of life, therefore it's essential to remember the increased morbidity and dependence on self-care, on patients treated with conservative treatment.

P268

Medium-term prognosis of revascularization by CABG vs PCI in a NSTEMI population

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Introduction: The choice between coronary bypass graft surgery (CABG) and coronary angioplasty (PCI) in patients with myocardial infarction without ST-segment elevation (NSTEMI) is based on multiple criteria including coronary anatomy and comorbidities. Currently, there is some gap in evidence regarding the medium and long-term outcomes between the two strategies.

Aims: 1) Characterize a NSTEMI population, which performed two different revascularization strategies (CABG versus PCI); 2) Analyze the medium term prognosis of both strategies; 3) Analyze subgroups of patients in each strategy that presented better survival curves.

Methods: Retrospective study, including 3156 patients with NSTEMI, revascularized by CABG or PCI. The population was divided in two groups: A, patients that were submitted to CABG (n=613; 19.4%); B, patients who underwent PCI (n=2543; 80.6%). Groups were compared regarding their characteristics and prognosis. Cox regression and Propensity Score were used to compare both revascularization strategies, to determine differences in mortality at one-year. Subgroups analysis was additionally performed to identify patients that could benefit of a particular strategy.

Results: Both groups had significant different demographical, comorbidities, presentation and laboratorial characteristics as expressed in Figure. The comparison between revascularization strategies revealed that the strategy itself was not a predictor of mortality at one-year follow-up, as evidenced in Cox regression (HR 0.55, $p = 0.080$) and the Propensity Score ($p = 0.996$). Other features as age > 75 years (HR 2.68, 95%CI 1.35-5.33, $p = 0.005$) or hemoglobin < 12 gr/dL (HR 2.84, 95%CI 1.42-5.66, $p = 0.003$) were predictors of one-year mortality. Several subgroups were defined by age, sex, comorbidities, laboratorial values, multivessel disease and complications, and were tested regarding differences in mortality between strategies; however, the interaction analysis did not identify any subgroup with statistically significant different survival curve.

Conclusions: Different revascularization strategies are applied according to patients' characteristics. The survival curves of CABG and PCI strategies did not differ at one-

year follow-up, showing that a strategy itself is not better than other, even when we consider subgroups of patients discriminated by age, sex, comorbidities, laboratorial values, multivessel disease and complications.

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Non-ST-elevation acute coronary syndrome - invasive strategy 0-24h vs 24-72h

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Introduction: Non-ST-Elevation Acute Coronary Syndrome (NSTEMI-ACS) comprise a heterogeneous group of patients (P) with different characteristics and prognosis. Several risk scores have been created for prognostic stratification, however, remains in discussion what is the ideal time of revascularization in NSTEMI-ACS P.

Purpose: Compare NSTEMI-ACS P submitted to invasive strategy (IS) between 0-24hvs24H-72, evaluating their clinical characteristics at admission and prognosis through mortality rate (MR) and hospitalization rate (HR) at 1-year follow-up (FU).

Methods: It was performed a retrospective study encompassing all P admitted by NSTEMI-ACS in a Cardiology Service of 1 October 2010 to 31 August 2014. Two groups were selected, one with coronary angiography (CA) performed in the first 24h after admission and another group with CA performed 24-72h after admission. Baseline characteristics and data on admission were evaluated. Univariate and multivariate analysis of MR and HR at 1 year FU were performed. For statistical analysis was used the SPSS 20.0.

Results: In study period were admitted 2818 Ps with ACS, 1566 with NSTEMI-ACS (56%). 977 patients (62.4%) were submitted to CA in the first 72h, 265 between 0-24h (27.1%) and 712 between 24-72h (72.9%). The group of P submitted to CA 0-24h had lower age (62.5yvs64.6y, p=0.02), less often had dyslipidemia (DL) (31.7%vs37.6%, p=0.04) and arterial hypertension (HT) (29.3%vs35.8, p=0.03) and more often present at admission with chest pain (72.0%vs62.0%, p<0.01) and had previous history coronary by-pass surgery (CABG) (98.1% vs 94.5%, p=0.01). There were no differences of gender and other cardiac and non-cardiac history.

In patients with CA 0-24h vs 24-72h was found a smaller percentage of normal coronary arteries (6,0%vs12,4%, p<0.01), lesser disease in coronary by-pass grafts (20%vs.54,3%, p<0.01) and more often were submitted to coronary angioplasty (66%vs.58,5%, p=0.02). There were no differences in vascular access used and in native coronary arteries disease.

At discharge there were no differences between groups (0-24hvs24-72h) in in-hospital mortality (0.8%vs0,8%), left ventricle ejection fraction (60.9%vs61,1%) and in-hospital complications (re-infarction, heart failure, arrhythmias, mechanical complications and hemorrhages). In 1 year FU there were no differences in HR (17.4%vs18,5%, p>0,05) and in MR (2.5% vs 3.4%, p>0,05) between groups.

Conclusions: 1 – In NSTEMI-ACS P, the group of P submitted to CA 0-24hvs24-72h had lower age, less often had DL and HT, more often had chest pain at admission and history of CABG, had a lower percentage of normal CA and more often were subject to coronary angioplasty.

2 - There were no differences in in-hospital mortality and number of complications. There is no difference too in HR and MR to 1 year FU.

3 - In the studied population there was not benefit on a early invasive strategy (0-24hvs24-72h) in the treatment of P with NSTEMI-ACS.

Atrial fibrillation

P270

Approach to de novo atrial fibrillation in the emergency department: from guidelines to reality

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Background and Purpose: Atrial fibrillation (AF) is the most commonly diagnosed arrhythmia worldwide. Its prevalence in the general population is of 1-2% but in can reach up to >15% in octogenarians. In Portugal, AF accounts for 15% of all strokes and it's associated with high morbidity and mortality.

Despite these findings, multiple studies have shown that it remains underdiagnosed and undertreated, even when high thromboembolic risk is recognized.

The aim of this study was to examine the current therapeutic strategies in AF patients in an emergency department (ED) of a tertiary care hospital in Portugal.

Methods: We performed a single-center retrospective observational study enrolling all patients with the ED discharge diagnosis of AF during a one year period (July 2014 to July 2015).

Results: Clinical records of 242 patients were reviewed. The diagnosis of de novo AF was made in 45% (n=108) of patients. The median age was 72 years old and 61% were women.

The onset of AF was established as acute (<48 hours) in 23% (n=25) and 55% of these patients were successfully cardioverted. In the remaining 77% (n=83) with AF onset unknown or superior to 48 hours a rate control strategy was chosen in 66% of cases and a rhythm control with amiodarone was used in 14%, while 20% didn't receive any drug.

In 84% of the studied population the CHADSVASc score was ≥ 2 and anticoagulation was given to 76% of these patients. In the 24% of patients that weren't treated 11% had a hemorrhagic risk that was considered to outweigh the benefit [previous hemorrhagic stroke (4), very advanced dementia (3), high hemorrhagic predisposition (5)]. For the remainder 13% the risk of falls was the most common appointed reason (9 patients) for not offering anticoagulation.

In 72% of all cases a cardiology consult was requested in the emergency department.

Conclusions: In this study, by comparison with previous studies conducted in Portugal, a higher rate of patients was given anticoagulation and managed with rate control drugs when presenting > 48 hours after AF onset.

The risk of falls still remained a common reason not to anticoagulate patients.

Further larger studies are needed to access the general scenario and develop strategies to help improve the standard of care and mitigate the AF burden.

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Atrial fibrillation in patients hospitalized with acute myocardial infarction

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Introduction: Atrial fibrillation (AF) is one of the most common complications of acute myocardial infarction (MI). Recent researches suggested, that AF is an independent predictor of inpatient and long-term mortality. But, other studies did not find this connection. Therefore, prognostic significance of AF in MI is controversial.

Purpose: To evaluate rate of AF after MI in Lithuania, find out risk factors of AF and consider the impact of atrial fibrillation on patients mortality.

Methods: A retrospective analysis of electronic medical records of 1184 patients hospitalized in the University Hospital Santariskiu klinikos with acute myocardial infarction in 2012. Two groups of patients were compared. The first group (I) – patients with AF, the second group (II) – patients, who had no AF.

Results: The mean age of patients was 72,25±12,26 years. 65,1% of subjects were males and 34,9% – females. AF

Table I. Comorbidities in patients groups

| Variables | I group (n=273) | II group (n=911) | p value |
|-----------------------|-----------------|------------------|---------|
| Chronic heart failure | 97 (35,8%) | 278 (30,5%) | p >0,05 |
| Hypertension | 236 (87,8%) | 761 (83,6%) | p >0,05 |
| Heart valve disease | 35 (12,8%) | 65 (7,1%) | p=0,003 |
| Renal disease | 60 (22,1%) | 129 (14,2%) | p=0,002 |
| Diabetes mellitus | 54 (20,0%) | 147 (16,2%) | p >0,05 |

was observed in 273 (23,1%) patients, 38,83% of them were diagnosed with permanent AF. I group (n=273) mean age was 78,21±10,06 y., II group (n=911) - 70,47±12,30 y. Patients in the I group more often had renal disease, heart valve disease, more often diagnosed Killip II, III and IV classes (respectively I gr. – 26,3%, 8,5%, 22,0%; II gr. – 19,6%, 4,6%, 9,2%;). In I group – 30,9% patients had LVEF <35%, in II gr. – 15,6% (p<0,001). Patients in the II group more often had dyslipidemia (568 (62,5%) vs. 132 (49,3%); p<0,001). In both groups, the most common reason of MI was occlusion of the LAD artery (36,4%-37,0%). 23,1% (274) of all patients died: I gr. – 114 (41,8%), II gr. – 160 (12,7%) (p<0,001). Deaths during hospitalization: I gr. – 37 (13,6%), II gr. – 44 (4,8%) (p<0,001), deaths in 3 years after hospitalization: I gr. – 77 (28,2%), II gr. – 116 (12,7%) (p<0,001).

Conclusions: Atrial fibrillation (AF) rate after acute myocardial infarction (MI) in Lithuania – 23,1%. AF is more common in older patients and in those who had comorbidities (renal, heart valve disease). Mortality during hospitalization term and in 3 years after hospitalization was higher for patients, who had AF.

P272

Factors associated with the occurrence of atrial fibrillation in acute coronary syndrome and its prognosis

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Introduction: Atrial fibrillation (AF) increases the mortality and morbidity in both the general population as patients with ischaemic heart disease. It is a frequent complication in acute coronary syndromes (ACS).

Purpose: The aim of the authors was to characterize the factors predictive of occurrence of AF in the context of ACS and its impact on morbidity and mortality in the short and medium term.

Methods: A retrospective, descriptive and correlational study, encompassing the patients admitted by ACS in a

cardiology department, during the period between 1st October 2010 and 30st June 2013. The follow-up was one year and held for medical consultation/contact telephone for Cardiologist. It was performed a multivariate and univariate analysis of the factors associated with the occurrence of AF in this context and of the complications and hospital mortality, to 30 days and 1 year after admission.

Results: In the time period indicated, 2302 ACS patients were admitted, of which 99 (4.3%) presented in initial EKG AF. 1680 patients (73%) were male and 622 (27%) were female, with an average age of 66 ± 13.4 years. 44.2% had ST segment elevation ACS (STEMI) and 55.8% had non ST segment elevation ACS (NSTEMI).

The factors associated with the occurrence of the AF were female sex, history of smoking, heart failure, peripheral arterial disease, kidney disease, dementia, Killip class 2 presentation and left ventricular dysfunction. The independent predictors of occurrence of AF were old age ($p < 0.01$), dyslipidemia ($p = 0.03$), STEMI ($p < 0.01$) and 3-4 Killip class presentation ($p < 0.01$).

In-hospital complications associated with the occurrence of AF were longer hospitalization (average of 6.7 days in patients with AF and 3.8 in no AF), stroke, clinically significant bleeding and the need for transfusion. AF occurrence associated with an increase of in-hospital mortality rate, to 30 days and 1 year.

Conclusions: The Independent predictors of occurrence of AF were older age, dyslipidemia, STEMI and Killip class 3-4 presentation.

AF is responsible for an increase in the average time of hospitalization in the ACS, as well as an increase of in-hospital complications and mortality in the short and medium term.

P273

Incidence of atrial fibrillation detected by continuous rhythm monitoring after acute myocardial infarction in patients with preserved left ventricular ejection fraction

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Background: Cardiac arrhythmias (CA) following the myocardial infarction (MI) can be associated with major adverse cardiovascular events. A timely detection of post-MI arrhythmias may lead to early intervention and bring benefit to the patients. The data on the 'real incidence' of post-MI arrhythmias remained limited.

Objective: We aimed to continuously monitor the rate and burden of CA by implanting cardiac loop-recorder (ILR) in patients with a preserved LVEF after AMI

Methods: In this prospective observational study, patients who underwent PCI and had LVEF $\geq 40\%$ within 7 days following MI were enrolled to receive ILR implantation. Primary outcome was the incidence of new-onset AF (defined by the ILR device's algorithm) during a follow up (FU) of 2 years.

Results: Of 827 consecutive patients with ACS, 50 (6%) eligible patients were finally recruited (mean age 57.8 ± 8.3 , 88% male). During the FU period, AF was found the most frequently detected arrhythmia. 29 (58%) of the patients developed new-onset AF, with a cumulative rate of all arrhythmias by 72%. The rate of AF events was increased in a time-dependent manner (16% at 3 months to 50% at 12 months), and the peak cumulative AF burden was detected between 3-6 months. Only 11% of symptomatic episodes were confirmed as AF, and 93% of patients with AF were asymptomatic. The Cox regression analysis further found that baseline troponin level and female-gender were risk factors of new-onset AF post-MI.

Conclusion: AF is a frequent but largely underestimated cardiac arrhythmia after MI. More rigorous monitoring strategies and relevant intervention are needed.

P274

Influence of atrial fibrillation type during acute coronary syndromes on long-term prognosis

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Background: Atrial fibrillation has been recognized as an adverse prognostic factor during acute coronary syndromes (ACS). The impact of AF type – new onset AF (nAF) or previous AF (pAF) - is controversial.

Purpose: We aimed to assess the influence of atrial fibrillation type on adverse cardiovascular events at 1 year follow-up, in patients diagnosed with ACS.

Methods: Prospective study of 1276 consecutive patients, diagnosed with ACS, admitted in a single coronary unit, between October 2009 and September 2014. They were divided in three groups: group A- patients with nAF (n=55; 63.6% men); group B- patients with pAF (n=61; 39.3% men) and group C – patients in sinus rhythm (n=1160; 71.8% men). We compared them regarding a primary composite endpoint (PCE) of cardiovascular death, non-fatal myocardial infarction or stroke at 1 year follow-up.

Results: Atrial fibrillation (AF) rhythm was identified in 9.1% of our population. It was more frequent in older patients (A= 71.9±13.8 vs B=76.8±8.9 vs C= 64.3±13.1, p<0.001) and in those with previous stroke (A=20.0% vs B=29.5% vs C=6.6%, p<0.001), chronic heart failure (A=16.4% vs B=26.2% vs C=4.4%, p<0.001) and high blood pressure (A= 76.4% vs B=78.7% vs C=64.4%, p=0.013). At admission, both patients with nAF and pAF had higher rates of non-ST elevation ACS (A= 70.9% vs B=68.9% vs C=56.5%, p=0.009), with higher prevalence of Killip class > 1 (A=40.4% vs B=39.3% vs C=19.1%, p<0.001). During hospitalization, AF patients were more often prescribed with antiarrhythmic drugs (A= 46.5% vs B=39.4% vs C= 10.2%; p<0.001) and less with beta-blockers (A=38.2% vs B=29.5% vs C=53.3%, p<0.001). AF patients were less likely to have undergone invasive risk stratification (A=72.7% vs B=75.4% vs C=89.1%, p<0.001). During hospitalization, they presented higher rates of cardiogenic shock (A=12.7% vs B=11.5% vs C=6.2%, p=0.019) and overall death (A=9.1% vs B=9.8% vs C= 4.7%, p=0.044) without any statistical difference between AF groups. At 1 year follow-up, AF groups evidenced higher PCE (A=36.4% vs B=31.1% vs C=15.7, p<0.001).

Conclusion: AF during the acute phase of ACS was associated to adverse outcomes at 1 year follow-up. However, there was no significant statistical difference between AF groups.

P275

New-onset atrial fibrillation in ST-segment elevation myocardial infarction: differences according to the myocardial infarction location and prognosis

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Introduction: In ST-segment elevation MI (STEMI) patients' (pts), the occurrence of new-onset atrial fibrillation (AF) can impair prognosis. However it is not known if in this group of pts, the location of myocardial infarction would have impact on the outcome.

Purpose: Characterization of population of pts with STEMI who developed AF according to the MI location - Anterior vs. Inferior - and its potential impact on in-hospital morbi-mortality

Methods: From 5739 pts with STEMI diagnosis from a Multicentric National Registry, we studied 381 pts (6.64%) who developed new-onset AF. Two groups were defined: 1) Pts with Anterior MI; 2) Pts with Inferior MI. Recorded demographic data, medical history, inpatient therapy, coronary angiography and revascularization performed. Defined the following in-hospital adverse events (IHAE): mortality, re-infarction, stroke, heart failure (HF), cardiogenic

shock (CS), high-grade atrioventricular block (AVB), sustained ventricular tachycardia (VT), major bleeding (MB). A multivariate analysis was performed to identify if MI location was an independent predictor of IHAE.

Results: Group 1 has 191 pts (50.1%). Group 1 pts were older (73±12vs69±13 years,p=0.001) but without differences in gender (male- 63.9 vs 69.5%, p=0.246), CV risk factors, previous MI, stroke, chronic kidney disease or previous PCI/CABG. No differences in proportion of pts in sinus rhythm on admission (84.8 vs. 78.9%, p=0.137), in those who received primary PCI (95.5 vs 96.7%, p=0.605), rate of radial access (64.7 vs 60.7%, p=0.448) or the presence of multivessel disease (38.8 vs 46.7%, p=0.164). Pts with Anterior MI were more likely to evolve in Killip II-IV (48.1 vs 29%, p<0.001), to have depressed LV function (ejection fraction<50% - 80.4 vs 45.6%, p<0.001) but were less likely to receive a temporary pacemaker (3.7 vs 16.3%, p<0.001). There were no differences regarding the need of IABP (4.2 vs 2.1%, p=0.244) or invasive mechanical ventilation (13.1 vs 7.9%, p=0.098). Pts in group 1 were more likely to receive beta-blockers (73.8 vs 64.2%, p=0.042), amiodarone (76.4 vs 55%, p<0.001) and diuretics (71.2 vs. 42.1%, p<0.001) but without differences on aspirin, P2Y12 inhibitors or anticoagulants. Group 1 pts had higher incidence of HF (59.7 vs 34.5%, p<0.001) but less incidence of AVB (5.2 vs 19.5%, p<0.001). There were no differences regarding re-infarction (1.6 vs 0%, p=NA), stroke (3.1 vs 2.1%, p=0.751), CS (25.4 vs 19.8%, p=0.193), VT (12.6 vs 12.1, p=0.89), MB (4.7 vs 5.3%, p=0.805) or in-hospital mortality (14.1 vs 13.7%, p=0.899). By multivariate analysis, the Anterior location of MI (vs. Inferior) was an independent predictor of HF (OR 2.15 [1.08-4.27], CI 95%; p=0.029).

Conclusions: In this population, new-onset AF occurred in 6.64%. In STEMI pts who developed AF, Anterior wall MI was associated with higher Killip class at presentation, higher rate of depressed LV function and incidence of HF but not mortality and was established as an independent predictor of HF.

P276

Predictors of atrial fibrillation in hypertrophic cardiomyopathy patients

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Purpose: Atrial fibrillation (AF) is an important clinical complication of hypertrophic cardiomyopathy (HMC) and

a major cause of morbidity and mortality. Our aim is find the AF predictors in patients with HMC.

Methods: Portuguese retrospective study, comprising all the patients diagnosed with HMC in 10 hospitals. There were evaluated clinical, genetic, electrocardiographic, echocardiographic and magnetic resonance data. The statistical analysis was made to determine the AF predictors with SPSS20.0.

Results: The sample had 476 patients with HMC (58% male, mean age 62±15 years). HMC was asymmetric in 72%, symmetric in 13% and apical in 15%. The obstruction in rest was of 33%. The mean thickness of the interventricular septum was 18±5mm and of the posterior wall was 11±3 mm. The mitral regurgitation was found in 51% of the patients. Late enhancement was found in 68% of the patients. AF occurred in 100 patients (21%) with HMC. The occurrence of AF was related to older patients ($p<0.001$), history of stroke ($p<0.001$), bifascicular block in electrocardiogram ($P=0.015$), pacemaker ($P<0.001$) and decrease of the ejection fraction of the left ventricle ($P=0.015$). In multivariate analysis the independent predictors of AF were age ($P=0.001$), history of stroke ($P=0.036$) and left ventricle ejection fraction ($P=0.005$).

Conclusions: In this multicenter portuguese study atrial fibrillation occurred in 21% of patients. Age, history of stroke and the left ventricle ejection fraction were independent predictive factors of atrial fibrillation in patients with HCM.

P277

Prognostic value of atrial fibrillation in acute coronary syndrome according to the results of RECORD-3 registry

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Objective: To evaluate the prevalence and impact of atrial fibrillation (AF) on the prognosis in patients with acute coronary syndrome (ACS)

Methods: The RECORD-3 (Russian Registry of acute coronary syndrome) is an independent registry, which was organized on the initiative of the participants. The registry includes 2370 ACS patients consecutively admitted within one month (starting from 03/11/15) to 47 Russian centers. Patients with AF documented at admission are compared to patients with sinus rhythm.

Results: At the moment of admission AF was identified in 213 cases (9% from all ACS patients), including 64 (30%) new-onset AF and 149 (70 %) known AF (82 permanent

and 67 persistent or paroxysmal AF). At the moment of admission sinus rhythm was identified in 2157 cases, including 151 patients with persistent or paroxysmal AF in the past. Patients with AF at admission were older: median and interquartile range of age were 73 [63; 78] vs. 63 [56; 74] years ($p<0.001$, Mann-Whitney test). They were more likely to have a chronic heart failure (63% vs. 46%, $p<0.001$, here and then - Pearson's chi-square test), and diabetes (25% vs. 18%, $p = 0.048$). Complications of ACS frequently developed in patients with AF at admission: cardiogenic shock (13% vs. 4%, $p<0,001$), pulmonary edema (10.5% vs. 4.4 %, $p<0,001$), cardiac arrest (10% vs. 4%, $p<0.001$). Hospital mortality differed significantly: 11% (24 cases) in patients with AF at admission vs. 4.5% (97 cases) in patients with sinus rhythm ($p<0.001$). The incidence of non-fatal myocardial infarction at 6 months was significantly higher in patients with AF (4.8% vs. 2%, $p = 0.02$). After 6 months, 14 (7.4%) patients out of 203 AF cases and 53 (2.6%) out of 2060 patients with sinus rhythm at admission died ($p<0.001$).

Conclusions: The presence of atrial fibrillation in ACS patients at admission is associated with more frequent development of complications, increased hospital mortality, an increase in the incidence of myocardial infarction and death after 6 months.

P278

Retrospective analysis of warfarinised patients admitted with stroke or transient ischaemic attack pective analysis of warfarinised patients admitted with stroke or transient ischaemic attack

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Introduction: Anticoagulants like Warfarin are well known for their use in reducing stroke risk in patients with high CHA2DSVASc2 score. Current NICE guidance for atrial fibrillation states patients on Warfarin should have a reduction in stroke risk provided they are in therapeutic range with a time in therapeutic range (TTR) of greater than 65% over a maintenance period of at least 6 months.

Purpose: We aimed to analyse patients who acquired either a transient ischaemic attack(TIA) or stroke whilst being on warfarin and calculate their TTR prior to the event.

Methods: Patients in our study were identified via an electronic hospital database provided by our stroke department from 2012 to 2014. Patients had to fulfil the following criteria:

i) Already on warfarin prior to ischaemic stroke or TIA, for more than 6 weeks and

ii)Diagnosis was confirmed either radiologically or clinically by a stroke physician

For each eligible patient, we calculated their TTR using Rosendaal’s method using their INR values over 1 year.

Results: We identified 1070 patients (stroke and TIA combined). Only 32 patients (14 Stroke and 17 TIA) met the eligibility criteria. For the TIA cohort, 12 patients out of 17 (70.6%) had a TTR>65%. Similarly, for the stroke cohort, 7 patients out of 14 had a TTR >65% (50%) Their demographics were tabulated.

Conclusion: There is still a small proportion of patients that despite being in therapeutic range (TTR>65%), still

develop stroke or TIA. There is currently a lack of guidance on how to adequately manage those patients to reduce their stroke risk. Questions about aiming for a higher INR range, a higher TTR or switching them to a new oral anticoagulant remain unanswered.

Biomarkers

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A lower cut-off of high-sensitivity troponin I to rule out myocardial infarction results in low follow-up mortality compared to the 99th percentile

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Background: Rule-out of non-ST-elevation acute myocardial infarction (AMI) is based on consecutive measurements of cardiac troponin with the 99th percentile of the respective assay as cut-off. The new ESC guidelines offer a rapid 1 hour algorithm with a distinctly lower cut-off than the 99th percentile. Whether this is relevant for outcome is unknown.

Table 1.

| Patient demographics | Stroke Cohort(n=15) | TIA cohort (n=17) |
|-------------------------|---------------------|-------------------|
| Male | 57.1% | 76.5% |
| Female | 42.9% | 23.5% |
| Diabetes | 14.3% | 35.3% |
| Hypertension | 42.9% | 76.5% |
| Coronary Artery Disease | 21.4% | 29.4% |
| Atrial Fibrillation | 92.9% | 100% |
| Event with TTR <65% | 50% | 29% |
| Event with TTR >65% | 50% | 71% |

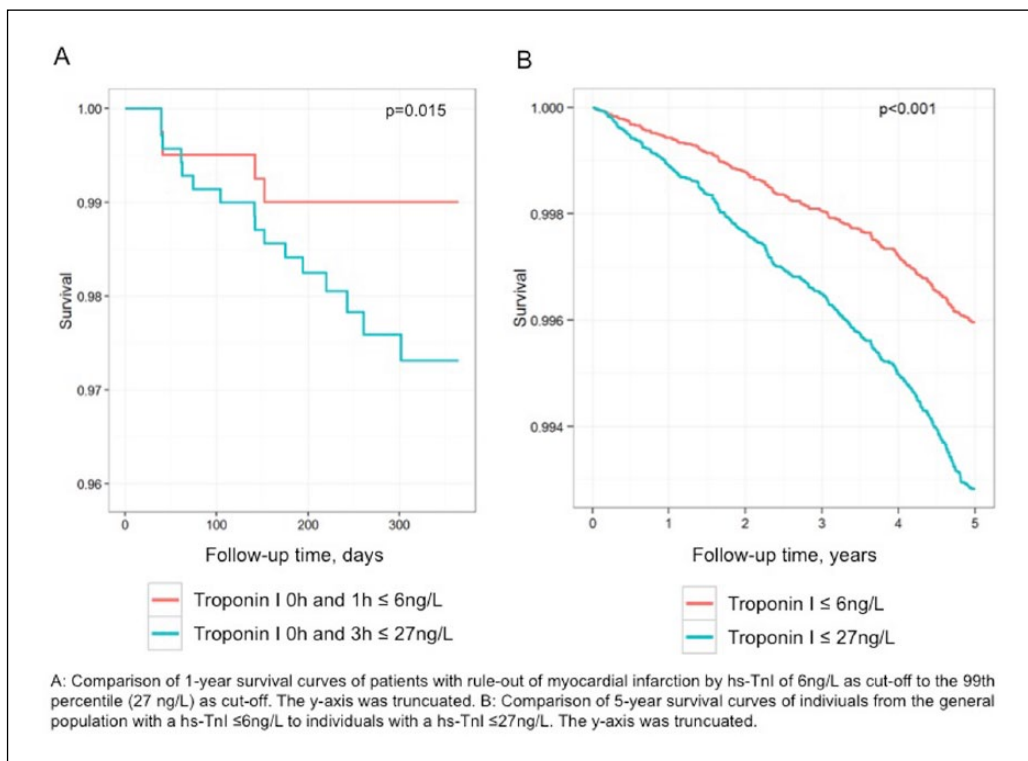


Figure 1

Objective: To compare a recently developed ‘rapid algorithm’ with a high-sensitivity cardiac troponin I (hs-TnI) cut-off of 6ng/L at 0h and 1h to the ‘standard of care’ with the 99th percentile (27ng/L) as cut-off in terms of follow-up events in a chest pain cohort. Secondly, to translate these findings into the general population and compared both hs-TnI cut-offs in view of long-term incidence of cardiovascular disease (CVD).

Methods: Troponin I was measured at three timepoints (0h, 1h and 3h) in 1,040 patients presenting with acute onset chest pain to the chest pain unit. Patients with ST-elevation AMI were excluded from the analyses. Follow-up was performed at 30 days, 6 and 12 months. Overall mortality, and cardiac rehospitalization were assessed. To evaluate both troponin I cut-offs in the general population we measured hs-TnI in a cohort of 61,579 individuals from five European countries. Survival curves were built with the Kaplan-Meier method. For comparison of survival curves the log-rank test was used.

Results: Of 1,040 patients with acute chest pain 184 were diagnosed with AMI. The mean age was 65 and 64,9% were male. The median follow-up time was 313 days. Patients ruled out by the low hs-TnI cut-off of 6ng/L showed significantly lower cardiac rehospitalizations (10.31% vs. 13.49%; $p=0.044$) as well as overall mortality (1.00% vs 2.69%, $p=0.015$) compared to the 99th percentile as cut-off. Of 61,579 Individuals of the general population those with a hs-TnI ≤ 27 ng/L had a significantly higher risk to develop of cardiovascular disease, compared to individuals with a hs-TnI ≤ 6 ng/L ($p=0.001$).

Conclusion: The commonly used 99th percentile is associated with higher cardiovascular risk, compared to lower cut-off concentration in the acute setting and the general population.

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Acute inflammatory response in acute myocardial infarction and mid-term mortality

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Introduction: Neutrophils/Lymphocytes ratio (N/L) has been proposed as a new indicator for measuring the systemic inflammation. N/L ratio is easy to obtain and it has a prognostic value in different cardiovascular diseases. In this study, we assessed the relationship between the acute inflammatory response in acute myocardial infarction by the use of this biomarker, and the mid-term mortality.

Methods: 191 consecutive patients with the diagnosis of ST-segment elevation myocardial infarction were included. All of them underwent primary angioplasty of the infarct-related artery in less than 12 hours from the onset

of symptoms. Acute inflammatory response was assessed by the number of leucocytes, neutrophils and lymphocytes obtained from the first blood cell count after admission. Mortality in follow-up was analyzed.

Results: During a median follow-up of 227 days (IQR25/75: 143,0-316,5 days), 24 (12.6%) died. No significance differences in cardiovascular risk factors were found between the two groups. Patients who died were older, 79 years old (10) vs 67 years old (14), $p<0,0001$. Time from symptoms-onset to intracoronary wire insertion was higher, 330 minutes (IQR25/75 140-332,5) vs 220 minutes (IQR25/75 140-332,5), $p=0,007$. The group of patients who died had higher levels of leucocytes ($p=0,003$), neutrophils ($p=0,004$) and the N/L ratio. In a robust Cox regression model, the only variable highly significant associated with mortality was the age ($p=0,02$) and the presence of left ventricular dysfunction was slightly significant ($p=0,09$). N/L ratio was not found to be associated with mortality during follow-up.

Conclusions: The acute inflammatory response in patients admitted with ST-segment elevation myocardial infarction undergoing primary angioplasty is not independently associated with mortality in a mid-term follow up.

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Additional prognostic value of red cell distribution width on independent hemoglobin anemic state in patients with acute coronary syndrome

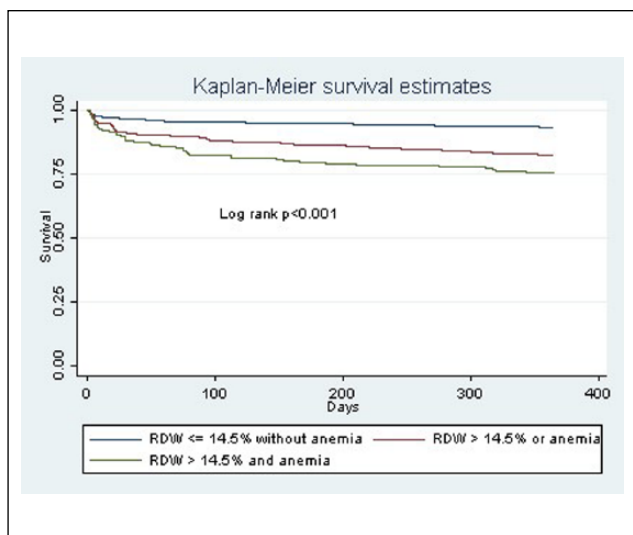
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Background: The red cell distribution width (RDW) has been related with higher risk of mortality in patients with acute coronary syndrome (ACS). However, it is unknown if RDW provides additional prognostic information on haemoglobin (Hb) regardless of anaemic state of the patients.

Purpose: The aim of this study was to evaluate the complementary role of RDW on Hb in predicting death in patients with ACS.

Methods: The RDW was measured at admission for 1509 consecutive patients (67 ± 47 years, 74% males) with ACS from January 2011 to December 2014. Clinical and analytic variables were collected during hospitalization. Anaemia was defined as Hb < 12 g/dl in women and < 13 g/dl in males. All patients were followed for one year to record mortality.



Survival analysis Kaplan -Meier

Results: At admission 379 (25%) patients had anaemia. During the follow-up period, 190 (12,6%) patients deceased. Quartile analysis of RDW levels revealed higher mortality in the 4^o quartile (RDW $>$ 14,5%, $p < 0,001$) while in the analysis of Hb level the increase was progressive ($p < 0,001$). In the whole population, after multivariate analysis, RDW $>$ 14,5% (HR 1,48, confidence interval 95% [CI] 1,06-2,06, $p = 0,02$) and Hb (HR \times g/dL 0,90, CI: 0,82-0,97, $p = 0,009$) were independent predictors of mortality. The subgroup of patients without anaemia, RDW $>$ 14,5% remained as independent predictor (HR 1,79, IC: 1,13-2,83, $p = 0,01$). Patients with RDW \leq 14,5% and without anaemia had the lowest risk of mortality (7,3%), while patients with RDW $>$ 14,5% and anaemia had the highest risk (26%, log rank $p < 0,001$; Figure 1). Reclassification analysis (NRI and IDI) revealed that RDW values added additional information to anaemia.

Conclusion: Elevated levels of RDW are associated with an increased risk of death in patients with ACS and provide additional information to the values of Hb, both in patients with and without anaemia. Future studies should evaluate the mechanisms by which high levels of RDW are related to the prognosis of these patients, and the possibility of including such determination on the scales of risk stratification in these patients

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Application of biological markers of kidney injury for prognosis of long-term adverse outcomes in patients with STEMI

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Objective: To study the prognostic significance of serum NGAL (sNGAL) and cystatin C in the acute phase of ST-segment elevation myocardial infarction (STEMI) in the late disease period.

Material and Methods: 357 patients with STEMI, admitted to hospital within 24 h of symptom onset, were included in the study. Serum creatinine levels with the calculation of glomerular filtration rate (GFR) using the MDRD as well as levels of sNGAL and cystatin C were measured on day 1 and 12-14.

Results: All patients were divided into 2 groups according to their estimated GFR: with and without renal dysfunction (RD), defined as a decrease of GFR $<$ 60 ml/min/1.73 m². Within 3 years of follow-up, the composite endpoint (CEP) were assessed (CEP - death + non-fatal cardiovascular events). The ROC curve analysis was used to determine the thresholds for every biomarker, involved in the CEP development: NGAL (\geq 1.25 ng / ml) and cystatin C (\geq 1.9 mg / l). On day 12-14 of hospitalization elevated NGAL \geq 1,25 ng / mL was associated with a 3-fold increased risk for adverse cardiovascular events in a 3-year follow up after STEMI; whereas, elevated cystatin C \geq 1.9 mg / l - with a 2-fold increased risk for the CEP, and signs of RD, found in patients before the discharge from the hospital, - with a 1.5-fold increased cardiovascular risk. The model considering an increase of NGAL over 1.25 ng / l has the highest prognostic value, while the models based on the levels of cystatin C and GFR are of equal prognostic value.

Conclusion: The most promising issue in the prognosis of long-term adverse outcomes in patients with STEMI may be considered the assessment of RD using new biomarkers such as sNGAL.

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Biomarkers as determinants of poor outcomes in patients with acute kidney injury and decompensated heart failure

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Objective: Acute decompensated heart failure (ADHF) is one of the leading causes of hospitalization worldwide. The development of acute kidney injury (AKI) is associated with poor outcomes. There is a strong need to detect AKI before serum creatinine (SCr) rise. The aim of the study was to determine the AKI in ADHF patients, to evaluate the association of urine neutrophil gelatinase associated lipocalin (uNGAL) and kidney injury molecule-1 (KIM-1) with changes in kidney function and outcomes.

Methods: in 51 patients with ADHF (18 male, 70 \pm 9 years (M \pm SD), arterial hypertension 92%, ischemic heart disease 56%, myocardial infarction 67%, atrial fibrillation 67%,

diabetes mellitus 27%, known chronic kidney disease 33%) levels of SCr, uNGAL and KIM-1 were determined on admission. AKI was defined using 2012 KDIGO Guidelines. Patients with AKI were classified into four groups on the basis of their levels of SCr, uNGAL and KIM-1. Mann-Whitney and multiple logistic regression analysis were performed. $P < 0.05$ was considered statistically significant.

Results: 53% of patients developed AKI. Patients with AKI compared with patients without AKI had higher SCr (189 ± 94 vs 115 ± 50 $\mu\text{mol/l}$, $p < 0.001$), uNGAL (203 ± 271 vs 11 ± 6 ng/ml, $p = 0.001$). Levels of KIM-1 did not differ ($0,454 \pm 0,266$ and $0,305 \pm 0,208$, $p > 0.05$). Urine NGAL > 184 ng/ml (odds ratio (OR) 3.85; 95% confidential interval (CI) 2.4-6.1) was determined to be significant and independent factor for development of AKI. Urine KIM-1 > 0.41 ng/ml (OR 2.85; 95% CI 1.8-5.9) was determined to be significant and independent factor for ADHF rehospitalization after AKI. Of 27 patients with AKI 15% had two criteria of AKI [NGAL(+)/KIM-1(+)], 18,5% - isolated increase of SCr, 29,5% two criteria [Scr(+)/KIM-1(+)] and 37% - two criteria [Scr(+)/NGAL(+)]. Patients with NGAL(+)/KIM-1(+) and patients with Scr(+)/NGAL(+) compared with other groups demonstrated transient character of AKI and the higher risk of 30-days mortality: all patients with AKI and NGAL(+)/KIM-1(+), 50% of patients with AKI and NGAL(+)/Scr(+) died in 30 days. There were no deaths in 30 days in patients with AKI with isolated increase of SCr and patients with AKI and Scr(+)/KIM-1(+).

Conclusions: 53% of patients admitted to the hospital with ADHF developed AKI. Level of uNGAL > 184 ng/ml and KIM-1 > 0.41 ng/ml in patients with AKI is associated with persistent character of AKI and higher risk of 30-days mortality. The use of uNGAL together with KIM-1 might be useful for the clinician to suspect the subgroup with high risk of mortality in patient population with ADHF and AKI.

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Fractional excretion of sodium (FENa) in urine may serve as an early diagnostic marker for the development of acute kidney injury in myocardial infarction patients

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Background: It has been shown that the development of acute kidney injury (AKI) in the clinical setting of acute myocardial infarction (MI) is associated with higher rates of morbidity and death and therefore has been described as type 1 Cardio-Renal Syndrome. A fractional excretion of sodium (FENa) in urine $> 2\%$ has been suggested as one

of the most promising markers for identifying acute tubular necrosis (ATN). Although ATN is the most common etiology in AKI, published data regarding its diagnostic ability in MI patients is scarce.

Purpose: With the present study we assessed the diagnostic value of FENa regarding the development of AKI in acute MI patients.

Methods: We prospectively assessed 436 patients (341 male, 63 ± 13 years) with acute MI (308 with ST-elevation and 128 with non-ST elevation MI). Patients were assessed for presence of AKI at 48 hours post admission and at hospital discharge using either the Acute Kidney Injury Network (AKIN), the Acute Dialysis Quality Initiative [Risk, Injury and Failure (RIFLE)] criteria or the Kidney Disease: Improving Global Outcomes (KDIGO) criteria.

Results: The incidence of AKI in the study population was 9.4% ($n=41$) at 48 hours and 14.2% ($n=62$) at hospital discharge. Patients who developed AKI at 48 hours ($1.4 \pm 1.6\%$ vs. $0.69 \pm 0.5\%$; $P=0.007$) and those who developed AKI at hospital discharge ($1.3 \pm 1.5\%$ vs. $0.67 \pm 0.5\%$; $P=0.001$) had increased baseline FENa in urine compared to patients without kidney injury. Patients with high FENa in urine ($> 2\%$) at baseline had an increased relative risk (RR) for developing in-hospital AKI both at 48 hours (RR 9.1 95%CI 5.5-14.8; $P < 0.001$) and at hospital discharge (RR 7.4 95%CI 5.4-10.4; $P < 0.001$) compared to patients with low FENa levels ($\leq 2\%$). Presence of high FENa in urine ($> 2\%$) at baseline was inversely associated with observed changes in glomerular filtration rate at 48 hours (Kendall's tau-b -0.144 ; $P < 0.001$) and at hospital discharge (Kendall's tau-b -0.200 ; $P < 0.001$).

Conclusions: Results from the present study suggest that increased baseline FENa in urine ($> 2\%$) is associated with increased risk for developing AKI during hospitalization in patients presenting with acute MI. These findings may have clinical implications since they propose that when FENa levels exceed 2% may serve as an early diagnostic marker in the Cardio-Renal Syndrome.

P285

Measurement of N-terminal pro-brain natriuretic peptide (NT-proBNP) in urine for long-term prognosis in acutely decompensated heart failure

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Purpose: Plasma NT-proBNP is an established heart failure marker. Several studies showed that NT-proBNP may have potential as a urinary marker due to its renal

arterio-venous clearance. The objective of this prospective study was to analyse the predictive value of urinary NT-proBNP for long-term prognosis in patients with acutely decompensated heart failure (ADHF) and whether the combination of plasma and urinary NT-proBNP might improve prognostication.

Methods: NT-proBNP was assessed simultaneously in fresh spot urine and plasma from 58 patients (54 healthy controls) with ADHF at different timepoints of therapy. Outcome parameters were all-cause mortality (n=34) and a combined endpoint of all-cause-mortality and rehospitalisation due to ADHF (n=40). Patients were followed for a maximum duration of five years with a median duration of 1042 days (IQR 415, 1458).

Results: Patients with urinary NT-proBNP values above the median at discharge showed significantly elevated event-rates regarding mortality [21/29 patients (72.4%), $p = 0.005$] and the combined endpoint [23/29 patients (79.3%), $p = 0.023$]. In uni- and multivariable Cox-regression analyses (including clinical, laboratory, electro- and echocardiographic parameters) urinary NT-proBNP at discharge (as well as plasma NT-proBNP) was an independent and strong predictor for both endpoints. The combined use of plasma and urinary NT-proBNP increased the Hazard ratios for both endpoints.

Conclusions: Urinary and plasma NT-proBNP were significant and independent predictors for long-term prognosis. For establishment of long-term prognosis urinary and plasma NT-proBNP should be measured at discharge. The additional measurement of NT-proBNP in urine increased the predictive value of plasma NT-proBNP and vice versa and seems to be a promising and easy achievable method to improve heart failure prognostication.

P286

Predictive value of low percentage of plasma lymphocytes in heart failure patients

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Introduction: Few small studies have suggested that low percentage of plasma lymphocytes (PPL) may confer increased risk for mortality in heart failure (HF) but the exact mechanism is not clear. Although it is an easily available variable, it is rarely used as a prognostic marker and cut-off values are quite variable between studies.

Purpose: To evaluate the prevalence and prognostic value of PPL in HF outpatients and to determine a possible cut-off value associated with a worse outcome.

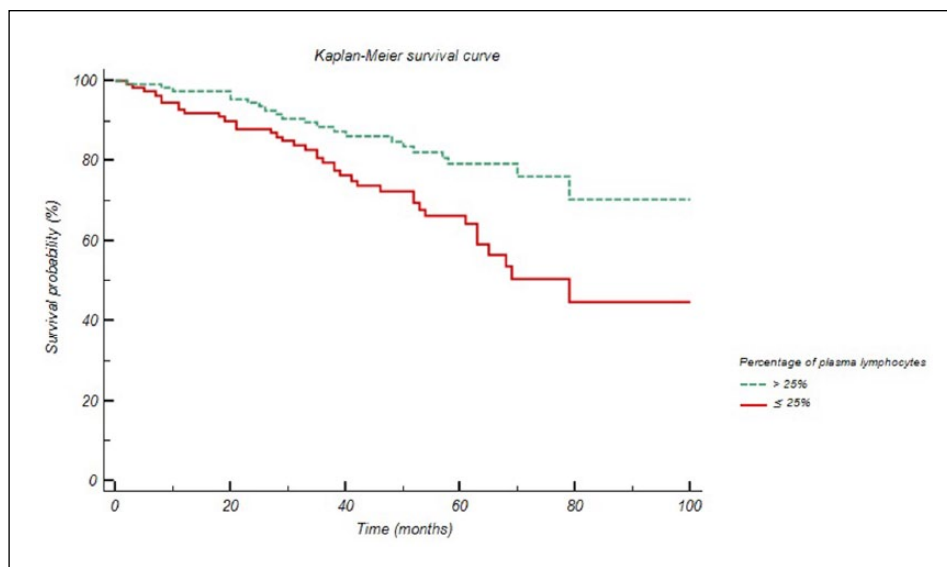
Methods: From January 2008 through December 2013, consecutive patients who were admitted to our outpatient HF clinic were evaluated. We recorded the patient characteristics at the time of admission, including PPL. The mortality endpoint (for all-causes) was analyzed by the Kaplan-Meier method.

Results: Two hundred and twenty-four patients (74% male, medium age 64 ± 11 years) were evaluated during a median of 49 ± 23 months. Sixty-one patients (27%) died. PPL (mean 25.9 ± 8.5 %, median 26.0%) had a normal distribution. ROC curve analysis was performed and the cut-off point for the percentage of plasma lymphocyte was set at 25% based on the lowest limit (Youden index). Using univariate logistic regression analysis, a PPL equal or below 25% is related with mortality (Odds ratio = 2.24, $p = 0.0092$; CI 1.22 – 4.11). Patients' characteristics were compared between groups, according to PPL (table). There was a statistically significant difference in mortality between these groups (image) (p [logrank] = 0.0021).

Conclusions: PPL may be useful for predicting the course of stable heart failure patients. In our study, patients with PPL equal or below to 25% had a worse survival. More studies are needed to confirm and clarify this relationship.

Table 1. Patients' characteristics

| Variable | All (n = 224) | PPL > 25% (n= 113) | PPL ≤ 25% (n= 111) | p-value |
|--------------------------|---------------|--------------------|--------------------|---------|
| Age (years) | 64 ± 11 | 63 ± 12 | 66 ± 10 | 0,002 |
| Syst BP (mmHg) | 125 ± 21 | 126 ± 19 | 121 ± 23 | 0,063 |
| LV EF (%) | 32 ± 10 | 31 ± 11 | 32 ± 9 | 0,751 |
| NYHA class II | 103 (24%) | 53 (47%) | 52 (47%) | 0,905 |
| Ischemic cause | 110 (49%) | 52 (46%) | 58 (52%) | 0,424 |
| ACE-I/ARB | 214 (95%) | 109 (96%) | 105 (95%) | 0,969 |
| Furosemide - dosage (mg) | 49 ± 28 | 31 ± 31 | 39 ± 36 | 0,067 |
| Hgb (g/dL) | 13.2 ± 1.8 | 13.5 ± 1.5 | 3.0 ± 1.9 | 0,040 |
| Uric acid (mg/dL) | 7.3 ± 2.6 | 6.5 ± 2.4 | 7.2 ± 2.8 | 0,063 |
| Sodium (mEq/L) | 139.3 ± 3.2 | 139.6 ± 2.6 | 139.0 ± 3.4 | 0,117 |



Kaplan-Meier survival curve

P287

Role of biomarkers in long-term prognosis of chronic heart failure formation in patients with acute coronary syndrome

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The progression of chronic heart failure (CHF) after acute coronary syndrome (ACS) significantly worsens the prognosis for this group of patients. Risk stratification of high risk patient of heart failure formation during the hospital period is very important. In order to diagnose this condition in time the search for biomarkers is going. One of them is the Growth differentiation factor 15 (GDF 15).

Purpose: estimate the role of various markers in the formation of CHF during first year after ACS.

Methods: 73 patients were screened with different forms of ACS (55 male and 18 female), mean age was 61, 8 ± 1 , 3 years. Among them, 54% patients with Q-wave myocardial infarction, 20% - with non-Q-wave myocardial infarction, 26% - unstable angina. All patients underwent a baseline investigation which includes: standard electrocardiography, echocardiography, angiography and determination of marker of myocardial necrosis – cardiac troponin T/I. In addition, the levels of GDF 15, N terminal-pro B-type natriuretic peptide (NT-pro BNP) were determined during the first day of hospitalization. The follow-up period was 1 year. The 6-minute walk test (6MWT) was performed for all patients after 1 year for exercise tolerance estimation. All patients

were divided into four groups accordingly to the New York Heart Association (NYHA) guidelines (stages I-IV).

Results: The effect of various variables of clinical, instrumental and laboratory status were assessed on CHF progression. For identification of the main risk factors for adverse outcome, we have used logistic regression (LR) method: NT pro-BNP (area under curve (AUC) 0.54; $p < 0.8$; 95% confidence interval (CI): 0.31 – 0.72), level of serum creatinine (AUC 0.76; $p < 0.0002$; 95% CI: 0.62 – 0.90), GDF 15 (AUC 0.87; $p < 0.0001$; 95% CI: 0.79 – 0.96). During the statistical analysis the predictive value for estimated parameters was calculated: GDF 15 > 2508 pg/ml (specificity (Spe) 95%, sensitivity (Se) 68%), NT- pro BNP > 1248 pg/ml (Spe 23%, Se 92%), serum creatinine > 118 $\mu\text{mol/l}$ (Spe 86,6 %, Se 56 %).

Conclusions: The biomarker GDF 15 can be used for risk stratification in development of CHF in patients after ACS in 1 year prognosis. For high prognostic possibility we can use a combination of biomarkers.

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Troponin overuse in the emergency department in patients with atrial fibrillation

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Background: There are no current recommendations for routine troponin assessment in patients admitted with atrial fibrillation (AF) to the emergency department (ED) without clinical suspicion of acute coronary syndrome (ACS).

However many of these patients still undergo troponin testing.

Purpose: We aimed to evaluate troponin utilization patterns in patients with AF admitted in the ED.

Methods: 2181 consecutive patients with AF (as a primary or secondary diagnosis) who were evaluated in our ED in a 12 month period were included retrospectively in our study. Among them, 423 patients were admitted for in-hospital management. All patients underwent routine clinical and laboratory exams. A value of troponin I >0.05ng/mL (99th percentile) in the ED was considered positive. Medical charts were reviewed for symptoms suggestive of ACS, rate of troponins ordered, proportion of positive troponins, reasons for troponin elevation (ACS or other) and ED length of stay.

Results: Mean age of our population was 72,8 ± 12,4 years, 41.1% were males. 378 (89.4%) patients had at least one determination of troponin. Among these 28.3% had positive troponin results (median value was 0.15ng/mL) and 26.5% had chest pain. Heart failure was the main reason for a rise in troponin (25.7%) and ACS was diagnosed in only 7.1%. Patients in whom troponin was determined vs non-determined had longer ED length of stay (median 1.04 vs 0.74 days, p=0.027).

Conclusions: Troponin levels were determined in a high percentage of patients with AF which resulted in longer ED length of stay, though the proportion of ACS was low. These findings suggest that troponin levels should not be routinely obtained in these patients.

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Von Willebrand factor is associated with atrial fibrillation paroxysms at patients with arterial hypertension and type 2 diabetes mellitus

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Von Willebrand factor has been proposed as a biomarker of endothelial dysfunction. Atrial fibrillation (AF) is associated with an increased morbidity and mortality. However, there is no single approved measurable parameter that would allow to predict the thrombotic risk at hypertensive patients during AF paroxysms. We hypothesized that VWF levels could be used as valuable biomarker for AF paroxysms at patients with arterial hypertension (AH) and type 2 diabetes mellitus (DM).

Purpose: to set VWF level and analyze its prognostic value at the patients with AH and type 2 DM during paroxysms of AF and episodes of ventricular tachycardia (VT).

Methods: It was examined 196 patients with AH and type 2 DM. All patients were conducted by the complex of examination in accordance with recommendations of ESC. Plasma VWF levels were determined from citrated plasma samples by standardized VWF-reagent.

Results. At patients with paroxysms of AF the level of VWF was reliably higher in compare to the patients with normal heart rate and arrived 130,7±14,0 IU/dL (F=14,2; p<0,001). Intergroup post-hoc analysis conducted with the usage LSD-test set unreliable differences VWF activity between patients with a normal rhythm and patients which has had the episodes of VT (p=0,43), and, also, the meaningful difference in VWF activity for patients with paroxysms of AF and VT. Plasma VWF level was reliably higher during AF paroxysms (p<0,001) in compare to VT episodes, so it was an independent prognostic marker for AF development in patients with AH and DM [odds ratio, OR – 7,0 (95% confidence interval, CI 3,46-14,2), p<0,05].

Conclusion: Plasma VWF levels are associated with AF paroxysms development at patients with AH and DM. Thus, the activity of VWF can be the factor of unfavorable

Table 1. Characteristics by Killip Class

| | KILLIP I N:4305 (84.9%) | KILLIP II N:554 (10.9%) | KILLIP III N:146 (2.8%) | KILLIP IV N:65 (1.4%) | P-VALUE |
|--------------------------------|----------------------------|----------------------------|----------------------------|--------------------------|---------|
| Mean Age (years) | 64.5 (SD 13) | 72 (SD 13) | 77 (SD 7.9) | 66.8 (SD 12.9) | 0.000 |
| Sex (% male) | 3085 (71.7%) | 358 (64.6%) | 93 (63.7%) | 48 (73.8%) | 0.001 |
| Active smoker (%) | 1170 (27.2%) | 70 (12.6%) | 19 (13%) | 18 (27.7%) | 0.000 |
| Hypertension (%) | 2373 (55.1%) | 345 (62.3%) | 102 (69.9%) | 26 (40%) | 0.000 |
| Diabetes (%) | 1049 (24.4%) | 218 (39.4%) | 69(47.3%) | 17 (26.2%) | 0.170 |
| Hyperlipidemia (%) | 2054 (47.7%) | 237(42.8%) | 53 (36.3%) | 16 (24.6%) | 0.170 |
| ACS with ST elevation(%) | 1237 (28.4%) | 190 (33.3%) | 51 (32%) | 51 (69%) | 0.000 |
| Previous cardiac disease (%) | 915 (21.3%) | 147 (26.5%) | 45 (30.8%) | 14 (21.5%) | 0.002 |
| Prior ACS (%) | 579 (12.2%) | 282 (10%) | 28 (12.2%) | 9 (13.8%) | 0.057 |
| Prior PCI (%) | 370 (8.6%) | 40 (7.2%) | 9 (6.2%) | 2 (3.1%) | 0.209 |
| Prior CABG (%) | 194 (4.5%) | 48 (8.7%) | 13 (8.9%) | 4 (6.2%) | 0.000 |
| Prior Heart Failure (%) | 115 (2.7%) | 76 (13.7%) | 20 (13.7%) | 5 (7.7%) | 0.000 |
| Mortality at end follow up (%) | 610 (14.1%) | 284 (51.3) | 103 (70.5%) | 45 (69.5%) | 0.000 |

outcome for patients with AH and DM during AF paroxysms, but not for VT episodes.

Cardiac shock

P290

Acute coronary syndrome complicated with heart failure depending on the Killip class at admission. Which is the contemporary long term prognosis of shock?

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Background/Introduction: The Killip class classification for heart failure it is used to predict short-term mortality in patients with acute coronary syndrome (ACS)

Purpose: To determine the contemporary long-term prognosis of ACS with acute heart failure graded according to the Killip classification.

Methods: Cohort study of consecutive hospitalized patients with ACS diagnosis from 2004 to 2009. Follow-up was done by clinical review or telephone contact and death or cardiovascular events were recorded, as well as the cause of death.

Results: 5070 patients were included with a complete follow up after a mean of 5.8±2.6 years. The clinical characteristics were analyzed in relation with Killip class at admission (shown in Table). A stepwise gradient in the

adjusted hazard ratio (HR) for mortality was observed with increasing Killip class: class > I HR 4.35 (95% CI 3.81 to 4.97) unexpectedly, in a landmark analysis excluding deaths <30 days after admission, patients in Killip class IV (cardiogenic shock) had a lower adjusted long-term mortality than those in class III (shown in Figure)

Conclusion: The heterogeneity in early versus late risk in patients with Killip class IV heart failure it is present in our contemporary cohort highlighting the importance of an appropriate early treatment in cardiogenic shock patients

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Analysis of the coronary artery lesions in patients with cardiogenic shock

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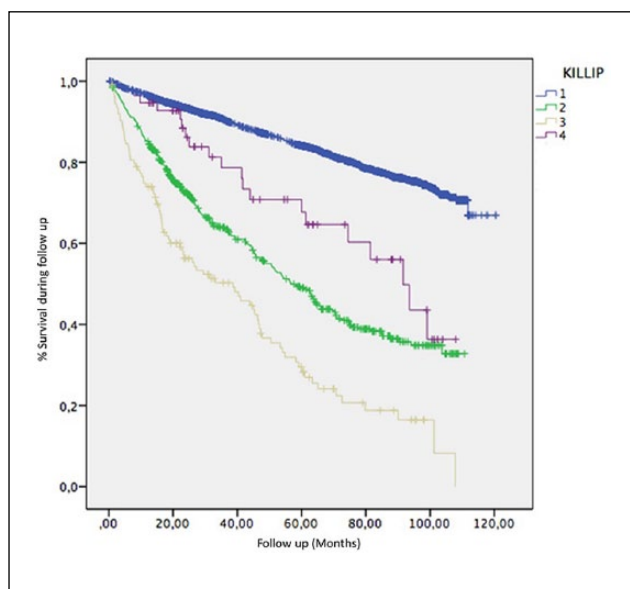
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Introduction: cardiogenic shock - one of the life-threatening complications of myocardial infarction (MI). Mortality of patients with cardiogenic shock remains high. An urgent task is to search for predictors of adverse outcome in cardiogenic shock.

Purpose: To evaluate the influence of the severity of coronary artery lesions on prognosis in patients with cardiogenic shock.

Methods: 91 patients (34 men and 57 women) with MI complicated by cardiogenic shock, were included into the study. Coronary angiography was performed in all patients. Patients were divided into two groups: Group 1 - died (60 patients; 66%); Group 2 - survivals (31 patients; 34%). The severity of the coronary arteries was assessed using the SYNTAX score. Statistical analysis was performed using Statistica program 10.0.

Results: The 1 group included 18 men (30%) and 42 women (70%) in 2 group - 16 men (51.6%) and 15 females (48.4%). The average age of the patients was 73,1 ± 9,2 years. No differences in age groups of patients, as well as among men and women, have been identified. The majority of patients (80.2%) at admission revealed a segment elevation ST. In both groups STEMI met equally often (82% and 77%, respectively, p=0.84). The right type of blood supply prevailed in both groups of patients (80% and 84%, respectively, p = 0.87). Thrombotic occlusion or subocclusion of the left main coronary artery was observed in 7 cases (11.7%) among died and in 3 cases among the survivals (6.5%, p>0,05). In 1 group 20%, and in 2 group 9.7% had severe coronary artery thrombosis (thrombosis of the LM coronary artery with the spread to LCx and LAD, simultaneous thrombosis RCA and LCx). In the 1 group of patients single vessel disease was found in 12 (20%), two-vessel disease in 18 patients



Mortality in follow up by Killip Class

(30%), in 30 patients - three-vessel coronary artery disease (50%). In the 2 group single vessel disease was found in 6 (19.3%), two-vessel disease in 10 patients (32.3%), in 15 patients - three-vessel coronary artery disease (48.4%). Collaterals were developed in 5 patients in the survivals, and in 28 patients from the 1 group ($p = 0.0091$). Rich collateral net principally was found in patients with severe chronic obstructive coronary atherosclerosis. Gender differences in the type of ACS, access in PCI, the type of blood supply in the heart is not revealed.

In 1 group severe coronary artery disease revealed more often than in 2 group (SYNTAX Score > 32, $p = 0.022$) in both men and women. The frequency of coronary artery thrombosis were the same in both groups. Successful thrombextraction was associated with a favorable outcome in patients with cardiogenic shock.

Conclusions: Predictor of adverse outcome in patients with MI and cardiogenic shock was severe coronary artery lesions (SYNTAX score > 32 points). Thrombotic occlusion or subocclusion of the left main coronary artery was observed more frequently among died. The collateral circulation was not associated with improved prognosis.

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Cardiogenic shock in acute coronary syndrome-survivors profile

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Background: Cardiogenic shock (CS) occurs in 6-10% of ST elevation myocardial infarction (STEMI) and in 2.6% of non STEMI and remains associated with a mortality of 40-50%.

Purpose: The aim is to characterize the patients whom survived to CS in context of acute coronary syndrome (ACS).

Methods: Retrospective analysis of ACS patients with CS admitted during ten years, in a tertiary centre. The patients were divided according to hospital outcome: GI-survival; GII-mortality. We evaluated clinical, electro and echocardiographic characteristics and performed a comparative analysis between groups.

Results: From 4538 patients admitted with ACS, 232 (5%) developed CS during hospitalization. Study population presented mean age of 69±12 years, 154 (66%) males, 186 (80%) STEMI. 131 (56%) patients were included in GI and 101 (44%) patients in GII. Mean age was significantly lower in GI (66±12 vs 72±12 years; $p=0.002$). There was not difference in genders, cardiovascular risk factors and previous coronary artery disease between groups. STEMI incidence was similar in both study groups (78.6% in GI vs

82.2% in GII; $p=NS$), however GI patients presented lower incidence of anterior STEMI (21.4% vs 57.4%; $p<0.001$). In GI, 15.3% of patients presented left ventricular ejection fraction <35%, comparing to 48.5% in GII ($p<0.001$). Mechanical complications were less frequent in GI (2.3% vs 7.9%; $p=0.036$), as well as ventricular arrhythmias (15.2% vs 42.6%; $p<0.001$) and major bleeding (3.8 vs 9.9%; $p=0.062$). The use of intra-aortic balloon pump (IABP) counterpulsation was similar between groups (19.1% vs 26.7%; $p=NS$).

Conclusion: CS complicated 5% of ACS, particularly in STEMI patients (80% of all cases), with a mortality of 44%. Survival was associated with younger age, non-anterior STEMI, better left ventricular systolic function, absence of mechanical complication and ventricular arrhythmias. IABP support was not associated with survival.

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Elderly patients undergoing percutaneous coronary interventions complicated by cardiogenic shock have similar short term outcomes compared to younger patients

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Background: Studies have shown the benefit of emergent percutaneous coronary intervention (PCI) in younger patients with cardiogenic shock (CS), the data for elderly patients is less clear.

Purpose: The purpose of the study was to assess the outcome of elderly patients presenting with CS.

Methods: We analyzed baseline characteristics procedural and clinical outcomes in consecutive patients undergoing percutaneous coronary intervention complicated by CS.

Results: 124 patient records were retrospectively analyzed at our University Hospital over a 5-year period. The mean age of the patients was 68.5 + 12 with male predominance (73.4%). Overall in-hospital survival was 41.9%. 90.3% of patients presented with acute myocardial infarcts. 9.7% of the patients were intervened for stable angina and developed cardiogenic shock as a procedural complication. Culprit vessel was LAD in 46.2%, LCX in 18.3% RCA in 20.2% and LMS in 14.9%.

We split the patients in two group; elderly (age > 75 years) and younger (age < 75). The elderly group comprised 33.9% (n = 42) while 66.1% (n=82) were in the younger age group. Younger patients were more likely to be male (81.1% vs. 18.9%, $p<0.05$) whereas gender was almost equally distributed in the elderly group (55.2% males vs. 44.8% females, $p=0.17$). Elderly patients were more likely to be smokers (47.6% vs 30.4% OR 2.07, 95% CI: 1.16-3.70

$p < 0.01$) have hypertension (66.6% vs. 46.4%, OR 1.81, 95 % CI: 1.14-3.93 $p < 0.01$), previous MI (28.2% vs. 14.5%, OR 2.55, 95 % CI: 1.09-5.99 $p < 0.05$), and multi vessel coronary artery disease (78.7% vs. 59.7%, OR 2.39, 95 % CI: 1.01 -5.67 $p < 0.01$). Intra-aortic balloon pump was used less frequently in the elderly (33.3% vs 56.1% OR 0.39, 95 % CI 0.18-0.85, $p < 0.05$) but there was no difference in the use of Glycoprotein IIb/IIIa inhibitor (69.1% vs. 74.3% OR 1.30 95 % CI: 0.57-2.95, $p = 0.47$) or inotropic support (33.3% vs 47.5%, OR 0.49, 95 % CI: 0.23-1.08, $p = 0.53$). No difference was found in the in-hospital mortality rate in the elderly versus younger age group (42.4% vs 40.8% 1.11 95 % CI: 0.52-2.37 $p = 0.88$).

Conclusions: Elderly patients with CS have more comorbid disease at baseline, despite this there is no significant difference in short term mortality seen in older compared to younger patients. Our data supports the use of PCI in elderly patients presenting with CS.

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Incidence and related factors of cardiac rupture following acute myocardial infarction: experience from eight-university hospitals in Japan

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Background: Primary percutaneous coronary intervention (PCI) may have decreased the incidence of post-infarction cardiac rupture (CR) following acute myocardial infarction (AMI). However, the clinical course, timing of rupture and relationship following primary PCI in patients with CR remains unknown.

Methods: A total of 10,305 consecutive patients with AMI at 8 institutions in Japan between January 1997 and December 2014 were retrospectively studied, in whom in-hospital mortality of CR was assessed.

Results: Early CR (≤ 24 hours after onset of the AMI) was approximately 62.3% (114/183) in all CR and the rate of late CR (> 24 hours after onset of the AMI) was 37.7% (69/183). In the multivariate analysis, emergency PCI (OR: 0.28, 95% CI: 0.14 to 0.58, $p < 0.01$) was protective for early CR while hypertension was associated with late CR (OR: 3.00, 95% CI: 1.37 to 6.59, $p < 0.01$). Late CR was an independent determinant of in-hospital mortality following AMI (OR: 2.35, 95% CI: 1.08 to 5.13, $p < 0.01$) as well as

age, use of percutaneous cardiopulmonary support and initial serum creatinine.

Conclusion: Late CR was associated with in-hospital mortality in a patient cohort predominantly treated with primary PCI. Further studies are warranted to examine the relationship between hypertension and late CR.

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Predictors and outcomes of cardiogenic shock in patients with acute coronary syndrome

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Background: Cardiogenic shock (CS) is the most common cause of death in patients (pts) with acute coronary syndrome (ACS) and it continues to have a significant mortality despite advances in pharmacological, mechanical and reperfusion endeavours.

Purpose: To identify predictors at admission of CS and to assess associations between CS and real-life management patterns and outcomes.

Methods: A prospective study was performed in one tertiary cardiology centre including 3395 consecutive patients diagnosed with ACS from 2005 until 2015.

Results: Cardiogenic shock occurred in 5.6% of pts with ACS and there were no differences between genders. Independent predictors at admission of CS were age (HR 1.051, CI 1.031-1.072, $p < 0.001$), glycaemia (HR 1.006, CI 1.004-1.008, $p < 0.001$), atrial fibrillation (HR 2.287, CI 1.168-4.478, $p = 0.016$), ST-segment elevation ACS (HR 3.112, CI 1.465-6.609, $p = 0.016$) and anterior wall localization (HR 2.304, CI 1.385-3.384, $p = 0.001$). Multi-vessel disease was more frequent in patients with shock ($p < 0.001$) and this group underwent more often angiographic revascularization ($p < 0.001$). CS patients were less likely to receive guideline-recommended therapies including statins, beta-blockers and angiotensin-converting-enzyme inhibitors. Intra-aortic balloon pump was used in 24.9% of pts in CS and did not reduce in-hospital mortality, nor was associated with better prognosis at 1-month and 1-year follow up. In-hospital mortality was lower in non-shock patients (2.5% vs. 54.0%, $p < 0.001$) and CS was an independent predictor of in-hospital death (HR 35.244, CI 21.644-57.392, $p < 0.001$). After discharge, mortality remained higher in CS pts at 1-month follow up (4.6% vs 1.5%, $p = 0.048$), but no difference was found at 1-year follow-up.

Conclusions: ACS complicated by cardiogenic shock was associated with dismal prognosis. Clinical characteristics at

admission can help to identify pts at increased risk of CS, who should be close monitored and have aggressive care. Intra-aortic balloon pump had no impact in short and long-term survival.

DVT and pulmonary embolism

P296

1 year prognosis in acute pulmonary embolism: validation of PESI and sPESI prognostic models

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Introduction: The high prevalence of acute pulmonary thromboembolism (PE) in the clinical practice, as well as the high mortality rate associated with it lead to formulating severity indexes such as PESI (Pulmonary Embolism Severity Index) and its simplified version (sPESI). However, the majority of validation studies of this indexes focus merely on hospitalisation and the first 30 days after hospital discharge.

Objective: Evaluate the impact of PESI and sPESI severity indexes in the 12 month prognosis of patients (P) hospitalized due to PE.

Methods: Retrospective, descriptive and correlation study extended to all P with PE hospitalized in our hospital during two years. P baseline clinical characteristics were evaluated and risk stratification was performed, computing PESI and sPESI in two groups: low risk (PESI class I and II; sPESI 0), and high risk (PESI class III-V; sPESI >1). A uni and multivariate analysis of recurrences, re-hospitalizations and overall mortality was performed at 6 months and 12 months.

Results: A population of 113 P (67.3% female; 67.2±15,5 years) was analysed. Recurrence of PE was found in just 2 P (1.8%), both cases in the first 6 months after hospital discharge. The mortality rate was 16.8% and 23% at 6 and 12 months, respectively. Re-hospitalization rate was 23% and 6.2% at 6 and 12 months, respectively.

sPESI score above 0 was linked to a higher overall mortality at 6 months (22.2% vs 3.1%, p 0.014) and 12 months (29.6% vs 6.2%, p 0.008). Similarly, a score of PESI III-V also correlated in a statistically significant way to a higher mortality at 6 months (24.7% vs 2.5%, p 0.003), and at 12 months (34.2% vs 2.5%, p<0.02).

A lower re-hospitalization rate was also found at 6 and 12 months in the low risk group.

Conclusion: In our sample, the mortality rate at 12 months was 23%. The evaluated indexes appear to maintain their

prognosis value beyond 30 days. Both sPESI above 0 and PESI higher or equal to class III are linked to a worse prognosis at 6 and 12 months.

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Are there clinical implications of an antiphospholipid syndrome diagnosis in pulmonary embolism patients?

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Background/Introduction: Antiphospholipid syndrome (APS) is a well-known cause of thromboembolic phenomena. APS was not an exclusion criteria in the recent NOAC trials on venous thromboembolic (VTE) disease.

Purposes: Regarding the APS and non-APS status in a cohort of consecutive unselected patients admitted for PE in a medical ward of an European urban hospital, we aimed to compare: a) in-hospital mortality; b) rate of VTE recurrence during follow-up; c) control of vitamin K antagonist (AVK) therapy, assessed by the time-in-therapeutic range (TTR) by the Rosendaal method.

Methods: 68 consecutive patients were admitted for PE in a 3 year period (2013-2015). APS was diagnosed according to the 2006 revised Sapporo (Sydney) criteria. Fisher's test was used to compare mortality and recurrence rates and Mann-Whitney's to compare the TTR.

Results: Mean age of our population was 68.9 ± 16.8 years, 29.4% were males. The median admission duration was 10.0 (interquartile range 8.0) days. Median follow-up was 10 (interquartile range 18) months. Among these patients 43 were screened for APS, which was confirmed in 7 patients (16.3%) and there were no in-hospital deaths. All patients were treated with LMWH during the hospital stay and bridged to warfarin. Comparing the APS and non-APS groups, we found no statistical differences regarding recurrence rate of PE (0.0 vs 2.9%, p=1.000) or TTR>65% (20.0 vs 0.0%, p=0.294).

Conclusions: In this contemporary registry of consecutive unselected patients admitted due to PE, APS was not associated with increased PE recurrence rate. Contrary to common knowledge, TTR control was no different between APS and non-APS patients.

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Eligibility criteria for non-vitamin K antagonist anticoagulants in patients with pulmonary embolism in a real world portuguese population

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Background/Introduction: Recent randomized clinical trials (RCTs) have demonstrated non-inferiority or superiority of non-vitamin K antagonist oral anticoagulants (NOAC) to warfarin for the treatment of thromboembolic events in patients with deep venous thrombosis or pulmonary embolism (PE). However, the vast number of eligibility criteria used in these RCTs may limit the applicability of its results in clinical practice.

Purpose: To evaluate the eligibility for NOAC according to 4 RCTs (RE-COVER I & II [dabigatran], AMPLIFY [apixaban], EINSTEIN-PE [rivaroxaban] e Hokusai-VTE [edoxaban]) in a cohort of consecutive patients admitted for PE in a medical ward of an urban hospital.

Methods: 68 consecutive patients were admitted for PE in a 3 year period (2013-2015). In each of these patients, we applied both inclusion and exclusion criteria of the above mentioned RCTs. A patient is considered eligible if inclusion criteria are filled without any exclusion criteria.

Results: Mean age of our population was 68.9 ± 16.8 years, 29.4% were males. The median admission duration was 10.0 (interquartile range 8.0) days; the in-hospital mortality

was 2.9%. The proportion of patients eligible for each RCT (figure 1A) varied between 26.5% (for AMPLIFY) and 41.2% (for EINSTEIN-PE). 60.3% were considered eligible for at least one RCT. The highest proportions of exclusion were reported for AMPLIFY (70.6%) and RECOVER I & II (64.7%). The main reason for exclusion in the 4 RCTs (figure 1B) was the presence of comorbidities (36.8 – 57.0%), followed by bleeding risk (16.2 - 41.2%).

Conclusions: In this contemporary registry of consecutive patients admitted due to PE, the eligibility for NOAC according to RCT criteria was low (26.5 – 41.2%). The presence of comorbidities was the most consistent exclusion criteria. It is unknown whether these patients would still benefit from NOAC vs warfarin therapy.

P299

Propensity score adjusted analysis of the association of thrombolytic therapy and 30-days outcome in patients with intermediate risk pulmonary embolism

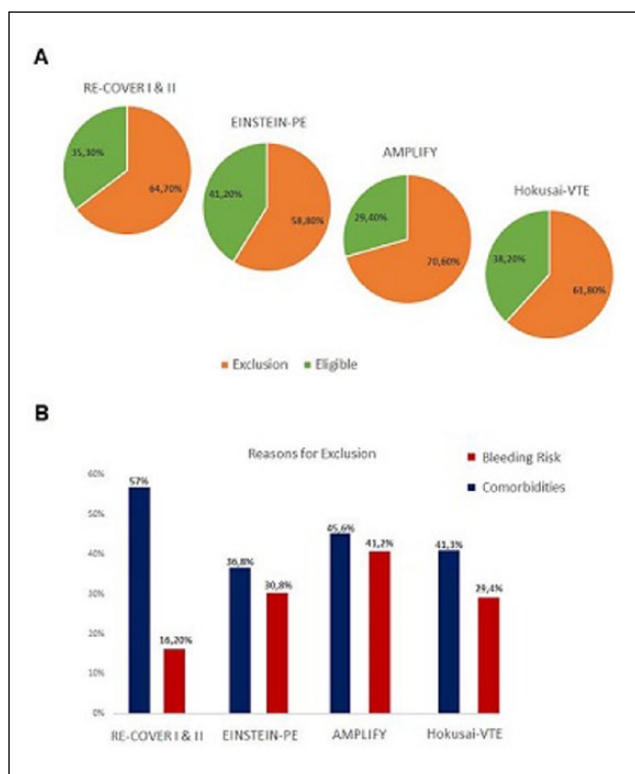
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Background: Patients with submassive or intermediate risk pulmonary embolism (PE) represent a heterogeneous group whose therapeutic strategy still belongs to the area of uncertainty, mainly questioning whether different risk groups of patients would profit from thrombolytic therapy (TT).

Purpose: We designed this observational, cohort study, in order to investigate the propensity score (PS) adjusted association of TT and 30-days outcome in patients with uniform definition of acute submassive PE, based on clinical and echocardiographic criteria.

Methods: From the local pulmonary embolism registry, 312 patients with acute PE were identified; 114 with submassive PE. All patients received an intravenous bolus of 5000 U of unfractionated heparin (UFH) and since, at the study time, no one prognostic score was routinely used for the treatment decision, it was made by the clinicians caring for each patient. If the decision was made for TT, FDA approved protocol for alteplase was applied, followed by an intravenous infusion of UFH. If the decision was made for anticoagulant therapy (AT) only, the infusion of UFH was started immediately, and continued thereafter, according to guidelines. Our study outcome was the composite of death, in-hospital cardiopulmonary deterioration (non-fatal) or



NOAC Eligibility & Reasons for exclusion

recurrence of PE (non-fatal) within 30 days of presentation. Safety outcomes included TIMI non-CABG related major and minor bleeding.

Results: Propensity score adjustment eliminated the 6 statistically significant unadjusted differences between the two treatment groups and attenuated the corresponding ORs. During the first 30 days, composite clinical endpoint occurred in 12,5% of patients treated with heparin and 9% of patients treated with TT. According to bivariate Cox regression analysis (adjusted to PS), the incidence of composite endpoint was significantly lower in patients treated with TT compared to AT (adjusted HR 0.20; 95% CI, 0.04-0.92; $p = 0.036$). Kaplan-Meier analysis, performed for the whole study group, showed a trend toward better prognosis of thrombolysed patients (Log Rank $p = 0.10$). But when patients were stratified into 4 groups, according to PS quartiles, there was a significant difference in the highest quartile, in favor of TT (Log Rank $p = 0.029$). Conversely, patients in the I,II and III PS quartile had better prognosis when treated with heparin compared to thrombolysis, although without significant difference. Total bleeding was significantly more frequent in trombolysed patients, but not the major or fatal one.

Conclusion: In our study the use of TT was associated with the lower incidence of composite clinical endpoint compared to AT in patients with submassive PE, primarily in those with the highest values of PS, i.e. with the highest risk, based on clinical judgment at the admission. This effect was not accompanied by higher rate of major bleeding.

P300

Reperfusion therapies for acute pulmonary embolism: the experience of a center

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Introduction: Acute pulmonary embolism (APE) is a common and potentially fatal disease. Reperfusion therapies are recommended in the treatment of high-risk (HR) APE, with indications that tend to extend to intermediate-high risk (IHR) disease. Catheter-based therapies are a growing field.

Purpose: To report the experience of our center with respect to the use of reperfusion therapies in the treatment of APE.

Methods: We retrospectively reviewed the hospitalizations with a diagnosis of APE, between January 2013 and June 2015, identifying all the patients treated with a reperfusion strategy.

Results: We identified 227 patients with a diagnosis of APE, 34 of whom were submitted to a reperfusion therapy

(15%). Among them, 21 were treated with thrombolysis using alteplase – group 1 (11 patients HR, 10 IHR); 7 were treated with rheolytic thrombectomy - group 2 (4 HR, 3 IHR); and 6 patients were submitted to both thrombolysis and thrombectomy – group 3 (all HR). There was 1 major bleeding in group 1 (5%), another in group 3 (17%) and none in group 2; no fatal haemorrhages occurred. Among the patients submitted to thrombectomy, there were 4 cases of acute kidney injury in group 3 (67%), but none in group 2. A case of haemolysis was identified in group 2 (17%) and 3 in group 3 (50%). Only 1 patient in group 3 needed a temporary pacemaker, placed 24h after thrombectomy. No cases of haemoptysis, pulmonary artery perforation or cardiac tamponade were identified in patients treated percutaneously. The overall mortality rate at 30 days was 9% (4.8%, 14.3% and 16.7% respectively in group 1, 2 and 3; $p > 0.05$); all the patients who died had HR APE. At 6 months, the majority of survivors reported no limitations in their daily lives.

Conclusions: In this series survivors experienced no permanent complications related to these treatments. Acknowledging the small sample size, there was no statistically significant difference in mortality between the different groups of patients. More research is needed to stablish the relative efficacy and safety of thrombolysis vs catheter-based therapies, between percutaneous therapies and when to treat IHR APE with reperfusion.

P301

Thrombolytic therapy for pulmonary embolism in real clinical practice

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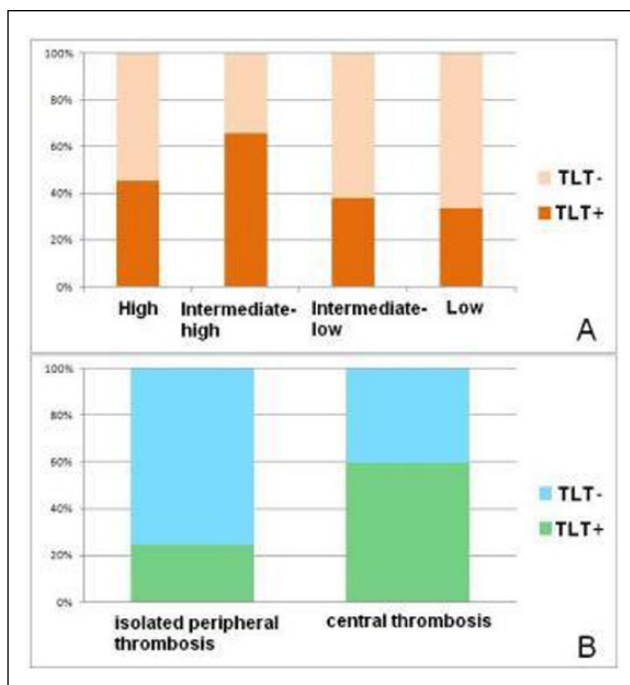
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Background: the current indications for reperfusion therapy for pulmonary embolism (PE) are governed by the recommendations of the European Society of Cardiology (2014). These guidelines are implemented in the clinical practice of hospitals through the introduction of special forms to help determine the risk level and indications for thrombolytic therapy (TLT). The accuracy with which the recommendations are followed in clinical practice requires study.

Objective: To evaluate the accuracy with which the recommendations on TLT of PE are followed in clinical practice.

Methods: PE hospital registry was analyzed.

Results: PE registry for 2015 includes data about 151 patients. The median and interquartile range of the time from onset of symptoms to hospitalization amounted to 2 [1; 6] days. Distribution of patients on 4-level assessment of the early mortality risks was as follows: high risk



Thrombolytic therapy in PE

- 10% (15 patients), intermediate-high risk - 31% (47 patients), intermediate-low risk - 41% (62 patients), low risk - 18% (27 patients). TLT was conducted in 66 cases (44% of patients). It was found that in real clinical practice TLT was performed not only in the high and intermediate-high risk cases, but in intermediate-low and even in lower risk patients (Figure A). The decision to use thrombolytic therapy was determined mostly by central localization of thrombotic masses according to CT-angiopulmonography (Figure B). Major hemorrhagic complications of antithrombotic therapy were observed in 3 patients (2.0%): 2 patients (1.3%) developed a hemorrhagic stroke, 1 patient - a massive gastric bleeding. PE hospital mortality rate was 11.9% (death occurred in 18 patients, including 6 patients who died during the first day).

Conclusions: In establishing the indications for thrombolytic therapy in the duty staff are guided mostly by the thrombus location according to CT-angiopulmonography and less by the risk estimation. Apparently, for a doctor an X-ray image looks a more convincing argument than biomarkers, right ventricular dysfunction or sPESI count.

Interventional cardiology, Coronary

P302

Acute coronary syndromes and left main coronary artery disease - independent predictors of hospitalization at 1-year follow-up

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Introduction: Significant left main coronary artery (LMCA) stenosis is not a rare condition, being found in approximately 4-7% of patients with an acute myocardial infarction (AMI). Patients with an acute coronary syndrome (ACS) and LMCA disease represent a special high-risk population, with significant morbidity and high mortality rates.

Purpose: This study pretends to characterize and identify independent predictors of hospitalization at 1-year follow-up in patients admitted to a cardiology department with an ACS and LMCA disease.

Methods: We performed a retrospective, descriptive and correlational study in all patients admitted with an ACS in a Cardiology department between the 1st of October 2010 and 31st of August 2014. All patients with LMCA disease were included, and their baseline characteristics, admission data and therapeutic strategies were analyzed. The patients were followed during 1 year by phone call by a Cardiologist. We performed a univariate and multivariate statistical analysis of hospitalization rate at 1-year through SPSS 20.0.

Results: A total of 2818 patients with an ACS were admitted, 148 (5,3%) of whom had LMCA disease. In this subgroup of patients, the hospitalization rate at 1-year follow-up was 16,9%. Rehospitalizations were associated with the presence of a past history of angina (80%vs47%, $p<0,01$), heart failure (20%vs3%, $p=0,02$) and peripheral artery disease (24%vs7%, $p=0,04$); as well as reduced left ventricular ejection fraction (LVEF) (55%vs62%). There was no significant differences regarding age, sex or Killip Kimball class during hospital stay. In a multivariate analysis, a reduced LVEF ($p=0,04$) and past history of angina ($p=0,04$) were independent predictors of hospitalization at 1-year in patients with an ACS and LMCA disease.

Conclusions: Patients admitted with an ACS and LMCA disease represent a high risk population. In this subgroup of patients, there was a high hospitalization rate at 1-year follow up (16,9%). Rehospitalizations were associated with co-morbid conditions, such as past history of angina, heart failure and peripheral artery disease, as well as reduced LVEF. The only two independent predictors of rehospitalization at 1-year were reduced LVEF and past history of angina.

P303

Clinical impact of restenosis on patients undergoing routine follow-up coronary

angiography after percutaneous coronary intervention

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Background: Routine follow-up coronary angiography (RFU-CAG) is used to ensure stent patency; however, its prognostic role of restenosis is still unknown. This retrospective study investigated prognosis in patients undergoing RFU-CAG after percutaneous coronary intervention (PCI).

Methods: Totally, 923 consecutive patients who underwent successful PCI and RFU-CAG for assessing de novo lesions after PCI between March 2006 and October 2014 were enrolled (mean follow-up period, 1,333 days). The primary outcome was a composite of death, fatal myocardial infarction, revascularization at de novo lesions, stroke and admission due to heart failure.

Results: Of the study patients, 157 patients had restenosis (17.0%) and 40 patients died, including 10 patients with restenosis (6.4%) and 30 patients without restenosis (3.9%). The incidence of primary outcome was significantly higher in the restenosis group than the non-restenosis group (37.6% vs. 13.2%, log rank; $p < 0.01$). The independent determinants of primary outcome were PCI procedural times > 2 {odds ratio (OR), 3.26; 95% confidence interval (CI), 2.07-5.12; $p < 0.01$ } and no statin use (OR, 2.49; 95% CI, 1.44-4.33; $p = 0.01$), whereas the glomerular filtration rate ≥ 45 ml/min/1.73m² was protective (OR, 0.28; 95% CI, 0.17-0.48; $p < 0.01$).

Conclusions: Restenosis in RFU-CAG after PCI was closely related to the increase of primary outcome. A head-to-head comparison between RFU-CAG and no RFU-CAG in patients receiving PCI is warranted.

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Emergency percutaneous coronary intervention in left main coronary artery

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Introduction: Current guidelines recommend emergent invasive study in all patients with ST elevated acute myocardial infarction (STEMI) or non ST acute coronary syndrome (NST-ACS) with hemodynamic instability. Even uncommon, left main could be involved and management of these patients, specially, in hospitals without cardiac surgery could be difficult and related to a poor prognosis.

Methods: Retrospective study of 81 consecutive patients, who underwent percutaneous coronary intervention to a left main

coronary artery (LM PCI), in our center, from June 2008 to June 2015. From those, we selected the patients submitted to an emergency LM PCI in context of an acute coronary syndrome (STEMI or NST-ACS with hemodynamic instability).

Results: Overall, 18 patients required emergency LM PCI. Mean age was 63.5 \pm 12.2 years old, with 58.8% of men. 41.5% of the patients presented with STEMI and 47.1% in cardiogenic shock. Mean Syntax score was 35.7 \pm 16.9. The majority of patients had an unprotected left main (82.4%) and a distal lesion was found in 42.2%. Three vessel disease was present in 47.1% of the patients and a total occluded LM artery was described in 35.3% of cases. Intra-aortic balloon insertion was used in 29.4%. The in-hospital mortality rate was 35.3%, with no significant differences in patients with or without evidence of ST-segment elevation on ECG (42.9% vs 30.0%; $p = 0.484$). At discharge moderate to severe left ventricular dysfunction was present in 72.7% of the patients. At one year follow-up, in hospital survivors had a mortality rate of 5.9%.

Conclusion: Patients requiring emergency LM PCI are a high risk subgroup, with a substantial mortality particularly in acute phase. LM PCI is a viable therapeutic option, special in non-surgical hospitals when transferring an unstable patient is challenging. In hospital survivors had a satisfactory one year outcome.

P305

Management of takotsubo syndrome with coronary artery disease

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Background: Takotsubo syndrome (TTS) is characterized by transient systolic and diastolic left ventricular dysfunction with a variety of wall-motion abnormalities in absence of coronary artery disease (CAD). Concomitant CAD is not uncommon. The differential diagnosis of TTS with ACS can be challenging in case of CAD. The optimal treatment of TTS with concomitant CAD is not known.

Purpose: The aim of the study is to document current interventional and non-interventional management in TTS with concomitant CAD.

Methods: 2-year data of patients with TTS in 2 centers with a coronary angiogram in the acute phase were obtained. Concomitant CAD was defined as significant in the presence of a lesion $> 70\%$ or as moderate in the presence of an intermediate lesion 40-70% in at least one vessel.

Results: 31 patients had clinical, electrocardiographic, biochemical and imaging evidence of TTS. 12 patients (10 female, 2 male) had concomitant CAD (38.7%). 7 patients (22.5%) were identified with significant CAD and 5 patients

(16.1%) with moderate CAD. There was a typical pattern of wall motion abnormality with apical akinesia with or without mid-segment involvement resulting in mild to severe impaired LV function in the 12 patients (EF range between 28-62%). None of the patients had cardiogenic shock. 7 patients had 1VD with a lesion > 70% on LAD (4 cases) or RCA (3 cases). 6 patients underwent PCI with stent implantation in the acute phase (4 LAD and 2 RCA). PCI of the LAD was performed because the LAD could contribute to the stunning. The RCA was treated because of a critical stenosis or possible thrombus. PCI was performed without complications in all the 6 cases. Although the value of FFR in TTS is not established because of microvascular dysfunction, one patient with RCA stenosis of > 70% was treated medically after performing FFR of the lesion (0.94). Of the 5 patients with moderate CAD, 2 patients had 2VD with LAD and RCA involvement and 3 patients had 1VD with intermediate LAD lesions with FFR measured in 2, both with a value of 0.84. In one case FFR was repeated one month after LV recovery and changed from 0.84 to 0.76, followed by PCI of the LAD. All patients received DAPT, in the medically treated patients DAPT was downgraded to aspirine after confirmation of TTS. Betablockers were used in 9 (75%) and ACE inhibitors in 10 patients (83.3%). One patient died after 2 weeks because of stroke, which was the acute trigger of the TTS. In the other 11 patients there was a complete recovery of the LV function at one month follow-up visit.

Conclusion: Moderate or significant CAD in TTS is frequently observed. A default ACS management strategy is proposed including ventriculography followed by PCI of significant lesions in the acute phase especially when the involved coronary artery could contribute to the wall motion abnormality observed. FFR should be interpreted with caution and it seems reasonable to repeat the measurement after recovery of the LV function.

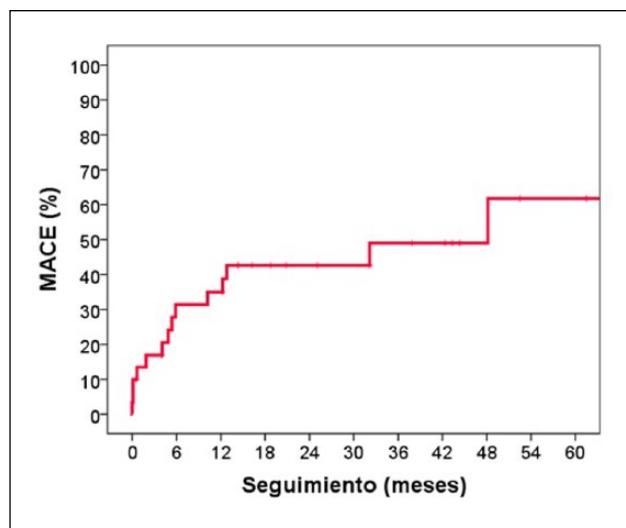
P306

Percutaneous coronary intervention in unprotected left main coronary artery of eighty-year-old patients with an acute myocardial infarction

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Introduction: The evidence about percutaneous coronary intervention (PCI) in unprotected left main coronary artery during an AMI is limited, especially in eighty-year-old patients. The aim of this study was to evaluate the management and clinical events of this group of patients in a contemporary series.



MACE % during the follow-up

Methods: We performed a retrospective study of all patients over 80 years old that were consecutive subject to percutaneous coronary intervention in left main coronary artery (LMCA) during an AMI from 2010 to 2015, in our hospital. We excluded those patients in whom coronary artery bypass surgery or previous PCI to LMCA was performed (n=30). We collected information about hospital management and clinical events at the hospital and during the follow up.

Results: From 30 eighty-year-old patients ($84,9 \pm 3,7$ years, 43,3% women) subject to PCI in unprotected LMCA, 5 (16,7%) had STEMI and 25 (83,3%) had NSTEMI. 32% was Killip \geq II and 34,8% had left ventricular ejection fraction (LVEF) \leq 40%. Femoral access for coronary angiography was performed in 30,0%. 70,4% presented distal compromise of LMCA. In 93,3% of cases drug-eluting stents were used. Complete revascularization was performed in 43,3%. 14,8% needed vasoactive amines and 3,8% needed intra-aortic balloon-pump.

4 patients (13,3%) died in hospital. Of the 26 remaining patients no one had reinfarction or stroke. 1 (3,3%) presented heart failure and 3 (11,1%) clinical relevant bleedings (TIMI major and/or minor).

At discharge, all patients received double antiplatelet drugs with clopidogrel (no one with ticagrelor and/or prasugrel). During the follow-up (median 19,4 months, interquartile range (IQR) 11,6-43,2), 8 of 26 patients (30,7%) whom survived hospitalization, died. 4 patients had reinfarction after the discharge (15,4%), 1 had stroke (3,8%) and 7 heart failure (26,9%), meanwhile 2 (7,7%) had significant bleeding during the follow-up. If we take in account total of deaths and cardiovascular major events (stroke, reinfarction and heart failure) from the

admission, we come across that 14 of the 30 patients had MACE (46,7%)

Conclusions: The eighty-year-old group with AMI who needs PCI to unprotected LMCA is a high risk group, with a high periprocedural risk of complications and with an incidence of major cardiovascular events at medium-large period.

P307

Primary coronary percutaneous intervention in diabetic. independent predictors of survival and event free survival

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Background: Some studies showed that diabetic patients group (DPG) had a worse outcome when compared to nondiabetic patients group (NDPG), after primary percutaneous coronary intervention (PPCI). The objectives were to compare mortality and major coronary events (MACE) at 30 days and 1 year of DPG and NDPG submitted to PPCI and to study whether another conditions were related to worst outcome of patients in 30 days or one year.

Methods: A prospective study with 450 consecutive patients submitted to PPCI from 01/01/2001 to 12/31/2006 (121 DPG and 329 NDPG) with ST-segment elevation acute myocardial infarction (AMI) in the first 12 hours of symptoms presentation treated with balloon or bare metal stent and without cardiogenic shock. We used in statistical analysis: Student t test, chi-square test, Fischer exact test, and multivariate analysis: logistic regression and Cox analysis.

Results: DPG and NDPG had similar age (63.1±10.0 and 62.3±11.7 years, p=0.44), male gender (63.6% and 69.9%, p=0.205) and multivascular disease (66.1% and 60.8%, p=0.301). The DPG had more dyslipidemia (65.3% x 51.7%, p=0.009) and severe left ventricular dysfunction (15.7% x 8.2%, p=0.019). The stent implantation rate was (83.5% and 81.1%, P=0.863) and glycoprotein (GP) IIb/IIIa inhibitors utilization (79.3% and 82.2%, p=0.831). The mortality at 30 days (2.5% and 2.7%, p=1.000) and at 1 year (5.0% and 6.7%, p=0.650) and MACE at 30 days (4.1% and 6.4%, p=0.496) and at 1 year (19.4% and 15.4%, p=0.3492) were similar. The absence of TIMI III flow after the procedure (procedure failure) was independent hospital mortality (30 days) predictor (p<0.001). Procedure failure (p=0.023) and age ≥65 years (p=0.035) were independent predictors of mortality at 1 year. The multivessel coronary disease (MVCD), (p=0.023) and procedure failure (p<0.028) were independent predictors

| MULTIVARIATE COX ANALYSIS - INDEPENDENT PREDICTORS OF DEATH 1 year | | | |
|--|-------|--------------|----------------|
| Independent Variable | p | Hazard Ratio | IC 95% |
| Female gender | 0,050 | 2,617 | 0,999 – 6,852 |
| Age ≥ 65 years | 0,035 | 3,391 | 1,091 – 10,543 |
| Failure outcome | 0,023 | 3,364 | 1,182 – 9,578 |
| MULTIVARIATE COX ANALYSIS - INDEPENDENT PREDICTORS OF MACE 1 year | | | |
| Independent Variable | P | Hazard Ratio | IC 95% |
| Multivessel disease | 0,034 | 1,854 | 1,048 – 3,280 |

of MACE at 30 days and MVCD was independent of MACE at 1 year (p=0.034).

Conclusions: The DPG mortality and MACE were similar to NDPG at 30 days and 1 year. Absence of TIMI III flow was predictor of mortality at 30 days and 1 year and age ≥65 years at 1 year. MVCD were independent predictors of MACE at 30 day and at 1 year

Non invasive imaging / Echocardiography

P308

Diagnostic value of echocardiography assessment of severity of group 3 pulmonary hypertension

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Background: Right heart catheterization (RHC) is invasively gold criterion for assessing severity of Group 3 Pulmonary Hypertension. Such a noninvasive method by echocardiography has not been available.

Methods: Derivation cohort of 107 patients with chronic lung diseases (CLD) who underwent echocardiography and RHC was performed. Echocardiography parameters independently predictive of 'severe PH' were modeled by multivariate logistic regression to create a total diagnostic index (TDIx) which was tested in an independent prospective validation cohort. The TDIx was calculated for each patient according to the formula: TDIx = TDIRVEDTD+TDIPASP +TDIPAd -TDITAPSE.

Results: The TDIx ranged from -3 to +7 with higher scores suggesting higher probability of 'severe PH': +2 point for right ventricular end-diastolic transverse dimension (RVEDTD) ≥ 3.8 cm; +3 point for pulmonary arterial systolic pressure (PASP) ≥ 61 mmHg; +2 point for pulmonary artery diameter (PAd) ≥ 2.7 cm; -3 point for tricuspid annular plane systolic excursion (TAPSE) ≥ 1.65 cm. Compared with PASP by echocardiography, TDIx ≥ 1.0 with 91.1% sensitivity and 80.4 % specificity resulted in a net improvement in model performance with a change in c-statistic from 0.823 to 0.937 and an integrated discrimination improvement of 11.3 % (95% CI: 4.5 %-18.2 %, P = 0.001). The TDIx was applied to validation cohort with 84.2 % of sensitivity, 81.3 % of specificity, 84.2 % of positive predictive value, 81.3 % of negative predictive value and 82.9% of accuracy.

Conclusions: We presented a comprehensive echocardiographic prediction rule which accurately facilitated screened for 'severe PH' due to CLD.

P309

Identification of acutely ischemic myocardium using a new ultrasonic deformation imaging technique in patients presented with acute chest pain

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Introduction: Patients suspected with acute coronary syndrome (ACS), admitted to chest pain unit (CPU) are targeted to have early diagnosis via serial examination of cardiac biomarkers, electrocardiograms (ECGs), echocardiography; deformation imaging, apart from clinical observation and reexamination.

Objective: Identification of high-risk patients of ACS in pre symptomatic phase with low to intermediate risk, suffering from acute chest pain.

Subjects and Methods: After written informed consent and approval from the ethic committee of North Eastern Emirates Hospitals, all the patients (n=492) coming with chest pain were admitted in the CPU in this prospective study. Of 492 patients suspected with ACS, 45% (n=214) had ACS of low to intermediate risk with normal or non specific changes in the electrocardiogram (ECG). Rest 55% (n=278) had non-cardiac chest pain. The peaks of longitudinal systolic strain, strain rate and post systolic shortening from 3 of apical views were measured by two and 3D (dimensional) echocardiography. The global longitudinal peak systolic strain (GLPSS) and the global longitudinal peak systolic strain rate (GLPSSR) were measured after tracing the endocardium in 3 apical projections. The acoustic markers were automatically

drawn and global strain and strain rate balls eye were constructed in automated way.

Results: The sensitivity, specificity, negative predictive value and positive predictive value of non invasive techniques for detection of acutely ischemic myocardium (Echocardiography-strain, strain rate imaging and post systolic shortening) as compared to invasive techniques [coronary angiography] was: 98.5%, 91.5%, 99% and 97% respectively.

Conclusion: Two and three dimensional echocardiographic-derived myocardial deformation imaging represent exciting advances in the field of noninvasive cardiac imaging. Strain and strain rate are highly sensitive that can detect early disease across a wide range of acute ischemic syndromes.

P310

Lung ultrasound for assessment of acute dyspnea in emergency room

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Introduction: Acute dyspnea is a common symptom in emergency room (ER). Lung ultrasound (US) is a useful technique on the bedside, where B-lines are sign of lung interstitial syndrome and elevated left ventricular filling pressure (LVFP).

Purpose: The aim of this study was to assess the accuracy of US B-lines to predict different causes of acute dyspnea in ER.

Materials and methods: The study was conducted in ER on 100 patients, for shortness of breath (tab1.1). All participants underwent examination for US B-lines in standard positions. These findings were compared with Kerley B-lines on the chest X ray. The LVFP and systolic function were assessed by E/e' and Simpson' method. To assess the reliability, we used intraclass correlation coefficients (ICC) and sensitivity/specificity by ROC.

Results: The patients were divided in groups with cardiac (n=55) and non-cardiac dyspnea (n=45). All participants in cardiac group demonstrated diffuse bilateral US B-lines, elevated E/e' and Kerley B-lines on the chest X ray. It was established a strong correlation between the quantity and distribution of the US B-lines and severity of pulmonary congestion on the chest X ray (r=0.82; p<0.001), as well as a moderate correlation with E/e' (r=0.64; p<0.001).

The patients with non-cardiac dyspnea demonstrated normal US B-lines profile, preserved LV systolic function, normal E/e' and lack of pulmonary congestion on the chest X ray. It was established a moderate correlation between using parameters (r=0.68; p<0.001).

Table 1. Study population

| | Cardiac dyspnea (n=55) | Non-cardiac dyspnea (n=45) | p-value |
|--------------------------|--|----------------------------------|---------|
| Etiology | ADLSHF due to: HT, CAD, CMP, Tachyarrhythmia | Pneumonia, COPD PE, PF, Hysteria | |
| EF (Simpson's method, %) | 45±10 | 60±10 | <0.001 |
| E/e' | 16±4 | 8±4 | <0.001 |
| Chest X ray | Kerley B-lines | No Kerley B-lines | <0.001 |
| US B-lines | Y | N | <0.001 |

ADLSHF - acute decompensated left side heart failure; HT - hypertension; CAD - coronary artery disease; CMP - cardiomyopathy; COPD - chronic obstructive pulmonary disease; PE - pulmonary embolism; PF - pulmonary fibrosis; Y- yes; N - No



B-lines

In the two groups the US B-profile demonstrated 95% sensitivity and 87% specificity to predict cardiac dyspnea. The reliability of US B-lines showed very good strength of agreement (0.8963).

Conclusion: The lung ultrasound is a new approach for differential diagnosis of acute dyspnea in ER. It's necessary to discover B-lines to provide a diagnosis of cardiac dyspnea in critical first minutes.

P311

Patterns of left ventricular global longitudinal strain in diabetic patients by speckle tracking imaging

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Introduction: Diabetic patients with normal left ventricular ejection fraction are frequently associated with diastolic

dysfunction. Speckle tracking is more sensitive than LVEF in detection subclinical LV systolic dysfunction. However, it is not clear whether there is any difference in early LV systolic dysfunction between DM patients if they have controlled or uncontrolled blood glucose, and what is the duration of DM that contributes to preclinical impairment of LV systolic function.

Aim: Detection of different patterns of global longitudinal strain in diabetic patients using global longitudinal strain by speckle tracking and trying to specify the time needed for DM to affect LV systolic function.

Methods: fifty two diabetic patients had been referred from internal medicine clinic after they had been tested for HBA1c test and stratified into two groups

Group I: it include 26 DM patients (< or > five years) with controlled blood sugar.

Group II: it include 26 DM patients (< or > five years) with uncontrolled blood sugar

The two groups had been subjected to the following diagnostic workup:

Full medical history, full clinical examination, laboratory assessment, twelve lead resting ECG, Stress ECG, Echocardiography study, Traditional Tissue Doppler imaging, Assessment of global longitudinal strain.

Patients with IHD, Systolic dysfunction, CHD, Valvular, Arrhythmia, HOCM, Pericardial, major systemic disease had been excluded.

Result: there was significant statistical difference in GLS, Age, Diabetic Type, Diabetic Duration, 2HPP Blood sugar level, E/e' ratio in controlled DM compared to uncontrolled DM ($p < 0.05$), significant statistical difference in GLS in (<5 years to >5 years) diabetic duration ($p < 0.05$), there was no significant difference in Gender, FBS, EF, E/A in controlled DM compared to uncontrolled DM.

Conclusion: Diabetic duration was strongly correlated with reduction of global LS. 2DSTE has the potential for detecting subclinical LV systolic dysfunction, and it might provide useful information for the risk stratification of an asymptomatic diabetic population.

P312

The late dynamics of parameters of standard and 2D speckle tracking echocardiography in primary anterior STEMI patients

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Purpose: to study the late dynamics of parameters of standard and 2D speckle tracking echocardiography (2D ste) in patients (pts) with primary anterior STEMI

Methods: The study included 35 pts with primary anterior STEMI (mean age 58,46±10,2). Echocardiography with 2D ste was performed on the 1st (T1), 7th (T2), 14th (T3), 6 month (T4) after STEMI (Vivid E9). Analysis of echocardiography images was performed offline on the software EchoPac. Depending on the left ventricular remodeling (LVR) pts were divided into 2 groups: LVR+ and LVR-.

Results: All pts had the urgent reperfusion therapy, 72% of them had patency of IRCA achieved during the first 6 h. Average reperfusion time was 4,84±3,06 h. EDV increased from T1 to T4: 106,0±25,1→111,4±22,4→115,4±27,3→120,6±23,3 ml ($p < 0,05$). ESV also increased at the same period: 49,4±14,1→53,2±14,8→51,2±14,7→55,6±17,4 ml ($p < 0,05$). EF LV decreased from T3 to T4: 55,5±8,3→54,5±8,8 % ($p < 0,05$). GLS improved from T1 to T3: -10,8±3,2→-11,9±3,1% ($p < 0,05$). Apical and basal rotation, twist had not any dynamics.

Only 27% of LVR+ pts had the total revascularization, but at the LVR- pts it was 66% ($p < 0,05$). 2D GLS improved

in the LVR- group from T1 to T3, as well as WMSI – it decreased to T2, then to T4. However, 2D GLS in the LVR+ group became worse: -12,3±3,5 (T2)→-11,47±2,85 % (T4).

Conclusion: The changes of the heart biomechanics by 2D ste in pts with modern managements of STEMI showed the recovery of heart function at the early period, whereas the parameters of standard echocardiography (EDV, ESV, EF LV) showed the late dynamics. The GLS improved to T3. Basal and apical rotation did not show any dynamics. LVR+ group and LVR- group had different numbers of pts with total revascularization, what was reflected in changes of contractility. LVR+ had the impairment of it: 2D GLS decreased from T2 to T4. LVR- had the improvement of 2D GLS from T1 to T3 and WMSI from T2 to T4.

P313

Total atrial conduction time (PA-TDI duration) and its correlation with recurrences of atrial fibrillation

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Introduction: Total atrial conduction time (PA-TDI duration) has been predictive marker of atrial remodelling. A large extent of atrial remodeling is associated with a limited efficacy of radiofrequency catheter ablation (RFCA) for atrial fibrillation AF. Therefore, pre-procedural assessment of the extent of atrial remodelling could be used to identify patients with a high risk of AF recurrence after RFCA. Purpose of the present study was to identify echocardiographic predictors of AF occurrence, including left atrial (LA) volumes, LA function, and PA-TDI duration, in patients after radiofrequency catheter ablation and with heart failure who had undergone ICD implantation.

Methods: we assessed n=60 patients with atrial fibrillation-AF (paroxysmal and persistent forms without structural changes), AF patients (with structural heart disease) with mild to severe heart failure symptoms scheduled for ICD implantation. The PA-TDI duration was assessed by measuring the time interval between the onset of the P-wave in lead II of the surface ECG and the peak A-wave on the tissue Doppler tracing. A long PA-TDI duration corresponded to a long total atrial conduction time. In all patients we performed 24h holter monitoring.

Results: an increased total atrial conduction time (PA-TDI > 119ms, mean PA-TDI 139-189) was associated with poor outcome and complications such as symptoms of heart failure $P < 0.001$ and recurrences after RFCA $p < 0.001$ in both subgroups -in patients with atrial fibrillation with or without structural heart changes. It was also found direct

correlation between recurrences of episodes of AF and PA-TDI in patients without RFCA. It was found correlation between LA size and PA-TDI duration $p < 0.001$, but in 35% of the patient without LA enlargement and prolonged PA-TDI duration we also found AF Recurrences.

Conclusions: An increased total atrial conduction time assessed with TDI echocardiography is an independent predictor of AF recurrence after RFCA. PA-TDI duration can be independently associated with AF occurrence in heart failure patients with or without history of AF who had undergone ICD implantation. This parameter may be useful to risk-stratify heart failure patients for AF occurrence.

Nursing in acute cardiovascular care

P314

Nurse-led telephone interventions for people with cardiac disease: a review of the research literature

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Background: Nurse-led telephone follow-up offers an inexpensive method of delivering education and support to assist recovery of people with coronary heart disease (CHD) in the early discharge period.

Aim: To perform a critical review of the literature pertaining to the effectiveness of nurse-led telephone educative interventions for people with CHD.

Methods: A literature search of five databases to identify journal articles from 1980 to 2009. People with CHD were considered for inclusion in this review. The search yielded 128 papers, of which 24 met the inclusion criteria.

Results: A total of 8,330 participants from 24 studies were included in the final review. Seven studies used randomised control trial design demonstrated statistically significant differences in all outcomes measured and used valid and reliable instruments. Some positive effects were detected in eight studies in regards to nurse-led telephone interventions for people with CHD and no differences were detected in nine studies.

Conclusion: Studies with some positive effects generally had stronger research design, larger samples, used valid and reliable instruments and extensive nurse-led telephone educative interventions. The results suggest that people with cardiac disease showed some benefits from nurse-led telephone interventions. More rigorous research into this area is needed.

P315

Cardiac rehabilitation improve hospital-acquired anemia for patients with cardiac surgery

Our work was supported in part by research grants from Cheng-Hsin general hospital, Taipei, Taiwan

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Cardiac rehabilitation (CR) practitioners faced the challenges of increasing number of patients with hospital-acquired anemia after cardiac surgery. Although exercise-based CR might enhance reconditioning in these patients, few assessments of hemoglobin and fitness change have been made.

Purpose: This study aimed to investigate the erythrocytic effects as well as exercise capacity to CR in patients underwent cardiac surgery.

Methods: This prospective study used data collected between January 2014 and August 2015 at a heart center in Taipei, Taiwan. The protocol was approved by the medical center's institutional review board. Patients with coronary artery bypass were recruited and distinguished by willingness to participate CR. The control group received usual care and asked to maintain physical activity level. Patients were excluded from consideration if they had contraindications for exercise training or cardiopulmonary exercise testing. The hemoglobin status was determined from complete blood count as regular examination at admission, discharge, and 3 months follow-up. Exercise capacity was measure as peak oxygen uptake (VO₂) using cardiopulmonary exercise testing at discharge and follow-up. Patients in CR group received aerobic training under medical supervision for 8 weeks. Reference values of exercise capacity have been used to personalize the exercise prescription, which included 30 - 40 minutes aerobic training on ergometer or treadmill, targeted to anaerobic threshold heart rate, at least once per week, light strengthen training for lower extremities, and Pilates exercise focus on breathing reeducation for 1 hour per week. Statistical analysis: Independent t test, fisher exact and Chi-square test were used to compare baseline between-group characteristics. Mixed models were constructed to examine group differences in hemoglobin and peak VO₂. All analyses were conducted in SPSS Version 19.0.

Results: The mean age was 62±13 years, 32% were women, 28% were currently smokers, and 6% were dialysis patients. No between-group differences were noted at baseline. Among 486 patients, mixed model indicated 2 significant main effects for the hemoglobin analysis. The main effect of intervention was significant ($t = -2.94$, $P = .003$, estimate = 0.7). The CR group was significantly higher in hemoglobin at follow-up (mean,

14.0±1.7g/100 ml in men, 12.5±2.3g/100 ml in women) than the non-CR group (mean, 12.5±2.0g/100 ml in men, 11.5±1.6g/100 ml in women). There were also significant main effect for gender ($t=-2.69$, $P=.007$, estimate=1.1). Peak VO₂ was significantly higher in CR group (mean, 24.4±6.5 mL/kg/min) than in non-CR group (mean, 19.3±7.5 mL/kg/min).

Discussion and conclusions: These findings suggest that following cardiac surgery, CR is associated with improvements both in hemoglobin and exercise fitness. Our current study suggested that CR for patients with cardiac surgery is feasible and beneficial.

Pre-Hospital care

P316

Code STEMI activation points and their influence in delay times

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Introduction and purpose: Time has shown to be crucial in the setting of reperfusion in ST elevation myocardial infarction (STEMI). The primary-Percutaneous coronary intervention (PCI) protocol can potentially be activated from 4 critical points: emergency medical services, PCI-capable hospitals, non-PCI-capable centres and ambulatory emergency care units. Our goal is to analyze the influence of these activation points in delay times in the setting of a primary - PCI program.

Methods: Prospective clinical observational registry study including 518 consecutive patients with suspected STEMI who underwent emergency coronary angiography during the year 2014. We measured several delay times: symptoms onset to first medical contact (FMC), FMC to primary-PCI team alert, FMC to balloon and total ischemia time. We compared these delay times among the activation points previously mentioned.

Results: The median overall delay between the onset of symptoms and FMC was 80 minutes. The time between the FMC and the activation of the primary-PCI team was 34 minutes, and the median FMC-to-balloon time was 125 minutes. Emergency medical services stand out as the fastest activation point with a median symptom onset to FMC time of 48 minutes ($P < 0.001$) thus providing the shortest total ischemia time (median 160 minutes $p < 0.001$). On the other hand, PCI-capable centres have the shortest

FMC-to-balloon time in comparison to other activation point (90 minutes $p < 0.001$).

Conclusions: Emergency medical services stand out as the fastest activation point in the setting of a primary PCI protocol for STEMI patients providing shorter total ischemia times, and with FMC-to-balloon delays close to those of PCI-capable hospitals.

P317

The emergency medical services staffing issue: comparison between nurse- and physician-guided resuscitation in out-of-hospital cardiac arrest

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Introduction: implementation of advanced life support (ALS) protocols led to improved outcomes in out-of-hospital cardiac arrest (OHCA). Nevertheless, the optimal staffing of emergency medical services (EMS) for OHCA cardio-pulmonary resuscitation (CPR) is still a matter of debate. Training and experience of ACLS-skilled crews differ internationally, and this may contribute to conflicting findings. Despite the intuitive appeal of physician-guided management of OHCA, this approach is unlikely to be feasible in terms of costs and effectiveness. Therefore, role of other ACLS-trained professionals (i.e. nurses) need to be investigated.

Purpose: we aimed to describe outcomes on survival and neurological performance on discharge of OHCA patients according to Utstein standards, with particular respect to the personnel dispatched on scene: basic-life-support-defibrillation (BLS/D)-trained, physician-staffed or nurse-staffed crews.

Methods: between January 2014 and February 2016, data from six non-consecutive months were systematically recorded in our local OHCA registry and retrospectively analyzed according to Utstein guidelines. Available data included mean age, sex, witnessed cardiac arrest, bystander CPR, first recorded rhythm. Outcome analysis was performed on all OHCA cases of presumed cardiac cause where CPR was attempted. Patients with obvious signs of death or 'do not attempt resuscitation' forms in place were excluded. Outcomes included number of patients admitted to emergency department (ED), survival to discharge and neurological status on discharge (standard CPC score). It has to be considered that non-physician-staffed crews cannot declare death on site in our system, thus all patients must be transferred to the nearest ED. This represents a limitation in survival rates analysis.

Results: 2485 OHCA were attended by EMS in the study period. Mean age was 75 y.o., majority of patients were male (56.7%). Cardiac arrest was witnessed in 44.2% of cases, bystander CPR was performed in 14%. CPR was attempted in 1579 patients. Of the 1444 OHCA of presumed cardiac origin, 699 (48.4%) were attended by BLS-trained, 717 (49.7%) by physician-staffed and 28 (1.9%) by nurse-staffed crews. Rate of shockable rhythms on presentation was 14.3%. Six hundred and eighty-eight patients (48.3%) were transferred to ED, 98.57% of which with ongoing CPR.

Overall survival to discharge was 5.6% (79/1444). When considering ALS-trained crews alone, survival rates increased to 10.7% (3/28) for nurse-guided- and to 20.8% (70/717) for physician-guided-CPR. CPC 1-2 on discharge was achieved in 100% of cases attended by nurse-staffed and 78.57% by physician-staffed crews.

Conclusions: ALS-trained nurses, remotely aided by medical staff, can safely manage OHCA patients. Comparison between nurse- and physician-treated cases showed similar survival rates and neurological outcomes. Given the limited sample size, further prospective analysis is needed to validate these results.

P318

Prediction of 30-Days outcome for out of hospital cardiac arrest survivors (OHCAS)

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According to guidelines, OHCAS should undergo admission early cerebral imaging by CT and coronary angiography in order to perform PCI culprit lesion indicated. Early coronary reperfusion has been reported to be associated with better outcome.

Aim: We sought to perform a quality control assessment on the management of OHCAS at our center and to determine predictors of 30-days outcome (survival).

Methods: A consecutive series of 123 patients admitted alive to our emergency department (2012-2014) after OHCAS. STEMI was present in 24 %, NSTEMI in 14 %, coronary angiography was performed in 52 % during hospital stay.

Results: The 30-days mortality rate was 60.2 %. In comparison to survivors, deceased patients were older (69.9 vs 60.7 y.), had longer duration of no flow (11.4 vs 3.4 min), longer duration of RCP (34.4 vs 12.5 min), higher lactate levels on admission (0.5 vs 4.2 mmol/L), higher creatinine levels (1.6 vs 1.2 mg%), higher glucose levels (244 vs 195 mg%), lower pH (7.10 vs 7.29).

30-days mortality was increased in the group of patients without cardio-convertible rhythm (80 vs 44.1 %), without bystanders (82.9 vs 23.9 %) ventricular tachycardia (VT) (74.7 vs 0 %), no evidence of ACS (73.7 vs 38.3 %), no evidence of STEMI (65.6 vs 43.3 %), no evidence of NSTEMI (65.1 vs 29.4 %), with convulsions – renal failure (78.3 vs 37 %).

By a logistic regression analysis and ascending selection, we found three variables predicting 30-days mortality outcome : the absence of VT, the duration of no flow (OR : 1.46 - CI : 1.20 – 1.77) and the duration of CPR (OR : 1.13 - CI : 1.03 – 1.24).

By using an algorithm including those 3 prehospital variables, we were able to predict correctly the 30-days outcome in 92.6 %.

Conclusions: In our series, 30-days outcome was mainly depending on 3 prehospital variables : the absence/presence of VT duration, of no flow duration, of RCP. The no flow duration seems the only modifiable (prehospital) variable – by proper training of the potential bystanders and by shortening the delay of SMUR/MUG interventions. It seems that most of the subsequent D and q measures after OHCAS have less impact on survival, as the severity (duration) of the circulatory arrest seems to represent the major determinant for outcome.

P319

Patients in intensity care unit the role of mouth

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Introduction: Dental disease in Intensity Care Unity (ICU) environment can induce bacteremia, exacerbating the patient's systemic condition and prolonging hospital stay. Objectives: To characterize oral complaints in ICU patients of the general hospital Albert Sabin, Juiz de Fora, Minas Gerais, Brazil, looking forward risk factors for systemic complications and to assess quality of life related to oral health.

Methods: Were evaluated 60 patients, aged 18 to 91 years old, in ICU. A dentist performed a complete evaluation: clinical questionnaire (SIQUEIRA, 2001); oral health impact profile OHIP-14 (SLADE, 1997); socioeconomic evaluation ABA-ABIPEMI questionnaire (ALMEIDA, WICKERHAUSER, 1991).

Results: The mean age of patients was 65 years (± 17.32), and 34 (56.67%) were male, 52 (86.67%) Caucasians, 8 (13.33%)

were smoking habits, 12 (20%) alcohol consumption and 1 (1.67%) drug use, and, among these harmful habits, 5 (8.33%) patients reported having more than a habit. At the time of dental evaluation, 14 (23.33%) patients had an acute dental complaint; other 46 patients did not report dental complaint. The main complaints were uncomfortable prosthesis in 3 (21.43%) patients, temporomandibular joint (TMJ) pain in 2 (14.29%) and pain in the mastication muscles in 2 (14.29%) patients. When asked what period of the day presented complaints, 12 (85.71%) said it was indifferent. About the timing and triggering factor, 8 (57.16%) patients reported being daily, 8 (57.14%) patients reported some triggering factor and 6 (42.85%) patients said it was spontaneous. About the time of day the complaint was worse, 9 (64.28%) patients said they were indifferent. Regarding the complaint duration, the average was 26.16 months, ranging from 0.25 to 60 months. The mean of intensity of chief complaint by Visual Analog Scale (VAS) was 5.86, ranging from 2 to 10. The classification of the socioeconomic level of the patients with acute complaint was high (A e B). The quality of life related to oral health in these patients showed a mean of 8.93 (\pm 5.99).

Conclusion: To the best of our knowledge, this is the first study conducted a systematic dental evaluation to characterize acute complaints in ICU patients. Acute oral complaint was present in 23.3% of ICU patients. The complaints were considered medium to high intensity for most patients, suggesting that may affect oral health, quality of life and the consequently on re-establishment of the patient in ICU.

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Patient delay in patients with ST-elevation myocardial infarction: time patterns and predictors for a prolonged delay

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Background and aims: A short patient delay (time from onset of symptoms to calling the emergency service) is crucial in order to reduce the overall treatment delay and thereby improving treatment success of ST-elevation myocardial infarction (STEMI). We investigated the effect of the introduction of field-triage based primary PCI strategy in Denmark in 2003 on the patient delay, and aimed to identify key predictors that affect the length of the patient delay.

Methods: Historical follow up study based on consecutive collected data from Danish national databases. We included 5,786 patients hospitalized with STEMI and treated with

primary percutaneous intervention (PPCI) during the period from 2003 to 2009. The dependent variable was patient delay (<120 and \geq 120 min). Data were analyzed for a possible time trend during the period and multiple logistical regression was used to identify risk factors for a prolonged patient delay.

Results: Median patient delay was 93 [IQR 89; 96] minutes. During the first 7 years after implementation of a field triage strategy for PPCI no major reduction in patient delay was observed. Multivariate analyses identified age 55 to 69 years (OR: 1.26 [95%CI: 1.08; 1.46]), age \geq 70 years (OR: 1.60 [95%CI: 1.37; 1.88]), diabetes (OR: 1.28 [95%CI: 1.06; 1.53]), female gender (OR: 1.19 [95%CI: 1.05; 1.36]), multivessel disease (OR: 1.12 [95%CI: 1.00; 1.27]) and presentation during the night 10 p.m. - 5.59 a.m. (OR: 1.93 [95%CI: 1.69; 2.22]), as independent risk factors of patient delay \geq 120 min. Symptom onset between 2 p.m. - 10 p.m. was associated with a shorter patient delay (OR: 0.76 [95%CI: 0.66; 0.88]). Both groups were compared to onset of symptoms between 6 a.m. - 1.59 p.m.

Conclusion: Patient delay did not change during the first 7 years after implementation of a field triage PPCI strategy for STEMI treatment. High age, diabetes, female gender, multivessel disease and presentation of symptoms during the night showed to be independent predictors of prolonged patient delay.

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Admission for intermediate risk NSTEMI-ACS patients : should non-PCI capable hospitals be preferred?

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Background / Introduction: According to 2015 ESC Guidelines, diagnosis of NSTEMI-ACS should be performed by a qualified physician in the prehospital setting and be based both on clinical evaluation and ECG features. High or intermediate risk patients should be admitted for cardiac monitoring in a coronary care unit (CCU) for at least 24 hours. If indicated, coronary angiography for intermediate risk NSTEMI-ACS patients should be performed within 72 hours.

In our institution, in the prehospital setting, risk stratification and decisions for hospital dispatching depend only on clinical and ECG evaluation. To optimize NSTEMI-ACS patients management, it was decided to implement a regional protocol in our geographical area.

Purpose: Both distribution of hospital wards for NSTEMI-ACS patients admission managed by a mobile intensive care unit (MICU) and proportion of accurate prehospital NSTEMI-ACS diagnosis were investigated in a preliminary survey.

A shared regional protocol for management of NSTEMI-ACS patients was implemented on May 2016 in collaboration with all the cardiology departments, cath-labs, Emergency Rooms (ER) and MICU.

Indicators should be proposed to help for best adherence to regional protocol.

Methods: From July to September 2015, patients identified as ' NSTEMI-ACS ' in the EMS database were included. Admission ward and discharge diagnosis were investigated. Prehospital and final diagnosis were compared to assess diagnostic concordance.

Results: 122 patients were diagnosed with NSTEMI-ACS during study period.

81% (99) of these patients (high and intermediate risk) were admitted in a CCU with PCI capabilities (including 3 patients immediately referred to the cath-lab).

16% (20) of the patients were admitted to an emergency room (ER) in a PCI-capable hospital.

Three remaining patients were admitted through ER or CCU to a non PCI-capable hospital.

Fifty-one of all patients were discharged with a final diagnosis of NSTEMI-ACS : estimated concordance between MICU and final diagnosis is 42%.

Conclusion: Despite ESC guidelines and low diagnosis accuracy, most of NSTEMI-ACS patients managed in the prehospital setting are referred to a PCI-capable hospital without taking the risk level into account.

In our area, the new shared management protocol recommends, after risk stratification, that intermediate risk NSTEMI-ACS patients be referred to a CCU in a non PCI-capable hospital and if necessary be transferred to the cath-lab for coronary angiography within 72 hours.

Orientation for intermediate risk NSTEMI-ACS patients will be used as a quality indicator to evaluate prehospital emergency physicians adherence to this regional protocol.

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Cost-effectiveness of extracorporeal life support networks in refractory out of hospital cardiac arrest

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Introduction: out of hospital cardiac arrest (OHCA) is a relevant health problem, yielding a significant socio-economic

burden. A stepwise approach to OHCA has been described as the 'Chain of Survival', which includes early alert of emergency medical system (EMS), immediate basic life support and defibrillation (BLS-D) and ultimately advanced life support (ALS). A highly integrated management of OHCA patients can be achieved in a two-tier system, comprising BLS-trained ambulance crews, with AED on board, and ALS-trained crews, staffed with physician and/or nurse, deployed on scene either simultaneously or sequentially.

For those patients who do not respond to conventional ALS protocols, extracorporeal life support (ECLS) may be a feasible option as a bridge to cardiac recovery or organ donation. Given its significant economic and biologic costs, ECLS needs to be guided by clearly defined protocols.

Purpose: the present study aimed to investigate the effects on OHCA management of ECLS-integrated network, involving four different cardiac arrest centres in a large urban area and outlying district.

Methods: from January to December 2015 we collected and analyzed data from all OHCA patients matching criteria for ECLS, according to our local protocol: age ≤ 75 , witnessed cardiac arrest, no flow ≤ 6 minutes (real hands-off time), low flow ≤ 45 minutes (time with manual or automatic chest compression). Patients who did not strictly met the above mentioned timings were considered eligible for lung donation as potential DCD (donors after cardiac death), providing age was ≤ 65 , no flow ≤ 15 minutes and low flow < 60 minutes. Based on first report from ambulance crew, all ECLS-eligible patients were referred to one of the centres involved in the program. Nevertheless, further pre-hospital evaluations and availability of in-hospital resources were pivotal to determine ECLS feasibility.

Results: in the study period 5135 OHCA were attended. Seventy-six patients were proposed for ECLS and 53 candidates (69.74%) actually received the treatment. In 13 patients (24.5%) ECLS was effective as a bridge to cardiac recovery or organ donation.

A favorable neurological outcome (i.e. cerebral performing categories 1-2) was recorded in 7 patients (13.2%). Five patients (9.26%) were eligible for organ donation (Maastricht category IV).

Conclusions: our urban network was able to guarantee ECLS treatment in a significant number of candidates, with a cost-effective use of resources. In addition, survival and favorable neurological recovery were comparable to recently published studies. Given the small proportion of donors in our country, the implementation of lung and organ donation-network will be one of our challenges.

Risk Stratification

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Acute coronary syndrome: risk factors paradox

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Introduction: The classic cardiovascular risk factors are associated with a higher prevalence of coronary artery disease, but appear to present a paradox in terms of outcomes.

Methods: Prospective registry of 444 consecutive patients admitted for acute myocardial infarction with ST-elevation myocardial infarction (STEMI) during a 4 years period. We considered as risk factors: male gender, hypertension, dyslipidemia, diabetes mellitus and smoking habits. We divided the sample into three groups: Group A - patients with no risk factors (n = 22; 5.0%; 0% men), Group B - patients with 1 risk factor (n = 85; 19.1%; 56.5% men) and Group C - patients with 2 or more risk factors (n = 337; 75.9%; 82.8% men). We compare them in relation to a primary composite endpoint (PCE) [re-infarction, stroke and cardiovascular mortality (CV)] and secondary objectives [re-infarction, stroke and CV mortality isolated] at 1-year follow-up.

Results: Group A presented worse outcomes at 1 year follow up both in terms of mortality (A = 31.8% Vs B = 15.3% Vs C = 12.8%; p < 0.05) and PCE (A = 36.4% vs. B = 18.8% Vs C = 15.7%; p < 0.05). For the in-hospital prognosis there were no differences between the groups (mortality: A = 13.6% Vs B = 12.9% Vs C = 6.8%; p = ns / PCE: A = 18.2% Vs B = 15.3% Vs C = 8.0%; p = 0.06). In baseline characteristics the only difference was found in terms of age, with group A having older patients (H = 76 B = ± 15 vs 67 ± 1 vs C = 62 ± 13; p < 0.01) while no differences were present for infarct location, number of diseased vessels, clinical variables at presentation or days of hospitalization. Group A was less often subjected to percutaneous treatment (A = 63.6% vs B = 83.5% vs. C = 85.5%; p < 0.05).

Conclusion: While STEMI happens more frequently in patients with risk factors, in those without risk factors it occurs at older ages. Although traditional cardiovascular risk factors are associated with a higher prevalence of coronary artery disease there is a paradox in terms of prognosis.

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CHA2DS2-VASc as a long-term risk predictor in hospitalized patients with acute coronary syndromes

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Introduction: CHA2DS2-VASc score, used to predict the thrombo-embolic risk in patients with Atrial Fibrillation (AF), is simple to memorize and apply in day-to-day practice.

Purpose: This study intends to evaluate this score as a long-term poor-outcome predictor in patients with Acute Coronary Syndromes (ACS)

Methods: Prospective data of 1276 patients consecutively admitted between 1st October 2009 and 30th September 2014 diagnosed with an ACS. The patients were divided into 3 groups: A) patients with CHA2DS2-VASc 0-1 (n=445; 34.9%; 92.4% male); B) patients with CHA2DS2-VASc 2-3 (n=444; 34.8%; 69.8% male); C) patients with CHA2DS2-VASc ≥4 (n=387; 30.3%; 44.2% male). The groups were compared according to the composite primary endpoint (CPE)(re-infarction, stroke, cardiovascular death) and secondary endpoints (re-infarction, stroke and cardiovascular death separately) at one year of follow up.

Results: Patients with higher CHA2DS2-VASc score displayed higher incidence of CPE both during hospitalization (A = 2.9% vs B = 7.2% vs C = 14.0%, p < 0.01) and at 1 year of follow-up (A = 5.4% vs B = 16.4% vs C = 32.0%, p < 0.01). Multinomial Regression analysis adjusted for dyslipidaemia, anterior infarction, previous angina, Killip class at admission > 1, smoking, sedentary life-style and glomerular filtration rate demonstrated power predicting EPC at 1 year follow up (p < 0.001; OR = 1.268).

During hospitalization, a higher incidence of heart failure (A = 4.3% vs B = 9.5% vs C = 16.3%, p < 0.01), re-infarction (A = 0.7% vs B = 0.7% vs C = 2.3%, p = 0.04), death of all causes (A = 2.2% vs B = 6.1% vs C = 10.6%, p < 0.01) and non-cardiac complications (A = 7.9% vs B = 10.1% vs C = 18.9%, p < 0.001) were found to be higher in group C.

A higher CHA2DS2-VASc was also correlated with adverse outcomes at 1 year follow up, namely: stroke (A = 0.0% vs B = 0.0% vs C = 0.8%, p = 0.032), myocardial infarction (A = 1.8 vs 3.2% vs 6.2%, p < 0.01) and all cause death (A = 3.6% vs B = 13.3% vs C = 24.5%, p < 0.01).

Conclusion: The CHA2DS2-VASc score predicted the incidence of adverse outcomes at 1 year of follow-up. D

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Determination of coronary heart disease risk factor prevalence conditions in the young

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Background: Conditions related to coronary heart disease risk factors usually arises in the youth and continues during adulthood. Coronary heart diseases are the epidemic of our age and is the number one reason for death in adults. According to “Euroaspire III”, Turkey is the country where myocardial infarcts or sudden cardiac death is the most commonly seen in the young without any symptoms. As compared to European countries, the reason why heart vein diseases have high prevalence in our country is due to smoking, increase in obesity, inaction, unhealthy nutrition and elevation in diabetes. It is curicial to know coronary heart diseases risk factors, to prevent them and diagnose early. It may decrease the death related to coronary heart diseases at older ages if risk factors prevalence rate is determined at youth thereby the young are supported to take precautions. This study was done to determine the coronary heart disease risk factor prevalence conditions in the young.

Methods: This randomized descriptive study was done on 138 students studying at a university. This is a pilot study of a project which aims to determine the heart health risk factor in the young. It was planned to conduct among university students due to the fact that the age of prevalence of cardiovascular diseases has gradually decreased. Data were collected by investigators with questionnaire and anthropometric measurements. Ethical committee and university permissions, verbal and written approvals of attendants were taken.

Results: It was determined that almost all of the young did not smoke, had alcohol and used drugs. It was found that 63.8% of them had stress, 55.1% of them were inactive, 21.0% of them were overweighted according to VKI, 21.7% of them had high body fat, 6.5% of them had very high body fat and 13.8% of them had risky waist hip ratio. It was detected that 81.9% of the young had home cooked food as main meals, 56.5% of them had fruit for interval meals whereas 29.0% of them had chips and cookies. It was found that the mean of systolic/diastolic blood pressure and pulse values were 113.98 ± 86.19 , 70.54 ± 9.58 and 89.26 ± 62.67 , respectively. When BWI were observed depending on the age of the young, at the age of 18 (47.6%) and 21 (27.6%) were overweighted whereas according to waist hip ratio the group with age of 20 (27.6%) were under risk. It was detected that 21.1% of girls were overweighted according to BWI and 68.4% of them were in the risk group of waits hip ratio. 33.3% of the young who were 18 years old had high body fat ratio and 20.3 % of girls had high body fat ratio ($p < 0,05$).

Conclusion: This pilot study showed that the young are under risk of coronary heart disease development and it is planned to investigate in detail with the project described

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Differential characteristics in patients hospitalized for acute coronary syndrome according to sex

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Introduction and objectives: Women suffering from an acute coronary syndrome (ACS) are older, have more cardiovascular risk factors (CRFs) and greater risk of ischemic and bleeding complications than men. Our objective was to evaluate such differences, assess therapy with new antiplatelet agents (NAP), and appraise the performance of percutaneous coronary intervention (PCI) and the incidence of ischemic major event (IME) (including death, acute myocardial infarction, ischemic stroke, new PCI and stent thrombosis) according to gender in monitoring clinical follow-up.

Methods: We studied 1235 patients consecutively admitted to our service with diagnosis of ACS. 467 (36.9%) had ST elevation ACS and 800 (63.1%) non ST-elevation ACS with some sign of myocardial ischemia. 296 patients (24%) were women. We analyzed baseline characteristics and events during the follow-up (median of 22.2 months) according to gender.

Results: Women admitted with ACS were older and showed higher prevalence of hypertension and diabetes. They presented a higher bleeding risk profile according to CRUSADE score and higher ischemic risk profile according to GRACE score, as reflected during admission in greater incidence of bleeding, anemia and heart failure (HF) among women. Women are less likely to undergo PCI and to receive NAP. At long-term follow-up, incidence of IME and death was higher among women.

Conclusions: Women admitted for ACS showed older age and higher prevalence of CRFs, a most unfavorable ischemic and hemorrhagic risk profile, and a higher rate of bleeding complications and HF during hospitalization. Despite their increased ischemic risk profile, they are less likely to undergo PCI or to receive NAP.

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Heart failure as an important factor of unfavorable prognosis for different age women after myocardial infarction

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Table 1. Baseline characteristics and events

| | Female | Male | P |
|-------------------------|-------------|-------------|--------|
| STEACS | 95 (32.1%) | 358 (38.1%) | 0.062 |
| Age | 70.0±12.41 | 62.77±12.4 | <0.001 |
| HTA | 201 (67.9%) | 534 (56.9%) | 0.01 |
| DM | 108 (36.5%) | 267 (28.4%) | 0.009 |
| GRACE >140 | 153 (67.4%) | 318 (46.4%) | <0.001 |
| CRUSADE >40 | 34 (31.8%) | 37 (6.1%) | <0.001 |
| Ticagrelor or Prasugrel | 55 (21.4%) | 288 (33.5%) | <0.001 |
| PCI | 249 (84.1%) | 836 (89%) | 0.025 |
| Death | 32 (10.8%) | 89 (9.5%) | 0.575 |
| ACS | 14 (4.7%) | 41 (4.4%) | 0.872 |
| IME | 63 (21.3%) | 171 (18.1%) | 0.269 |

Despite the progress in the management of patients with acute coronary syndrome in the last decade, mortality from myocardial infarction is higher in men than in women.

The aim of our study was evaluation of main risk factors of mortality among different age women.

The study included 385 women with myocardial infarction (MI). Hospital mortality rate was 17,93%, 24-h mortality was 76.9%. The most frequent cause of death according to autopsy studies was cardiac arrest 95.65%. In 26.08% of the cases patients had myocardial rupture and hemotamponade. Multivariate regression analysis identified quantitative and qualitative factors affecting mortality in women. Factors affecting the men's risk of death in the hospital were congestive heart failure (CHF) (RR 17.7 $p = 0.0001$), VT/VF in the first day of MI (RR 13 $p = 0.01$), the SA and AV block (RR 8.1 $p = 0.05$), creatinin > 117 mmol / l (RR 5.5 $p = 0.0005$), potassium < 4.15 mmol / l (RR 3.8 $p = 0.0005$), sodium < 136.5 mmol / l (RR 3.37 $p = 0.0001$), glucose > 9 mmol / l (RR 3.27 $p = 0.003$). All survived women were divided into age groups: young till 44 years, middle age of 45-59 years, elderly - 60 years are more senior. During correlation analysis ($p < 0.0001$) it were found link between heart failure with the presence and duration of a history of CHD, both stable angina and previous MI, also found significant ($p < 0.001$) CHF with the presence and duration of diabetes. No significant differences according to age for NT-proBNP, determined on the 5th day of MI, was found, however, drew the attention of higher average value of this indicator in all age groups: a group of young women in 1036 $9 \pm 15,1$ pg / ml, medium - 1053,9 $\pm 8,1$ pg / ml and the elderly - 1082,3 $\pm 12,9$ pg / ml, respectively. In all age groups was detected significantly higher levels of neutrophils in the development of CHF (Killip's I 4,55 $\pm 0,2 \times 10^9 / l$ Killip's IV 7,74 $\pm 0,5 \times 10^9 / l$). NT-proBNP level was significantly higher ($p = 0.03$) in patients with angina before MI. It was found a positive relationship between the level of NT-proBNP and CK MB ($r = 0,64$ $p = 0,03$), the absolute

number of monocytes in the first day of MI ($r = 0,46$ $p = 0,02$), CRP levels ($p = 0.01$), as well as the development of left ventricular aneurysms ($p = 0,02$) and a negative - the level of erythrocytes on the first day of MI ($r = -0,58$ $p = 0,02$). Development of acute HF was associated with higher levels of glucose ($p = 0,02$) and creatinine ($p = 0,01$) in the first day of the MI, and the presence of anemia ($p = 0,003$). The findings suggest that NT-proBNP, hyperglycemia and anemia is directly related to the vastness of myocardial lesion, one adverse remodeling in the development of MI and CHF, which are more common in older women with MI. For women with MI the highest predictive value had acute heart failure and rhythm and conduction disturbances.

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High Syntax score and left main percutaneous coronary intervention in high risk patients. Results at 10 years follow-up

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Introduction: Nowadays complex anatomical coronary lesions (Syntax score ≥ 32) that involve left main coronary artery (LMCA) are contraindicated for a percutaneous coronary intervention (PCI) treatment in revascularization guidelines. Nevertheless, PCI could be of choice in selected surgical high-risk patients.

Purpose: The main objective of this study was to evaluate the efficacy and safety of PCI in LMCA disease with high Syntax score at 10 years follow-up.

Methods: We prospectively included 123 consecutive patients (71 ± 11 years, 70.5% male) with LMCA disease and Syntax score ≥ 32 treated with PCI between June 2006 and April 2015. We evaluated the occurrence of major adverse cardiovascular events (MACE) defined as cardiac death, nonfatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis after 10 years clinical follow-up (median 40.8 months).

Results: 44.7% of patients had stable coronary disease and 55.3% acute coronary syndrome (35% Non-STEMI and 20.3% STEMI). 45% were diabetic patients and 45.1% presented moderate-severe left ventricular systolic dysfunction. 45% of patients had logistic EuroSCORE ≥ 12 and median Syntax score was 41.5. The most frequently bifurcation technique employed in LMCA was 'provisional stenting' in 64.2% of cases, and zotarolimus eluting stent was used in 71.1% of cases. Stroke rate after PCI was 0.9%. During follow-up, MACE rate at 10 years was 15.3% (10.3% cardiac death, 0.9% non-fatal myocardial infarction,

4.9% TLR and thrombosis rate 0%). We observed significant differences in the occurrence of TLR in patients in which 2 stents bifurcation technique were used (1.5% vs 10%, $p=0.05$). 25.7% of patients had an angiographic follow-up

Conclusions: PCI treatment of LMCA disease and high Syntax score (≥ 32) in surgical high-risk patients provide very positive results and low rate of mayor cardiac adverse events at a very long-term follow-up. Two stents bifurcation technique at LMCA was associated with a higher TLR rate.

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Jung variable as a predictor of one year mortality and acute heart failure in patients with acute ST elevation myocardial infarction treated with primary percutaneous coronary intervention

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Background: Accurate early risk stratification of patients with ST-elevation myocardial infarction (STEMI) is important in the management of these patients. Jung variable is a simple clinical risk index combining age, systolic blood pressure and heart rate. It is designed to be calculated quickly at first medical contact, and all potentials subsequent risk stratifications points.

Purpose: To determine the long term prognostic accuracy of Jung variable and established risk scores in STEMI patients treated with primary percutaneous coronary intervention (pPCI), and to validate it in independent STEMI patients population.

Methods: Primary and validation prospective studies of consecutive patients were conducted in two tertiary hospitals. One-year combined outcome (all-cause mortality and acute heart failure (AHF) was assessed. The Jung variable was calculated using the equation: $\text{systolic blood}/(\text{heart rate} \times \text{age}) \times 100$. The predictive value of Jung variable and TIMI, PAMI, and Zwolle scores were evaluated with Cox regression analysis, calibration of scores with Hosmer-Lemeshow test and the diagnostic accuracy of the scores was assessed using receiver operating characteristic curves, while scores were compared using the DeLong method.

Results: Out of 647 patients 70 (10.8%) died and 42 (6.5%) had AHF in primary, while out of 418 patients 33 (7.9%) died and 52 (12.4%) had AHF in validation study. In primary study Jung variable was independent predictor of combined

end point (4.94 (2.64-9.58); $p<0.01$), while in validation study Jung variable was univariate predictor of combined end point (6.881 (3.553-13.327); $p<0.01$). In a primary study, C-statistic and 95% confidence intervals of Jung variable for combined end point was the biggest (0.764 (0.729-0.796)) and comparable to TIMI, PAMI and Zwolle risk score ($p>0.05$). Jung variable ≤ 2.35 had sensitivity 74.3% and specificity 77.3% for mortality and acute heart failure. C-statistic for predicting combined clinical endpoint in a validation study was 0.721 (0.655-0.788), but lower than C-statistics of other risk scores ($p<0.05$). Hosmer-Lemeshow test of Jung variable in both studies was nonsignificant ($p>0.05$).

Conclusion: The Jung variable, simple, quickly determined at first medical contact, was independent predictor of one year combined end point, mortality and AHF, in primary study of STEMI patients treated with pPCI. Jung variable had good calibration and good discriminative capacity in primary and validation studies, comparable to TIMI, PAMI, and Zwolle risk scores in primary study.

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Predictors of survival in Cardiopulmonary exercise test after cardiac resynchronization therapy

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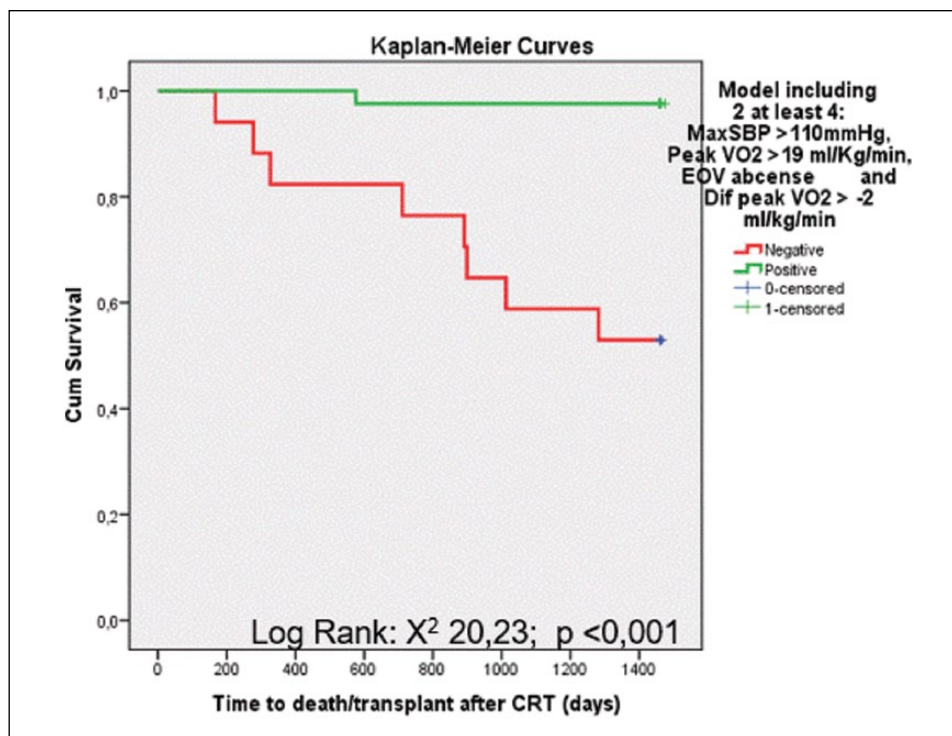
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Introduction: Cardiac resynchronization therapy (CRT) reduces heart failure mortality/morbidity and delays heart transplantation.

Objective: This study aimed to find criteria from cardiopulmonary exercise test (CPEX) pre and/or after CRT that could predict death or transplant at 4 years (Death/Tx at 4Y)

Methods: 67 patients were retrospectively selected between those in whom a CRD (cardiac resynchronization device) was implanted were assessed with CPEX and echocardiography at time of implantation and 1 year after implantation. Follow-up of these patients was achieved through hospital records revision considering as primary end-points death or heart transplantation. Variables obtained through CPEX were compared considering the primary end-point. Receiver operating curves were used to assess the best cut-off points of significant continuous values, with that was constructed a composite model. A Cox logistic regression analysis was used to test the value of the model.

Results: Sixty seven patients, age of $57,7 \pm 9,5$ years, 44 males (65,7%), 23 (34,3%) with an ischemic heart failure and 31 (46,3%) a idiopathic cardiomyopathy. Fourteen



patients (20,9%) died or were transplanted during follow-up. Comparing patients with events, Death/Tx at 4Y, versus survivors, we found a significance difference in maximum systolic blood pressure (MaxSBP) (107 ± 22 vs 138 ± 29 ; $p=0,005$), peak VO₂ ($14,4 \pm 5,4$ vs $19 \pm 4,5$; $p=0,009$), oscillatory ventilation pattern (EOV) presence (6 (66,7%) vs 7 (14,6%) $p=0,003$) from CPEX after CRT. Additionally the difference in peak VO₂ after and before CRT (Dif peak VO₂) ($-4,9 \pm 2,1$ vs $1,8 \pm 4,0$; $p < 0,001$) was higher in survivors. Using Cox regression analysis, a model corrected for age and gender, including at least 2 of the 4 criteria: peak VO₂ >19 ml/kg/min, oscillatory ventilation pattern absence, MaxSBP > 110 mmHg, all from second CPEX and Dif peak VO₂ > -2 ml/Kg/min, was a strong predictor of lower incidence of Death/Tx 4Y (HR 0,04; IC 0,0 – 0,32; $p=0,002$; Kaplan Meier, Figure 1).

Conclusion: The composite model including 2 at least of the 4 criteria (peak VO₂ >19 ml/kg/min, EOV absence, MaxSBP > 110 mmHg and Dif peak VO₂ > -2 ml/Kg/min) was a strong predictive of survival/transplant free at 4 years after CRT.

Secondary prevention

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Acute myocardial infarction and erectile dysfunction in 2-year unhealthy relationship

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Background: Acute myocardial infarction (AMI) has a negative impact on the sexual activity of men. Information concerning the causes of sexual dysfunction after an AMI is scarce. Erectile dysfunction (ED) is the most common manifestation of sexual dysfunction in these patients. Its pathophysiology is mediated through endothelial dysfunction and lack of nitric-oxide (NO), same as pathophysiology in coronary artery disease itself.

Purpose and methods: We wanted to investigate the prevalence of ED in patients with AMI at admission and after 2 years of follow-up. We used the sexual health inventory for men (SHIM) questionnaire for ED diagnosis and for the determination of its severity. A secondary aim was to compare levels of brain natriuretic peptide (BNP), as a marker of hemodynamic disturbance, and NO degradation products (NOx) in patients with and without ED. The third aim was to investigate the predictive role of ED after AMI.

Results: We included 80 men with AMI and 40% of them had some degree of erectile dysfunction, at least 6 months previously. Erectile dysfunction was insignificantly prevalent in patients with myocardial infarction with ST-segment elevation, compared to those without ST-segment elevation (57.9% vs. 34.4%, $p=0,06$). After 2 years of follow-up, we found an insignificant increase in a number of patients with ED (60 vs. 73.2%). Percentage of patients

with severe ED significantly decreased (17.5% vs. 2.8%, $p < 0.01$). Patients with severe ED had significantly higher BNP levels and lower levels of NOx compared to those without ED measured during the first 72h after admission [802.5(750.5-2901.3) vs. 236.1(127.2-407.3) pg/mL; 117.4(103.0-131.8) vs. 138.6(116.8-162.4) $\mu\text{mol/L}$]. In logistic regression analysis presence of ED was associated with higher risk of rehospitalization due to cardiovascular causes during 2 years after AMI. After 2 years, 7.5% with and 3.75% without ED died ($p = \text{n.s.}$).

Conclusions: A high percentage of patients with AMI had an ED at admission since these conditions share the same risk factors. Patients with ED had higher levels of BNP at admission and worse 2-year prognosis (more frequent rehospitalizations). Also, patients with ED had lower levels of NO degradation products which was associated with more pronounced endothelial dysfunction and that could be the cause of worse 2-year prognosis in these patients. Interestingly, the prevalence of patients with severe forms of ED significantly decreased which could be the consequence of used medications such as nitric oxide donors (e.g. anti-ischemic therapy). Diagnosis and treatment of ED in AMI patients could influence long-term prognosis in this setting.

P332

Can pre-implantation cardiopulmonary exercise test predict cardiac resynchronization therapy response?

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Introduction: Cardiac resynchronization therapy (CRT) is an established treatment modality for advanced chronic heart failure (CHF). However 20-30% of patients treated with CRT do not experience clinical improvement.

Objective: Our aim was to evaluate the role of cardiopulmonary exercise test (CPEX) in predicting CRT response.

Methods: We included 38 consecutive patients in whom a CRT-D (cardiac resynchronization and defibrillation device) was implanted, with CPEX and echocardiography assessment at time of implantation and 1 year after implantation. Positive CRT response was defined as the combination of improvement on New York Heart Association class (NYHA) ≥ 1 and enhanced on left ventricle ejection fraction (LVEF) $\geq 15\%$.

Results: Thirty eight patients, age of 57 ± 10 years, 23 male (60,5%), 14 (36,8%) with ischemic heart failure, and 18 (47,4%) with idiopathic dilated cardiomyopathy. Fourteen (38,2%) had positive CRT response at 1 year. Responders

had lower VE/VCO₂ slope, pré CRD implantation, compared to non-responders ($26 \pm 3,8$ vs $31 \pm 6,3$; $p < 0,01$) and lower proportion with oscillatory ventilation pattern (EOV) (0 (0%) vs 10 (45%); $p < 0,01$). On multivariate logistic regression model corrected for age and gender, increased VE/VCO₂ slope is associated with lower CRT response (OR 0,77; IC 0.61-0.96; $p = 0,02$). Using receiver operating curves was assessed that best cut-off point of VE/VCO₂ slope predictor of CRT response, was 26,5, with area under the curve 80%, $p 0,003$.

Conclusion: VE/VCO₂ slope $< 26,5$ prior CRT-D implantation is a strong predictor of CRT response.

P333

Glucose tolerance testing: an underutilized investigation post acute coronary syndrome?

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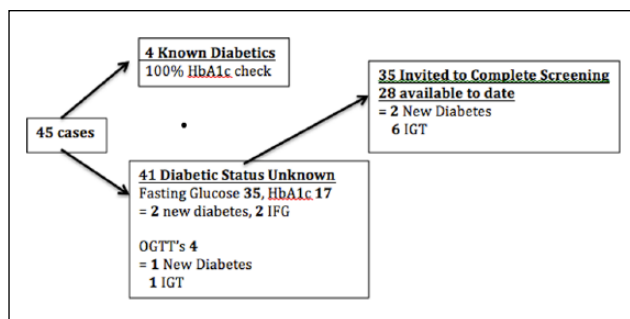
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Background: Impaired glucose tolerance (IGT) is now recognized as the strongest glycemic predictor of cardiovascular risk. Although more convenient to perform, Glycated Haemoglobin A1c (HbA1c) and Fasting Glucose (FG) are relatively weak markers of macro-vascular complications after controlling for the effect of a two-hour glucose challenge. As a result, European Society of Cardiology (ESC) guidelines advocate that an oral glucose tolerance (OGTT) test be performed in all cases of known coronary artery disease (CAD) with a normal or inconclusive FG and HbA1c (Class 1, Level A). It is essential that IGT is detected and promptly treated given the potential to halt progression to type two diabetes and avert further hyperglycemic complications. This is particularly pertinent to CAD given the higher risk of recurrent events and restenosis post revascularization.

Purpose: To audit current diabetes screening practices, and possibly demonstrate the merits of greater adherence to ESC guidelines.

Methods: Single center review of all cases of acute coronary syndrome (ACS) admitted to our Coronary Care Unit between January 1st to February 29th 2016. An audit of current practice of diabetes screening was first performed. Any cases not meeting ESC diabetes screening guidelines were to be invited to attend to complete their workup.

Results: 45 ACS cases were identified over the two-month period. Four of these had known diabetes, all of which had a HbA1c checked. Of the remaining 41 cases, 35 had a fasting glucose and 17 had a HbA1c. 2 new cases of type two diabetes and 2 cases of impaired fasting glucose (IFG) were detected. 4 had undergone an OGTT, which yielded one new diabetes diagnosis and one IGT. 35 cases did not



meet current ESC guidelines, and were invited to complete diabetes screening. 28 have been available to attend to date and OGTT's have revealed 2 new diabetics and 6 cases of IGT. (See Flowchart)

Conclusion: This short study clearly exemplifies the value of performing OGTT's in all cases of CAD with normal/inconclusive FG and HbA1c. In keeping with similar studies, 10/32 (31%) of OGTT's yielded a positive result in this high risk group. Although encouraging levels of FG/HbA1c testing had been achieved, it is clear we must ensure greater adherence to the ESC diabetes guidelines. If undetected, these patients would be at greater risk of recurrent ACS due to de novo atherosclerosis and higher restenosis rates post revascularization.

P334

Is the difference in personal-adaptive potential in women with acute myocardial infarction and healthy individuals?

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Studies of personality characteristics and behavioral characteristics that influence the development of myocardial infarction (MI) are few and relate to men.

Objective: to study the characteristics of personality-adaptive capacity in women with MI.

Materials and methods: 60 women with MI (mean age $49 \pm 8,6$ years) and 38 patients without coronary artery disease (CAD) (mean age $50 \pm 7,7$ years). Questionnaires Hardiness Survey (SR Maddi), Life style index and method for psychological diagnosis coping mechanisms were used.

Results: Hardiness in the group of women with MI was $74,64 \pm 2,6$ points, the women in the control group $77,71 \pm 1,95$ points. On scales 'Involvement', 'Control', 'Acceptance of risk' was not obtained significant differences between women with MI and control group. Women with high levels of Hardiness seek medical help faster compared with patients with lower levels of

Hardiness ($p = 0,01$). A significant relationship indicator 'involvement commitment' to-income patients ($p = 0.01$) and the parameter 'control' - with the debut of CAD as MI ($p = 0.04$). In the presence of a history of angina were observed higher values of the parameter 'control' in individuals with lower functional class of angina ($p = 0.04$), suggesting that the patient tried to control the course of the disease, following the advice of a doctor. The study of LSI has shown that 'Denial' and 'Substitution' at women with MI were more pronounced as compared to women in the control group ($p < 0.05$). The degree of severity indicators 'Denial' and 'Compensation' have a direct correlation with the duration of pain and eventually seeking medical care ($r = 0,29$ $p = 0,03$ and $r = 0,36$ $p = 0,007$, respectively). The 'Extrusion' has a connection with recurrent MI ($p = 0,048$), 'Projection' with the development of early postinfarction angina ($p = 0.049$). It was shown a significant correlation 'Substitution' and the development of ventricular arrhythmias ($p < 0.05$). It was no significant differences in the use of coping strategies in women with MI and control group. But it is shown that in women with MI presented less adaptive cognitive coping strategies (40%) and is dominated by the adaptive emotional (60%) and behavioral coping strategies (53.3%).

Conclusion: In women with MI not changed the level of 'resilience' and among parameter 'negation' and 'substitution', which leads to the fact that patients are not really aware of the severity of their illness and try to cope with the stress of being distracted from their own state.

P335

Overall healthcare costs after an acute coronary syndrome (ACS): a real-life analysis of a large community setting of 2,989,512 subjects of the Italian National Health Service (NHS)

The analysis was partially supported by Sanofi

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Background/Introduction: Acute coronary syndromes (ACSs) represent the most common cause of morbidity and mortality worldwide. The economic burden of ACSs in Europe and in Italy is extremely high and is mainly related to hospitalizations, pharmaceutical costs, diagnostic procedures, and visits. Although several studies have been carried out to evaluate the cost of ACS management in clinical trials, real world data collected from electronic

administrative databases are generally available just for northern European countries.

Purpose: The aim of this study was to evaluate the healthcare resource consumption and average annual direct healthcare costs in the perspective of a NHS for the treatment of patients with a recent hospital admission for ACS and followed up for a 3-year follow-up period.

Methods: From the ARNO Observatory, we carried out a record linkage analysis of discharge records for ACSs (as a primary diagnosis) and prescription databases, which included 2,989,512 subjects of 7 Local Health Authorities from Northern to Southern Italy. The accrual period lasted from January 1 to December 31, 2011. Patients were evaluated for costs during the 3-year follow-up period from the NHS perspective. Costs items considered were: drugs in charge to NHS (based on reimbursement prices),

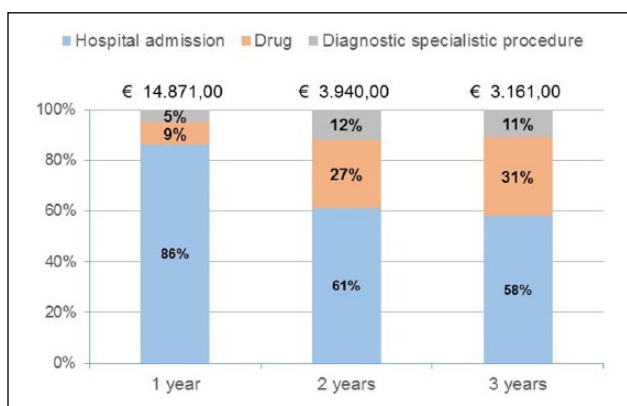
diagnostic/specialistic procedures (using reimbursement tariffs) and hospitalizations (using DRGs).

Results: Of the 2,989,512 subjects, 6,226 (2.1%) were hospitalized for ACS in year 2011. Female gender accounted for 35.5% of the cases. Mean age was 71 ± 13 (68 ± 13 in males, 77 ± 12 in females). History of diabetes, hypertension, COPD and depression was reported respectively in 30.8, 71.4, 9.5 and 14.6% of the cases.

Over the follow-up period, 63.3% of the patients discharged alive after ACS needed to be readmitted again in the first year, 29.1% during the second year and 23.6% in the third year.

Figure reports the overall costs, split by hospitalizations, drugs and diagnostic/specialist procedures over the 3 years of follow-up.

Conclusion(s): This analysis of a large population of real world patients showed that ACSs have major direct healthcare costs and that hospital admissions were the most important cost driver, specifically in the first year of follow-up. In the following years, due to the lower rate of re-hospitalizations, overall costs were strongly reduced with an increasing relevance of drug related costs.



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Prevalence of cardiovascular ambulatory care sensitive conditions and their association with patient characteristic in emergency department patients

Table 1. Table 1: Prevalence of cardiac ACSC

| | ACSC in all patients (ED-diagnosis) | ACSC in ambulatory patients (ED-diagnosis) | ACSC in inpatients (main diagnosis) |
|-----------------------|-------------------------------------|--|-------------------------------------|
| Overall % (n/n-total) | 10.8 (124/1,152) | 5.9 (39/662) | 16.3 (80/490) |
| MTS | P<0.001 | p=0.413 | p=0.187 |
| red | 0 (0/8) | 0 (0/0) | 12.5 (1/8) |
| orange | 18.5 (48/259) | 9.0 (8/89) | 20.0 (34/170) |
| yellow | 9.9 (49/497) | 5.5 (17/310) | 14.4 (27/187) |
| green | 7.6 (26/341) | 5.4 (13/239) | 14.7 (15/102) |
| blue | 5.9 (1/17) | 7.7 (1/13) | 0 (0/4) |
| Age | p=0.003 | p=0.106 | p=0.010 |
| <65 years | 8.5 (59/695) | 4.8 (22/457) | 11.8 (28/238) |
| ≥65 years | 14.2 (99/457) | 8.3 (17/205) | 20.6 (52/252) |
| Sex | p=0.254 | p=0.869 | p=0.265 |
| men | 11.8 (71/600) | 6.1 (19/310) | 17.9 (52/290) |
| women | 9.6 (53/552) | 5.7 (20/352) | 14.0 (28/200) |

All numbers are presented in relative frequencies. Absolute frequencies (number of patients) and number of patients within the subgroups are shown in parentheses.

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Introduction: Ambulatory care sensitive conditions (ACSC) consist of a subset of diagnoses (ICD10 codes) of potentially avoidable hospitalizations. ACSC are being used as a surrogate parameter for the quality of primary care.

Purpose: To investigate the prevalence of cardiovascular ACSC (i.e. hypertension, angina pectoris, congestive heart failure) on the basis of routine diagnoses (ICD-10)

Methods: Study population: consented, non-surgical ED-patients with all symptoms and severity levels (n=1,152). Electronically documented routine data were retrieved from the hospital information system (HIS). ACSC were defined according to Purdy et al. (Public Health; 2009).

Results: Of all patients, 57.5% (n=662) were discharged home after ED-visit (ambulatory patients) and 42.5% (n=490) were hospitalized (inpatients). Cardiovascular ACSC were coded in 10.8% (n=124) of all patients as an ED-diagnosis and in 16.3% (n=80) of all inpatients as hospital main diagnosis. Proportions of cardiovascular ACSC are presented in table 1.

Conclusions: According to the ACSC concept every sixth hospitalization could have been avoided by adequate treatment of cardiovascular diseases in primary care setting. Thus prospective studies should focus on the identification of influencing factors and potential supply gaps, especially in vulnerable populations, in the German health care system.

Sudden death / resuscitation

P337

Acute coronary syndromes complicated by reanimated cardiorespiratory arrest

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Introduction: Cardiorespiratory arrest is a frequent complication in the acute phase of acute coronary syndromes (ACS) and is the leading cause of death for ACS in the prehospital setting. Even when there is a successful resuscitation, mortality and the rate of complications are high, associated not only with the cardiac pathology but also with the lesions of other systems, including the central nervous system.

Purpose: To characterize the population of patients with ACS complicated with reanimated cardiorespiratory arrest (rCRA) admitted in a cardiology department. Determine the predictors of in-hospital and 1 year follow-up mortality.

Methods: We performed a retrospective, descriptive and correlational study, encompassing all patients admitted by ACS with rCRA in a Cardiology Department between 1st October 2010 and 31st August 2014. A 1 year follow-up was done, through medical consultation or telephone contact made by Cardiologist. Then, a univariate and multivariate analysis with factors possibly associated with larger mortality during hospital stay and on follow-up was performed. For statistical analysis, we used the SPSS 20.0.

Results: In this period, 2818 patients with ACS were admitted, 111 (3.9%) of which with rCRA. Among these, 83 (74.8%) were male and 28 (25.2%) were female, with an average age of 61.0 years. In-hospital death occurred in 21 patients (18.9%).

Associated to a higher hospital mortality were older age ($p < 0.01$); the history of diabetes mellitus ($p < 0.01$), angina pectoris ($p < 0.01$), heart failure ($p < 0.01$), peripheral artery disease ($p = 0.026$) and chronic renal failure ($p = 0.026$); higher Killip-Kimball class at admission ($p < 0.01$); the non-realization of coronariography ($p < 0.01$) and coronary angioplasty ($p = 0.013$). The lower left ventricular ejection fraction (LVEF) was an independent predictor of in-hospital mortality ($p < 0.01$).

There were 8 deaths (14.8%) and we did not find any predictors of death in this group. The prior history of heart failure showed a trend towards association with 1-year mortality, although it was not statistically significant ($p = 0.054$).

Conclusions: In patients admitted by ACS with rCRA, the lower LVEF was an independent predictor of in-hospital mortality. We did not find any predictors of mortality in 1-year follow-up.

P338

Cardiac arrest: troponin-I as a marker of coronary artery disease

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Introduction: In adult population cardiac arrest (CA) is often due to acute coronary syndrome. Cardiac troponin (cTn) is the marker of choice of myocardial injury. In patient resuscitated from CA increased values of cTn are commonly present. The clinical rule of those elevations is not clear.

Purpose: To assess if serial cardiac troponin I (cTnI) measurements may be useful for early assessment of underlined coronary artery disease (CAD) in patients resuscitated from CA.

Methods: From November 2010 to October 2014 all consecutive patients admitted in our department after

CA and treated with therapeutic hypothermia (TH) were included in a specific registry. From this one, we selected patients undergoing coronary angiography and at least three cTnI measurements at the following time-points: admission, after 3-6 and 12-15 hours. Cases were divided into two groups: 'A' with at least one angiographic critical lesion, 'B' without any critical lesion. Based on admission electrocardiogram, group A was divided into STEMI and NSTEMI subgroups. Measurement of cTnI was performed by Luminescent Oxygen Channelling Immunoassay, Dimension Vista (Siemens Health Care Diagnostics). Data are expressed (in $\mu\text{g/L}$) as median value, 25th-75th percentile. In addition to the absolute value, we considered the increase of cTnI at 3-6 hours and at 12-15 hours as compared to admission one (delta cTnI), in absolute terms and as percentage (D1 and D2, D1% and D2% respectively).

Results: 58 of the 120 patients of our registry were considered: 38 (66%) group A; 20 (34%) group B. In group A, 47% were STEMI and 53% were NSTEMI; the increase in cTnI was similar in STEMI and NSTEMI. Thus the subsequent analysis was done by comparing group B with the entire group A. At hospital admission, the cTnI values were not statistically different (group A: 0.44 [0.2, 1.4]; group B: 0.3 [0.1-0.6]). Significant differences were observed, in absolute value, at 3-6 hours (group A: 12.3 [2.4-47.3]; group B: 1.9 [0.4-4.1]) ($p=0.001$) and at 12-15 hours (group A: 32.5 [4.6-101.0]; group B: 1.9 [0.4-9.6], $p<0.001$). Similarly for D1 (group A: 11.7 [2.0-40.6]; group B: 1.2 [0.3-3.7], $p<0.001$), D2 (group A: 24.5 [4.4-96.2]; group B: 1.4 [0.1-9.1], $p<0.001$), D1% (group A: 1967 [729-4976]; group B: 891 [395-1831], $p=0.015$) and D2% (group A: 4192 [1587-10408]; group B: 758 [367-3096], $p=0.002$). We calculated sensitivity, specificity, positive and negative predictive value for the presence of critical CAD for D1, D1%, D2, D2% (ROC analysis). D1 superior or equal to 15 $\mu\text{g/L}$ was the best marker of critical CAD with 0,95 of positive predictive value.

Conclusions: Serial cTnI measurements appear to be a good marker of CAD in patients treated with TH after CA. The cTnI delta variation between admission and 3-6 hours seems to be the most powerful marker of underlined CAD. Additional studies are needed to establish the role of cTnI in the decision making of performing an urgent coronary angiography in these patients.

P339

Comparative characteristics of clinical and functional parameters of the survivors and patients who died suddenly after myocardial infarction

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The sudden death (SD) after myocardial infarction (MI) is an important issue, so this study was dedicated to comparison of patients survived and died suddenly after MI. 667 patients with MI were included. In addition to standard methods marker of apoptosis of CD 95 lymphocytes and monocytes CD 14, interleukin 1 β , 2, 6, and TNF α were investigated. The patient's follow-up period was 1 - 7 years. During this period 61 people died suddenly.

When comparing the SD and survived patients no differences in age, smoking, hypertension, diabetes were found. Number of male was significantly higher (90.2% vs 74.3% $p=0.006$) among SD patients, and these patients had more frequent history of repeated MI (55.7% vs 24.3% $p=0.001$) and circular MI (8.2% vs. 2.8% $p=0.01$). Acute and chronic heart failure, left ventricular aneurysm, ventricular extrasystole were detected significantly more frequently among SD patients compared with survived (23% and 6.3% $4*10^{-6}$; 34.4% and 8.9% $3*10^{-9}$; 41% vs 19.3% $8*10^{-5}$; 48.9% vs 21.4% $8*10^{-5}$ respectively). SD patients had greater decrease in left ventricular ejection fraction (LVEF) ($47,1\% \pm 13,6\%$ against $56,5\% \pm 10,7\%$, $p=1*10^{-8}$), larger values of end-diastolic size ($57,6 \pm 8,6\text{mm}$ vs $6,6\text{mm}$ against $52,3$ $p=2*10^{-7}$), end-diastolic volume ($180 \pm 125,8 \pm 60,7\text{ml}$ against $38,4\text{ml}$ $p=2*10^{-5}$), end-systolic size ($43,3 \pm 12\text{mm}$ against $35,3 \pm 7,8\text{mm}$, $p=9*10^{-8}$), end-systolic volume of the left ventricle ($93,9 \pm 43,3\text{ml}$ vs. 53.1 ± 22 ml, $p=1*10^{-7}$) and left atrium ($42.8 \pm 4,7\text{mm}$ against $40.4 \pm 5.3\text{mm}$, $p=0.002$) and more frequently recorded LV hypertrophy (3.9 % versus 57.6%, $p=0.03$). Among suddenly died restrictive type of diastolic dysfunction was detected more frequently (27.3% vs. 10.8% $p=0.004$). The level of lymphocyte in the first day of MI was significantly lower among SD patients than in survivors ($1,3 \pm 0,5$ $10^9/l$ vs. $1,8 \pm 0,7$ 10^9 left ventricular akinesia / L; $p=0.03$). On other parameters (IL 1 β , IL-2, IL-6 and TNF- α), as well as the expression of CD95 and CD14 on lymphocytes, monocytes statistically significant differences were not found. In order to determinate the independent factors for the risk of development of SD stepwise multivariate Cox analysis was conducted. For SD development such risk factors were the most important: acute left ventricular failure III-IV class Killip ($\beta=1,09$; OR = 2.99; 95% CI = 1,44-6,18; $p=0.003$) LV end-diastolic dimension ($\beta=0,05$; OR = 2.46; 95% CI = 1,07-2,68; $p=0.02$), LVEF ($\beta=-0,03$; OR = 1.63; 95% CI = 0,40-1,75; $p=0.05$) and a left ventricular akinesia ($\beta=-0,88$; OR = 2.42; 95% CI = 1,30-5 41; $p=0.006$). The most important and independent factors for predicting of SD in patients after MI are the end-diastolic dimension, LVEF, LV akinesia, LV failure III-IV by Killip. Leukocytes and their classes, pro-inflammatory cytokines (IL-1, IL-2, IL-6 and TNF- α), and the expression of CD95 on lymphocytes and CD14 monocytes do not have independent prognostic value in acute MI.

P340

Do out-of-hospital cardiac arrest survivors have a better survival when treated by public access automated external defibrillators than emergency medical services?

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Background: Several countries are promoting the installation of automated external defibrillators (AEDs) in public places in order to achieve prompt defibrillation for witnessed out-of-hospital cardiac arrests (OHCA) due to shockable rhythms. However, the benefit of being shocked by on-site AED compared with defibrillation by emergency medical services (EMS) is unclear.

Purpose: To analyse hospital mortality and neurological prognosis of OHCA survivors, by comparing patients treated before the arrival of EMS by on-site AEDs or by EMS defibrillators.

Methods: Prospective registry of all patients admitted to two public hospitals after an OHCA due to a shockable rhythm and treated with therapeutic hypothermia for persistent unconsciousness, from October 2008 to October 2015. Our protocol includes rapid endovascular cooling system to target temperature $T=33^{\circ}\text{C}$, to be maintained during a 24-hour period, and progressive rewarming. 72 hours after the OHCA, when normothermia is achieved, a full neurological evaluation is performed.

Results: One hundred and forty-one patients were included. In 114 cases we could obtain specific data about defibrillation. Only in a small number of patients (21 cases, 18.4%), on-site AED was used (Group 1), while the majority of patients (93, 81.6%) were treated by an EMS defibrillator (Group 2). Among Group 1, 7 AEDs were located in primary care centres and 14 in other public spaces. In the neurological evaluation 72 hours after OHCA, patients from Group 1 were better able to obey commands than from Group 2 (78.9% vs 51.1%, $p=0.023$). Nociceptive flexor reflex was more present in Group 1 (84.2%) than in Group 2 (67.4%) without reaching statistical significance. In both groups photomotor reflex was mostly preserved (89.5% and 87.6%). Hospital mortality was significantly lower in Group 1 (2/21, 9.5%) compared to Group 2 (32/93, 34.4%), $p=0.018$. However, the lack of significant differences observed in neurological prognosis at discharge evaluated with Cerebral Performance Categories (CPC) Scale could be due to sample size.

Conclusions: In our setting, most of the patients suffering from an OHCA due to a shockable rhythm are not defibrillated by on-site AED; but in our series they show a

better survival compared with those shocked by EMS. We conclude that on-site AEDs used by a bystander could have a positive impact on a patients' survival.

P341

Initial experience with percutaneous veno-arterial ECMO in the resuscitation of refractory ventricular fibrillation

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Background: Refractory cardiac arrest has an ominous prognosis. It exists some evidence of the utility of the venoarterial-ECMO (VA-ECMO) in this context, with best results when ventricular fibrillation (VF) is the initial rhythm. Recently, the possibility of a percutaneous cannulation by the interventional cardiologist has been reported, but the feasibility of this strategy in the cardiac arrest setting is not known.

Methods: Retrospective study of the patients rescued from refractory cardiac arrest with VA-ECMO placed by the interventional cardiologist when ventricular fibrillation was the initial rhythm in our institution from 2013 to 2015. Refractory cardiac arrest was defined as not recovered after 10 minutes of standard resuscitation.

Results: During the study period 4 patients were placed on VA-ECMO due to refractory cardiac arrest with VF as the initial rhythm. All of them were cannulated percutaneously by an interventional cardiologist. Mean age was 55.8 ± 6.8 , and three of them were male. The etiology was acute myocardial infarction in all of them. The implantation was performed in the catheterization laboratory in half of the cases, and in the Cardiac Intensive Care Unit in the other two cases. Time from the arrest to the beginning of the support was 38.8 ± 7.4 minutes and duration of support was 3.5 ± 2.3 days. The circulatory support allowed the percutaneous coronary revascularization in three cases. Survival at discharge was 50%, both without neurologic impairment.

Conclusion: Initial experience in our institution shows the feasibility of cardiopulmonary resuscitation with VA-ECMO cannulated percutaneously by the interventional cardiologist, with reasonably favourable results in an ominous prognosis setting.

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Neurological assessment in survivors of out-of-hospital cardiac arrest who underwent therapeutic hypothermia

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Background: Despite advances in the treatment, the outcome of survivors of cardiac arrest remains poor. Survivors of cardiac arrest have a variable susceptibility to hypoxic-ischemic brain injury, depending of the duration of circulatory arrest, extent of resuscitation efforts and underlying comorbidities. Neurologic injury is the most common cause of death in these patients. Therapeutic hypothermia (TH) during the first hours after cardiac arrest improves neurologic outcome. Electroencephalogram is used for outcome prognostication in patients with postanoxic coma.

Objective: The aim of this study was to define the profile of survivors of out-of-the hospital cardiac arrest (OHCA) who underwent to therapeutic hypothermia and to describe whether electroencephalogram (EEG) is related with neurologic outcome in patients remaining comatose after return-of-spontaneous-circulation (ROSC).

Methods: In a cohort of 82 consecutive patients with therapeutic hypothermia in our centre between 2009 and 2015. Different clinical variables were analyzed. The neurologic function at time of discharge was analyzed and related to the EEG. Poor neurologic function was defined as a Cerebral Performance Category (CPC) of 3 to 5. The CPC scale ranges from 1 to 5, with 1 representing good cerebral performance or minor disability, 2 moderate disability, 3 severe disability, 4 coma or vegetative state, and 5 brain death. Unreactive malignant EEG pattern was defined as absence of reactivity to external stimuli, burst-suppression and status epilepticus.

Results: Mean age was 60 ± 10, 82% were men, 20% with previous cardiac disease, 42% were hypertensive, 37% were dyslipidemic, 17% were diabetic and 60% were active smokers. 62% of the patients (51) had good neurologic outcome according to the CPC. TH was only interrupted in 5% (4). Time to achieve ROSC was lower in patients with good neurologic outcome (24vs34 minutes; p=0,005). 72% of patients (13) with initial non-shockable rhythm had a poor neurologic function (p<0,001). 73% of patients (47) with initial shockable rhythm had a good neurologic function (p<0,001). 16% of patients (13) had convulsions or myoclonic jerks; 70% of them (9) had a poor neurologic function (p=0.008). Electroencephalogram (EEG) was performed in 40% (32 patients), 62% of them (20) had an unreactive malignant EEG pattern and was associated with a poor neurologic function in 19 patients (p<0.001). Within the subgroup with good neurological outcome (51 patients), EEG was not performed in 80% (41) given the

early good neurological clinical progression after finishing TH and suspended sedation.

Conclusions: In unconscious survivors of OHCA integral and early clinical assessment identifies patients with good neurological outcome. Unreactive malignant EEG pattern is associated and allows to identify patients with poor neurological outcome.

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Predictive factors of neurologic outcome after an out-of-hospital shockable cardiac arrest with mild therapeutic hypothermia treatment

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Background: Determination of the neurological prognosis after an out-of-hospital cardiac arrest (OHCA) may be difficult in patients undergoing mild therapeutic hypothermia (TH). Several clinical and laboratory findings have been described as predictive factors of neurologic outcome in this context.

Purpose: The objective of the analysis is to determine the early predictive factors of neurologic outcome defined by cerebral performance categories scale (CPC) at discharge and whether the neurologic clinical findings at 72 hours of admission were correlated with neurological outcome at discharge, considering two groups (CPC 1-2 and CPC 3-5).

Methods: Prospective registry of 141 consecutive patients admitted to the coronary care unit at two centers from October 2008 to October 2015 after OHCA from shockable rhythm treated with TH for persistent unconsciousness. The TH protocol includes endovascular cooling system to achieve a 33°C body core temperature, keeping this temperature during a 24-hour period.

Results: Of 141 patients registered, we observed a significant relationship between time from cardiac arrest to return of spontaneous circulation (ROSC) with CPC scale at discharge: time from OHCA to ROSC was 29.4 minutes (SD 14.5 minutes) in CPC 1-2, and 35 minutes (SD 13.5 minutes) in CPC 3-5 at discharge (p=0.033). Furthermore, shorter OHCA to ROSC times were associated with lower mortality, but not reaching statistical significance (p=0.054). The presence of pupillary light reflex and nociceptive withdrawal reflex on third day of admission were also associated with a shorter period of time from OHCA to ROSC (p=0.022 and p=0.039, respectively). However, in our analysis there were no statistically significant differences between time from OHCA to CPR

start and neurologic prognosis, neither between time from OHCA to 33°C body core temperature target and neurologic prognosis ($p=0.879$ and $p=0.376$, respectively).

Conclusions: In conclusion, in a prospective registry of 141 patients after OHCA due to a shockable rhythm treated with TH, time from cardiac arrest to ROSC, presence of pupillary light reflex and nociceptive reflex at 72 hours of the admission showed a statistically significant correlation with neurological prognosis at discharge.

Valvular heart disease

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Balloon aortic valvuloplasty in the transcatheter aortic valve implantation era: single center registry

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Background: Until recently the use of percutaneous balloon aortic valvuloplasty (BAV) was limited due to the high rate of complications and early restenosis. However, the growing use of transcatheter aortic valve implantation

(TAVI) has revived the interest of BAV in clinically unstable patients as a bridge to definite therapy.

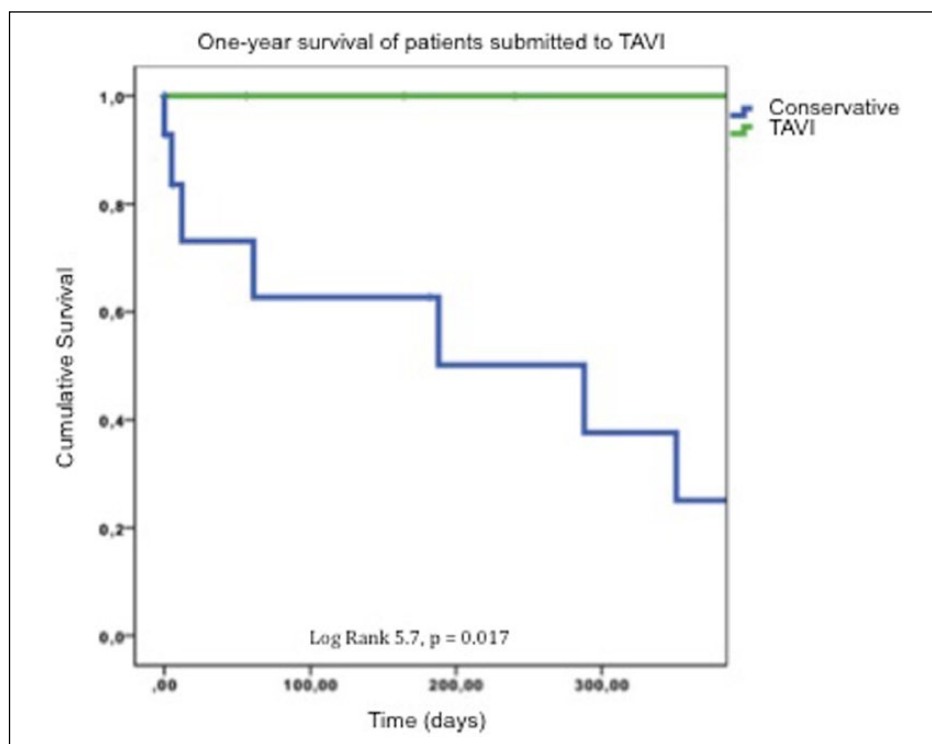
Purpose: To analyse the indications, success, complications and outcomes of BAV in a tertiary university hospital.

Methods: Retrospective single center registry of patients undergoing BAV between January 2013 and December 2015. Data from all consecutive patients were collected, as well as acute results and long-term outcomes.

Results: Twenty one patients underwent BAV, 52.4% male, mean age 78 ± 7 years. The mean EuroScore II was 10.2 ± 6.8 . Indications for BAV were: decompensated heart failure including cardiogenic shock or pulmonary oedema under invasive mechanical ventilation ($n=3$), comorbidities requiring urgent non-cardiac surgery ($n=8$), and as bridge to TAVI or surgical aortic valve replacement (SAVR) ($n=10$). 6 patients were in functional NYHA class IV, the remainder in class III.

The procedure was performed under conscious sedation, by femoral access, with 11-14 Fr sheath (12 Fr in 19 cases), using 20-25 mm balloons under rapid ventricular pacing. Vascular closure devices were used in all patients.

The peak and mean aortic gradients measured by transthoracic echocardiogram were, respectively, 69 ± 21 mmHg and 43 ± 13 mmHg, with an aortic valve area of 0.7 ± 0.3 cm² (0.4 ± 0.09 cm²/m²) and a mean ejection fraction of $43\pm 13\%$. The peak gradient evaluated haemodynamically during the procedure decreased from 56-21 mmHg to 27-12 mmHg ($p=0.002$).



There was one ischemic stroke and one left lower limb ischemia requiring urgent surgery after the procedure. No other complications occurred, especially severe aortic regurgitation or need for permanent pacemaker. Ventilated patients were all extubated soon after the intervention and the patients undergoing non-cardiac surgery showed no major postoperative cardiovascular complications. At the time of discharge 92% of the patients were in NYHA class II. During an average follow-up of 9±10 months, 7 patients underwent TAVI (average waiting time of 123±68 days) and 2 patients SAVR. 9 patients died (43%), 6 of non-cardiovascular causes. Patients died 1-13 months after the BAV (median 9 months). In-hospital mortality was 9,5% (n=2), procedure-related in one case. Mortality was lower among patients undergoing BAV as bridge to TAVI or SAVR (22% vs. 58%; p=0.005).

Conclusion: BAV is a safe and effective procedure and should be considered for selected patients with severe aortic stenosis and temporary contraindications to definite therapy or as palliative therapy.

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Characterization, clinical outcomes and predictors of intra-hospital death of patients with infective endocarditis: a single-center experience

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Background: Epidemiologic profile of patients (pts) with infective endocarditis (IE) has changed in recent years with fewer cases associated with rheumatic disease and a higher incidence in elderly due to degenerative valvular disease and health care associated procedures.

Purpose: Describe epidemiology, microbiologic profile, outcomes during hospitalization and predictors of intra-hospital death in pts with IE.

Methods: Retrospective study including consecutive pts with IE admitted to our centre during a 10 years period. Data on demographics, past medical history, clinical presentation, isolated microorganisms and echocardiogram were evaluated, as well as hospitalization outcomes. Predictors of intra-hospital death were analyzed.

Results: We studied 139 pts, 73.4% males, age 61±16 (22-89) years old; 50.4% had previous valvulopathy and 13.7% were current IV drug consumers. It was the first episode in 91% of pts. Diagnosis of prosthetic valve IE in 26.6%, device related IE in 2.9% and IE of native valve in the remaining pts. Infection was considered to be nosocomial in 22.3% cases. Aortic valve was the most often involved

(57.6%) and right-side valves were affected in 13.7%. Staphylococcus aureus was the most frequent isolated microorganism (23.7%), followed by Enterococcus faecalis and Streptococcus viridans (11.5%); in 21.6% blood cultures were negative. Adverse outcomes during hospitalization occurred in 113 (81.3%) pts: 49.6% evolved with heart failure (HF), 21.6% with septic shock, 41% had evidence of locally uncontrolled infection or periannular complication, and 37.4% showed embolic events. Forty-five pts (32.4%) underwent cardiac surgery and 5 of them died after the intervention. Intra-hospital death rate was 33.1%. Predictors of intra-hospital death were: previous HF (p=0.008), isolation of S. aureus (p=0,003), evidence of paravalvular abscess (p=0.017), clinical evolution with HF (p=0.002) or septic shock (p<0,001) and pts only medically treated (p<0.001), with 44% of intra-hospital death vs. 11.4% in pts submitted to surgery.

Conclusions: As reported in the literature, in our serie S. aureus and E. faecalis, were the most frequent isolated microorganisms. We found a relative high number of IE in IV drugs abusers, which could justify an average age lower than previously reported. Infective endocarditis is still associated with major intra-hospital complications and high mortality rate.

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Heart failure in patients with infectious endocarditis: predictors and prognosis based on 14years cohort study

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Purpose: Heart failure (HF) is a common complication in patients with infectious endocarditis (IE) and may be associated with a poor prognosis. This study aims to evaluate the predictors of the occurrence of HF (NYHA class IV) during hospitalization in patients with IE and to assess its prognostic relevance.

Methods: All patients admitted to the Cardiology department of a university hospital between 2001 and 2015, with a diagnosis of IE, established by the Duke criteria and by European Society of Cardiology 2015 modified criteria, were included. Demographic, clinical, laboratory, echocardiographic, and microbiologic parameters were analysed and related with HF development and mortality, assessed by Cox regression analysis.

Results: From a population of 120 patients admitted due to IE, 36 (30%) were on class IV HF during hospitalization (67.5% male; age 65±14 years; hospitalized for 42+26

days) and 22 (61.1%) died. The factors associated with occurrence of class IV HF were left-sided valve involvement ($p=0.047$), age >55 years ($p=0.02$), creatinine $>1,2$ mg/dL ($p=0.010$) and the presence of complications like perivalvular abscess ($p=0.008$), worsening of aortic regurgitation ($p=0.014$), significant aortic regurgitation ($p=0.032$), shock ($p=0.002$), acute kidney injury ($p=0.043$), the need for renal replacement therapy (RRT) ($p=0.014$) and invasive mechanical ventilation ($p=0.04$).

In the overall population the occurrence of HF was a predictor of both in-hospital [hazard ratio (HR) = 2.35; 95% CI 1.15-4.82; $p=0.002$], and 2-year mortality (HR=3.31; 95% CI 1.79-6.13; $p<0.001$). The factors associated with in-hospital death among class IV HF patients were the presence of prosthetic heart valve ($p=0.001$), development of shock ($p<0.001$) and need for RRT ($p=0.001$). Among patients with HF, the simultaneous evidence of shock (HR=5.32; 95% CI 1.53-15.27; $p=0.002$) and the need for RRT (HR=2.69; 95% CI 1.03-6.99; $p=0.043$) were an independent predictor of in-hospital death.

Conclusions: HF is a common complication in patients with IE, and is associated with higher in-hospital and long-term mortality. In this study, patients with HF and simultaneous evidence of shock or need for RRT seems to be associated with a particularly poor prognosis.

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Infective endocarditis: analysis of in-hospital outcomes and predictors of major complications

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Background: Infective endocarditis (IE) is a severe disease, associated with high mortality, long hospital stay and frequent complications. Because of its low incidence and limited number of studies, there are still some gaps in the literature concerning the disease management and predictors of worse outcome.

Purpose: To analyze the group of patients admitted with IE to our center in the last 10 years and to detect potential predictors of major complications.

Methods: Single-center retrospective analysis of 103 patients admitted with the diagnosis of infective endocarditis (using modified Duke criteria) between January 2005 and July 2015. Independent predictors of major complications (defined as in-hospital death, major embolic events,

cardiogenic and septic shock) were determined using a multivariate logistic regression analysis.

Results: The studied population had an average age of 65,8 \pm 17,2 years and 62,1% were male. The mean hospital stay was 31,7 \pm 20,2 days. At least one predisposing factor for IE was present in 53,4% of individuals, 76,7% had comorbidities and 33% presented with acute renal failure. The majority (64,1%) was community acquired; 26,2% were nosocomial and 8,7% were health care associated. Native valve IE was more prevalent (82,5%) than prosthetic valve IE (11,7%). Major complications were present in 49 patients (47,6%). The rate of in-hospital death was 28,2% which increased to 34% at one year follow-up. Only 28,1% of patients underwent surgery. After performance of a multivariate analysis (including variables statistically significant in univariate analysis), independent predictors of major complications were acute renal failure ($p=0,037$), reduced left ventricular ejection fraction ($p=0,019$) and moderate to severe valvular regurgitation ($p=0,005$).

Conclusion: In the studied population, independent predictors of major complications were acute renal failure, reduced left ventricular ejection fraction and moderate to severe valvular regurgitation. A rapid identification and management of these patients with increased risk at admission might improve their in-hospital prognosis. The low number of cases that underwent surgery compared to international reports underlines the importance of evaluation by a multidisciplinary 'endocarditis team'.

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Peak global longitudinal strain variation predicts contractile reserve in patients with moderate to severe aortic stenosis with depressed ejection fraction in dobutamine stress echocardiography

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Introduction: Lack of contractile reserve in low dose dobutamine stress echocardiography (DSE) – the failure of LV ejection fraction (EF) to increase by at least 20% with dobutamine infusion at 20 μ g/Kg/min – is a known poor prognostic sign in patients with moderate to severe aortic stenosis (AS) with depressed EF. We aimed to evaluate the relationship between peak global longitudinal strain variation (Δ PLS) with dobutamine infusion and the presence of contractile reserve in patients with moderate to severe AS with LVEF $< 50\%$ undergoing low dose dobutamine stress echocardiography.

Methods: Retrospective observational study that included all patients with AS with $AVA \leq 1,0 \text{ cm}^2$ and $LVEF < 50\%$ that performed a low dose DSE between 09/2011 and 11/2015. PLS was evaluated by speckle tracking imaging from acquired apical 4 chamber cine loops at rest and at 20 microg/Kg/min dobutamine infusion using EchoPAC workstation.

Results: 32 patients (23 males, median age 74 y) fulfilled the selection criteria. Medians of ΔPLS were significantly different between patients that had contractile reserve (median -3,30, IQR -5,2 -0,42) and those that did not (median -0,01, IQR -2,35 2) (Mann Whitney U 133,5,

$p= 0,04$). Simple regression was conducted to investigate how well ΔPLS predicts LVEF increase. The results were statistically significant, $F(1,27) = 5,74$, $p= 0,02$. The identified equation to understand this relationship was $\Delta LVEF = 0,2 - 0,051 \times \Delta PLS$. The adjusted R^2 value was 0,145. A receiver operating characteristics (ROC) curve was used to assess the predictive power of ΔPLS . Area under the curve (AUC) was 0,742 ($p=0,04$), yielding moderate discriminate power. In a binary logistic regression model, a $\Delta PLS < -3,0$ was associated with a 10 times increase in the probability of increasing LVEF for at least 20% (OR 9,78, 95% CI 1,02 – 93,5).

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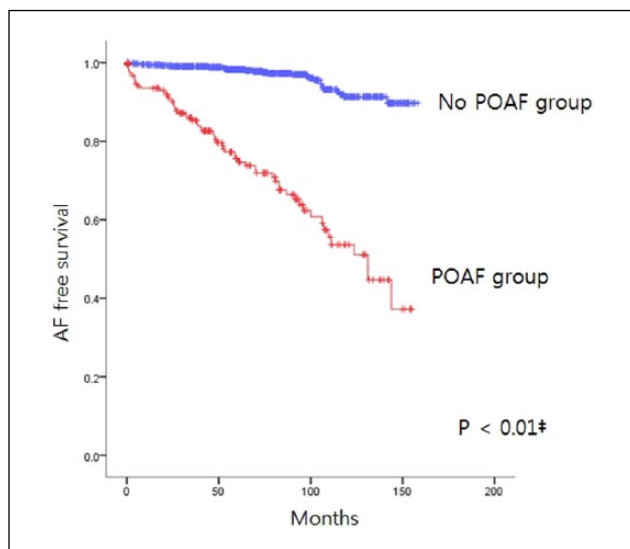
Newly developed post-operative atrial fibrillation is associated with an increased risk of late recurrence of atrial fibrillation in patients who underwent open heart surgery; long-term follow up

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Background: We sought to determine whether the occurrence of post-operative atrial fibrillation (POAF) increases the risk of late recurrence of AF in patients undergoing open heart surgery (OHS).

Methods and Results: This study included 938 patients (56.7±13.1 years old, 550 males) with no history of AF who underwent OHS. All patients were monitored continuously for development of POAF after surgery until the time of hospital discharge and received clinical follow up with serial evaluation of rhythm status. Among the total population, POAF occurred in 207 patients (22.1%) and late AF in 88 patients (9.4%) during the mean follow up period of 78.1±39.1 months. Development of late AF occurred more frequently in patients with POAF than in those without [29.0% (60/207) vs. 3.8% (28/731), $p < 0.01$]. Higher septal E/e' ratio (HR 1.04, 95% CI: 1.00 - 1.08, $p = 0.04$) reflecting high left ventricular end-diastolic pressure on the echocardiogram was an independent predictor of late occurrence of AF and an episode of POAF (HR 27.12, 95% CI: 8.46 - 86.96, $p < 0.01$) was the most powerful predictor.



Conclusions: POAF is significantly associated with an increased risk of late AF recurrence during long-term follow up. Careful concern regarding late recurrence of AF with serial evaluation of rhythm status is required in patients with POAF.

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Development and acceptability evaluation of an avatar-based education application for improving knowledge of symptom recognition and response for patients with acute coronary syndromes

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Background: Patients' ability to recognise and manage the symptoms of acute coronary syndrome (ACS) is imperative for timely intervention. Numerous studies have demonstrated that information technology now plays an important role in improving patients' knowledge and self-management ability.

Purpose: To involve patients with ACS in the development of avatar-based application (the app) and to conduct acceptability evaluation of the app on ACS knowledge and satisfaction.

Methods: Participatory action research methods were used to engage Consumers, Cardiac and gaming IT experts to develop an ACS educational tool for delivery on a tablet-computer. The app was evaluated for its effectiveness in improving ACS knowledge, symptom recognition, satisfaction and acceptability by using validated questionnaires.

Results: Phase 1: Results from the cardiovascular experts indicated that the app integrated the heart attack message according to evidence-based guidelines, applicability of psychometric tools, appropriated language, images and interactivities. Feedback from consumers focused on usability, ease of navigation and enjoyable. Phase 2: Ten ACS patients (mean age 52.2±10.4 years) were recruited. Patients reported a high level of satisfaction with the app (87.3%) and reported that the app had taught them how to recognise and respond to symptoms of heart attack. ACS response index indicated that knowledge score increased from 62.4±13.4% to 78.1±9.3%, a 15.7% increase, belief scores increased by 25.7% (73.2±6.1% to 98.9±1.7%) and symptom recognition scores increased by 24.3% (72.5±5.6% to 96.8±8.0%).

Conclusion: This preliminary study involved developing and evaluating an avatar application for improving

patients' knowledge and response to ACS symptoms. Positive feedback shows that the methodology used in this study was acceptable and appropriate.

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Circulating HtrA2 as a potential biomarker for mitochondrial induced cardiomyocyte apoptosis in st-segment elevation myocardial infarction

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Background: The extent of myocardial damage in patients with ST-segment elevation acute myocardial infarction (STEMI) depends on both the time to reperfusion as well as on injury induced by ischaemia-reperfusion resulting in a cascade of cellular and humoral reactions. As a consequence of ischaemia-reperfusion in the heart, the high-temperature requirement serine peptidase 2 (HtrA2) is translocated from the mitochondria to the cytosol, whereupon it induces protease activity-dependent apoptosis mediated via caspases. Myocardial damage induced by reperfusion cannot be monitored due to a current lack in specific biomarkers. We examined the serum level of HtrA2 as a potentially novel biomarker for mitochondrial induced cardiomyocyte apoptosis.

Methods: After informed consent, peripheral blood was obtained from patients (n=19) enrolled in the phase IIb clinical study EMBRACE (NCT01572909) with first-time acute anterior STEMI 18±6 hours after PCI. Within this group, 10 of the patients received the mitochondria stabilizing peptide elamipretide. Blood was also obtained from a control group of healthy donors (n=16). The serum level of HtrA2 was measured by an enzyme linked immunosorbent assay (ELISA). In a murine model of myocardial ischemia/reperfusion HtrA2 was determined in plasma by ELISA after left anterior descending (LAD) occlusion.

Results: HtrA2 was significantly increased in patients with STEMI compared to healthy controls (408.9 pg/ml ± SEM 52.8 vs. 1485 pg/ml ± SEM 495.1; p ≤ 0.05). Elamipretide significantly reduced the HtrA2 serum level after myocardial infarction (1485 pg/ml ± SEM 495.1 vs. 686 pg/ml ± SEM 161.7; p ≤ 0.05). LAD occlusion in mice significantly increased HtrA2 in plasma (18.9 fg/ml ± SEM 9.7 vs. 448.6 fg/ml ± SEM 181; p ≤ 0.05).

Conclusion: Compared to healthy controls, we found significantly increased serum levels of HtrA2 in patients

with STEMI. This result was validated in a murine model of myocardial ischemia-reperfusion injury. In humans the increased serum level was significantly reduced by the mitochondrial stabilizing peptide elamipretide. In conclusion, HtrA2 is detectable in serum of patients with STEMI and might present a novel biomarker for mitochondrial induced cardiomyocyte apoptosis. Consequently, HtrA2 may also show promise as a biomarker for the identification of ischaemia-reperfusion injury. However, this must be validated in a larger clinical trial.

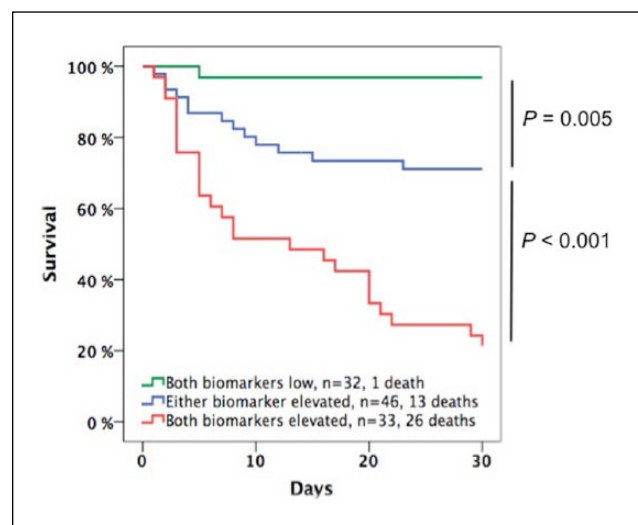
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Combined measurement of sST2 and NT-proBNP provides early assessment of severity in cardiogenic shock complicating acute coronary syndrome

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Background: Mortality in cardiogenic shock (CS) complicating acute coronary syndromes (ACS) is high. Risk stratification for affected patients is needed for rational use of advanced therapies such as mechanical circulatory support. Traditionally, clinical parameters have been used to judge risk in CS.



sST2 and NT-proBNP at 24 hours

Purpose: The aim of this study was to evaluate the added value of serial measurement of sST2 and NT-proBNP to clinical variables for risk stratification in CS.

Methods: CardShock is a prospective European multinational observational study of CS. The main study introduced CardShock risk score, which is calculated from seven clinical variables, including lactate levels, at the detection of shock. The score result was associated with short-term mortality. In this sub-study plasma samples from 145 patients with CS caused by ACS were analyzed at 8 time points during intensive or cardiac care unit stay.

Results: Patients' mean age was 68 years, 78% were men, and all-cause 30-day mortality was 44%. The combination of sST2 and NT-proBNP showed excellent discrimination for 30-day mortality (AUC 0.83 at 24 hours up to 0.93 at 5 to 10 days after CS onset). At 24 hours, patients with both biomarkers elevated (≥ 470 ng/mL for sST2; ≥ 4800 ng/L for NT-proBNP) had higher 30-day mortality compared to those with one or neither biomarker elevated (79%, 33% and 3%, respectively, $p < 0.001$) (figure). The combined measurement of sST2 and NT-proBNP at 24 hours was independent of CardShock risk score result and peak value of hs-TnT, and furthermore, added prognostic value to CardShock risk score with an incremental discrimination improvement of 20%.

Conclusions: The combination of results for sST2 and NT-proBNP provides early risk assessment beyond clinical variables in patients with ACS-related CS, which may help therapeutic decision-making in these patients. This biomarker approach may also help in more objective characterisation and risk profiling of CS patients when designing future trials on mechanical circulatory support devices.

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ICD programming and electrical storm: results of the OBSERVational registry On long-term outcome of ICD patients (OBSERVO-ICD)

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Purpose: Electrical storm (ES) is defined as three or more episodes of ventricular fibrillation (VF) or ventricular tachycardia (VT) within 24 hours and is associated with an increased cardiac and all-cause mortality. The aim of

the present study is to determine whether an aggressive ICD programming with lower detection rates and shorter detection times can be associated to ES, and eventually contribute to higher mortality.

Methods: The OBSERVational registry On long-term outcome of ICD patients (OBSERVO-ICD) is a multicenter, retrospective registry endorsed by the Italian Association of Arrhythmology and Cardiac Pacing (AIAC), enrolling patients from five Italian high-volume arrhythmia centers. All consecutive patients aged ≥ 18 years who underwent an ICD implant from the 1st of January 2010 to the 31st of December 2012 were enrolled into the present study, and were followed for a minimum of 3 years. Clinical history and risk factors were collected for all patients, as well as ICD therapy-related variables, such as detection zones and delays. The total number of arrhythmic episodes and therapies delivered by the ICD were collected through out-of-hospital visits and remote monitoring. The primary endpoint was to detect significant differences in ICD programming between patients experiencing ES, patients with unclustered VTs/VFs, and patients with no arrhythmic episodes. Secondary endpoints were: a) define the incidence of ES in a 'real-world' population during a 3-year follow-up; b) evaluate the association between ES and mortality; c) evaluate the association between ES incidence and cardiovascular events.

Results: The registry enrolled 1319 consecutive patients, of which 62 (4.7%) experienced at least one ES during follow-up (median 39 months). VF detection zone was significantly lower in patients developing VTs/VFs (208 bpm), and even lower in patients developing ES (205 bpm) during follow-up (p between groups=0.002). ATP therapies during capacitor charge were programmed off more frequently in ES and VTs/VFs patients when compared with patients with no episodes (27.4% and 24.6% respectively versus 15.2%; p between groups=0.001). An ICD programming including delayed therapies was significantly less frequent in patients experiencing ES during the follow-up. This includes both VT zones delays and VF zone delays ($p=0.042$ and $p=0.036$ respectively). During the 3-year follow-up, patients experiencing ES had a significantly higher incidence of death and HF-related death when compared to patients with no ventricular arrhythmias and patients with unclustered VTs/VFs (log rank $p=0.025$ and $p<0.001$ respectively).

Conclusion: Patients with ES had a more aggressive ICD programming, including lower VF detection rates, shorter detection times, and no ATP therapies during capacitor charge. An aggressive ICD programming could potentially increase the likelihood of ES and the related risk of death.

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Prevalence and prognostic implications of Bundle Branch Block in comatose survivors of out-of-hospital cardiac arrest

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Background: Prognostication in comatose out-of-hospital cardiac arrest (OHCA)-patients is difficult and early indicators of prognosis and causes of the OHCA are needed. The first test-result available is often the electrocardiogram (ECG), in which bundle branch blocks (BBBs) can be seen after OHCA.

Purpose: This study reports, the prevalence and prognostic value of BBBs on admission to hospital in comatose survivors of OHCA.

Methods: The present study is part of the pre-defined ECG sub-study of the prospective randomized Target Temperature Management (TTM)-trial, which found no benefit of targeting 33°C over 36°C in terms of outcome. Six-hundred-and-eighty-two patients were included in the ECG sub-study. An admission ECG, which defined the population of the present study, was available in 602 (88%) patients. These ECGs were stratified by presence of left bundle branch block (LBBB), right bundle branch block (RBBB) or no-BBB (reference) on admission. Endpoints were mortality and neurological outcome 6 months after OHCA.

Results: RBBB was present in the admission-ECG of 79 (13%) patients and LBBB were present in 65 (11%) patients. Ninety-two percent of the BBBs found on admission resolved four hours after admission. Patients with BBBs on admission were significantly older (RBBB: 67 y (\pm 11), LBBB: 66 y (\pm 12), no-BBB: 63 y (\pm 12), $p < 0.01$). Time from cardiac

arrest to ROSC was significantly longer in the RBBB group (RBBB: 33 min. (IQR 22-52), LBBB: 29 min. (IQR 17-41), no-BBB 25 min. (IQR 16-37), $p < 0.001$). Level of target temperature did not influence BBB-morphology or outcome in these patients. RBBB on admission was associated with significantly higher 180-day mortality (HR_{unadjusted} 1.78; 95% CI 1.30-2.43, $p < 0.001$) (Figure). The association of RBBB and higher mortality did not remain statistically significant, when adjusting for factors known to influence mortality (HR_{adjusted} 1.33; 95% CI 0.94-1.87, $p = 0.11$). LBBB on admission was not significantly associated with mortality (HR_{unadjusted} 1.26; 95% CI 0.87-1.81, $p = 0.22$). Similar findings were seen for neurological outcome in the unadjusted and adjusted analysis, however RBBB was independently associated with higher odds of unfavorable neurological outcome (RBBB: OR_{adjusted} 1.97; 95% CI 1.05-3.71, $p < 0.05$).

Conclusions: Twenty-four percent of comatose survivors of OHCA presents with a BBB on admission-ECG. The BBBs were transient as the majority disappeared during admission. RBBB was directly associated with higher mortality and independently associated with higher odds of unfavorable neurological outcome. RBBB in the admission ECG is seemingly an early indicator of poor prognosis following OHCA.

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Early discharge strategy after a ST-segment elevation myocardial infarction: safety assessment at one-year follow-up

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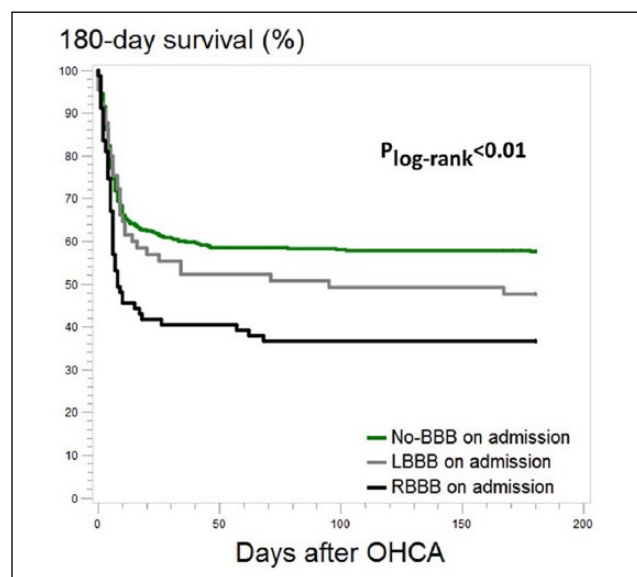
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Background: For the past several decades, lengths of hospital stays after a ST-segment elevation myocardial infarction (STEMI) have considerably shortened as well as the short-term prognostic of STEMI's has improved.

Purpose: The aim of this study was to assess the safety of an early discharge from the Cardiology Intensive Care Unit (CICU) following a STEMI in non-selected patients under 'real-world' conditions.

Methods: We retrospectively analysed the data of patients with STEMI that survived to hospital discharge between 2009 and 2013 using the OSCAR Registry Database : a multicenter observational cohort study taken from the French RESCUE network. The primary clinical end-point was all-cause mortality at one-year follow-up.

Results: 2027 STEMI patients were included in this study. Baseline characteristics were compared between the 680 patients (34%) discharged within two days of admission



180-day survival, RBBB, LBBB and no-BBB

(early discharge group) and the 1347 patients (66%) after two days (late discharge group). The early discharged patients were younger and less likely to have had diabetes, anterior myocardial infarction and reduced left ventricular ejection fraction. At one-year follow-up, 27 patients (1.3%) died : 6 (0.9%) in the early discharge group and 21 (1.6%) in the late discharge group with no significant statistical differences in their survival rates.

Conclusions: This study confirms that a strategy of early hospital discharge within two days of admission after a STEMI does not raise the risk of mortality in selected patients. Moreover, it may certainly have important cost-efficiency impacts.

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Prevalence of cardiovascular ambulatory care sensitive conditions in the emergency department

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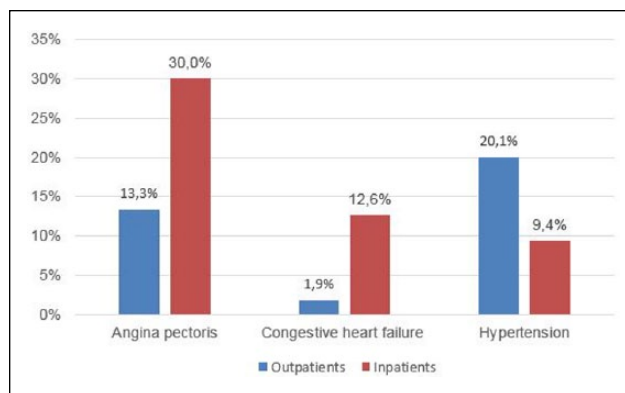
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Background: Crowding is a challenge for Emergency Departments (ED's) caused by increasing case numbers. One approach to explore this tendency is the concept of Ambulatory Care Sensitive Conditions (ACSC's). This means that hospitalizations related to ACSC's (e.g. chronic diseases) could be prevented by an effective and early treatment in primary care.

Objective: The objective was to examine the prevalence of cardiovascular ACSC's in the ED.

Methods: We analyzed routine data from the hospital information system of 34,444 patients in two ED's in Berlin for the period between February 2009 and February 2010. We included hospitalized patients, who received one of 19 hospital main diagnoses according to the International Classification of Diseases (ICD-10). The ICD-Codes are used by the National Health Service to describe ACSC's. In addition we analyzed the hospital main diagnoses of hospitalized patients with the first diagnoses of patients in the ED.

Results: In total 2,962 of 13,536 (21.9%) hospitalized patients were identified with ACSC's in their main hospital diagnoses (median age 68 years, IQR 57-76; female 43%). The prevalence of cardiovascular ACSC's were 6.6% (angina pectoris), 2.8% (congestive heart failure) and 2.1% (hypertension). The cumulative frequency of these diagnoses among hospitalized patients with ACSC's (n=2,962) was 52% (figure 1). The in-hospital mortality for all patients with cardiovascular ACSC's was lower in comparison to all inpatients (2.3% vs. 4.7%), but in detail the mortality rates varied among cardiovascular ACSC related diagnoses



(congestive heart failure 8.6%; angina pectoris 0.3%; hypertension 0%). Comparable results could be found in the utilization of intensive care beds, which happened less often in patients with ACSC's in comparison to all inpatients (13.8% vs. 18.2%). In similarity to inpatients 4,266 of 20,797 (20.5%) outpatients were identified with ACSC's (median age 50 years, IQR 34-69; female 53.3%). The prevalence of cardiovascular ACSC's in outpatients were 4.1% (hypertension), 2.7% (angina pectoris) and 0.4% (congestive heart failure). The cumulative frequency of these diagnoses among outpatients with ACSC's (n=4,266) was 35.3% (figure 1). Among patients with cardiovascular ACSC's in their first ED diagnoses (n=3,106), the main causes of hospitalization (n=1,601) were also angina pectoris (37%), hypertension (10.3%) and congestive heart failure (10.1%).

Conclusion: Every tenth hospitalized patient received a hospital main diagnoses, which was related to cardiovascular ACSC's. Although not every hospitalization can be prevented, the results suggest that a more effective primary care could reduce the case number in ED's. In similarity to inpatients 7.2% of the treated outpatients received ICD-codes related to ACSC's. Outpatients deviate from inpatients in the prevalence of cardiovascular ACSC's and age. Improving primary care could disburden ED's and avoid unnecessary hospitalizations.

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Mild hypothermia in cardiogenic shock complicating myocardial infarction the randomized SHOCK-COOL pilot trial

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Background: In experimental animal studies and a small retrospective observational human study mild therapeutic

hypothermia (MTH) has been found as possible beneficial treatment for cardiogenic shock (CS) following acute myocardial infarction (AMI). No randomized trial in CS patients addressed this question yet.

Methods: Intubated, mechanically ventilated Patients (n=40) with CS complicating AMI undergoing primary percutaneous intervention without classical indication for MTH underwent randomization in a 1:1 fashion to MTH for 24 hours or to conventional therapy. The primary endpoint was cardiac power index (CPI) after 24 h, secondary endpoints included other hemodynamical parameters as well as serial measurements of serum lactate and sublingual microcirculation.

Results: Between the MTH-group (n=20) and control (n=20) baseline characteristics were similar. No differences were observed for the primary endpoint CPI measured by thermodilution (MTH vs. control: 0.30 [IQR 0.09-0.36] vs. 0.32 [IQR 0.16-0.52] W/m²; p=0.32) or Fick's equation (MTH vs. control: 0.37 [IQR 0.23-0.51] vs. 0.34 [IQR 0.29-0.46] W/m²; p=0.78). Similarly, all other hemodynamical measurement and also mixed venous oxygen saturation measurements were not statistically different (p>0.05 for all). Serum lactate levels after 6, 8 and 10 hours were significantly higher in patients in the MTH group (6h: 3.3 [IQR 2.4-5.9] vs. 1.6 [IQR 1.1-2.6] mmol/L; p=0.006; 8h: 3.7 [IQR 2.4-5.8] vs. 1.5 [IQR 1.3-2.9] mmol/L; p=0.01; 10h: 2.7 [IQR 2.3-5.3] vs. 1.3 [IQR 1.0-3.8] mmol/L; p=0.02) reflecting a slower decline of lactate levels in the MTH group. No differences were seen in sublingual microcirculation measured by dark stream side field imaging (Table 1). Short-term 30-day and mid-term 6 months mortality rates were similar between the groups (MTH vs. control: 30 day: 60% vs. 50%; p=0.75; 6 months: 65% vs. 60%; p=0.99).

Conclusion: In this randomized small pilot study MTH failed to show a beneficial effect in patients with CS after AMI on hemodynamical parameters, serum lactate and sublingual microcirculation.

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Outcomes of PCI with bioresorbable vascular scaffolds in acute STEMI and NSTEMI: results from the Italian absorb registry

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Background: bioresorbable vascular scaffolds (BVS) are attractive for use, especially in young patients. Limited experience, however, is available with use of this device during PCI in patients with acute evolving STE-MI and NSTEMI-MI. This clinical setting may be challenging in view of a higher-than-normal risk of thrombosis. Prospective registries may help in studying the outcomes

Purpose: data were extracted from a prospective Italian registry of unrestricted BVS implantation in consecutive patients, to explore the outcomes of patients after PCI with use of BVS during both STE-MI and NSTEMI-MI within 12 hours of onset.

Methods: the RAI Registry (ClinicalTrialsGov ID: NCT02298413) is a nationwide, investigator-initiated and – owned registry involving 25 Italian centres in a partnership with Istituto Mario Negri, Milan. All consecutive patients treated with PCI and BVS during the time lapse (between March 2012 and January 2016) in which each centre took part in the registry, were entered into an electronic web-CRF. No restrictions were applied, and each centre followed its own indications and protocols. A strong commitment to follow optimal implantation rules, including accurate pre-dilatation of all coronary lesions and post-dilatation of BVS, was shared by all participants. Patients were included after successful deployment of at least one coronary BVS. Follow-up is ongoing up to 5 years after the patient's first BVS implantation.

Results: 381 out of 1505 Patients included in the RAI Registry had either STE-MI <12 hours of onset (n=250) or NSTEMI <12 hours of onset (n=131) and are the cohort of this study. Seventy-two Patients were female (19%),

Table 1.

| | Day 1 | | | Day 2 | | | Day 3 | | |
|---|---------------|---------------|------|---------------|---------------|------|---------------|---------------|------|
| | MTH | No MTH | p | MTH | No MTH | p | MTH | No MTH | p |
| Total vessel density (mm/mm ²) | 7.5 (6.4;9.2) | 6.6 (5.3;8.0) | 0.26 | 6.7 (5.5;7.8) | 6.3 (5.8;8.4) | 0.52 | 7.3 (5.3;9.0) | 6.3 (5.2;9.0) | 0.67 |
| Perfused capillary density (mm/mm ²) | 3.5 (2.8;4.8) | 2.7 (2.6;4.5) | 0.39 | 3.8 (3.2;4.1) | 3.5 (3.3;4.4) | 0.47 | 3.8 (3.5;4.9) | 3.9 (3.5;4.6) | 0.90 |

age was 56 ± 11 y (median = 55 y), diabetes and chronic renal failure were present in 15% and 4% of Patients, respectively. The Syntax score was 12 ± 8 (median = 9) and the LVEF was $52 \pm 9\%$. During PCI, Bivalirudin was used in 20 cases and Abciximab in 79. The LAD, RCA and Cx were treated in 62%, 20% and 18% of cases respectively, as the target-vessel, and PCI was performed in > 1 coronary segment in 23% of cases. Ticagrelor, Prasugrel and Clopidogrel were used during hospital stay and

prescribed at discharge in 47%, 27% and 26% of patients, respectively. Three patients were lost to follow-up, which was 394 ± 217 days (30-893 days). Including hospital stay after PCI, 4 deaths (1%), 10 infarctions (2,6%) – 5 of them peri-procedural – and 5 BVS thromboses (1,3%) - one of them fatal - were observed.

Conclusions: our data suggest that BVS use in PCI of Patients with acute evolving STE-MI and NSTEMI is safe at midterm.

Moderated Posters Session 3: Heart failure, nursing, special populations Sunday, 16 October 2016 10:00 - 11:00

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Is there an impact in the long term for the different revascularization strategies in acute coronary syndromes complicated with acute heart failure at admission?

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Introduction: Acute heart failure (AHF) has a strong negative prognostic impact in patients with non-ST-elevation acute coronary syndromes (ACS) and ST elevation ACS.

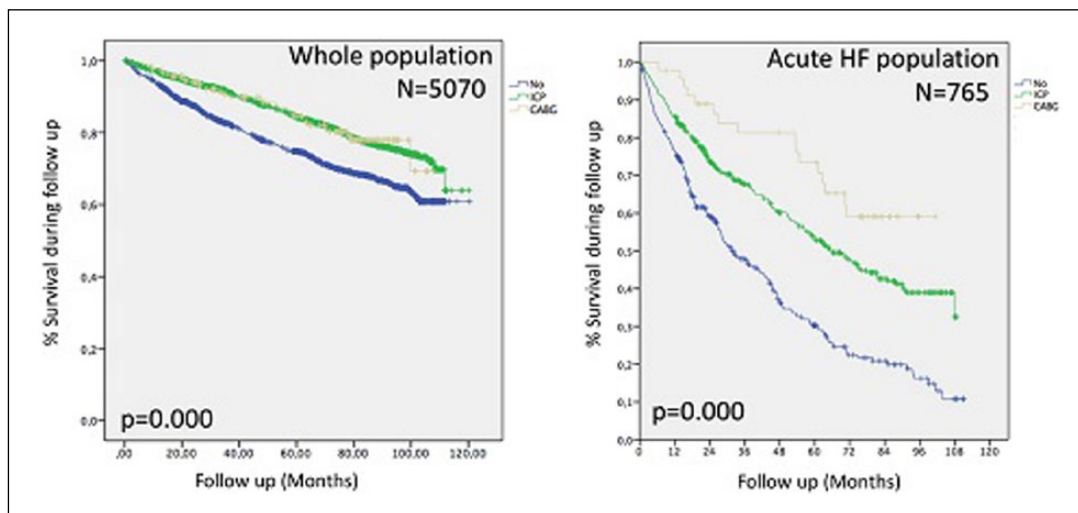
Purpose: To establish the effect of coronary revascularization on the prognosis of ACS complicated with AHF at admission

Methods: We retrospectively studied 5070 non selected patients admitted in a third level hospital from 2004 to 2009 followed up a mean of 5.4± 2.4 years. The effect of coronary

revascularization on the outcome of patients with and without AHF was assessed using a multivariable regression model.

Results: Acute heart failure was present in 765 patients (14.5%) at hospital admission. During the index hospitalization 471 (61.5%) patients received coronary revascularization by percutaneous coronary intervention (PCI) in 424 cases (55.4%), and by coronary artery bypass grafting (CABG) in 47 patients (6.1%). In a 5-year follow-up the mortality was 255 patients PCI group (49.7%), 27 (41.1%) in CABG group, and 289 (69.63%) in the non revascularized group. AHF was an independent predictor of 5-year mortality (adjusted HR 4.3; 95% CI 3.16-4.97; $p < 0.001$). Revascularization with PCI was protective in AHF population and non AHF population. Revascularization significantly influenced the prognosis of patients presenting AHF by CABG (adjusted HR 0.51; 95% CI 0.33-0.774; $p = 0.001$), but not of those without AHF (adjusted HR 0.55; 95% CI 0.28-1.09), data shown in figure.

Conclusions: In patients with ACS, clinical manifestations of AHF at admission could be a strong predictor of adverse outcome in the long term follow up that may be significantly modified by the coronary revascularization strategy



Prognosis impact of revascularization

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Acutely decompensated heart failure readmission at 1-year in patients with acute coronary syndrome

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Background: A common complication in patients with acute coronary syndrome (ACS) is acutely decompensate heart failure (ADHF). It is associated with worse prognosis and its impact on morbidity and mortality of these patients is evident. So, accuracy and early identification of patients at high risk for this complication could be of clinical significance.

Purpose: The aims of this study were: a) to describe the incidence of ADHF hospitalization in patients admitted because of ACS; b) to develop a clinical prediction model for predicting risk of ADHF readmission in patients discharged after an ACS and c) to evaluate the prognosis impact of ADHF hospitalization in these patients.

Methods: Between January 2011 and December 2014, 1487 consecutive ACS patients admitted to our University Hospital, were included after hospital discharge. Post-discharge ADHF readmission and death were collected at 1-year in 98.5% of cases. A derivation cohort (n = 1000) and a validation cohort (n=487) were used to develop and validate respectively the clinical prediction model.

Results: A total of 79 patients (5.3%) presented ADHF readmission. Table 1 shows the adjusted hazard ratios of the variables included in the prediction model. Both, discrimination and calibration, were good in the derivation cohort (c-index = 0.874 and Hosmer-Lemeshow p value = 0.338); and in the validation cohort (c-index = 0.848 and Hosmer-Lemeshow p value = 0.691). Moreover, ADHF hospitalization was associated with a higher risk of 1-year mortality (adjusted HR: 2.35, 95%CI 1.41-3.93; p = 0.001).

Conclusion: In ACS patients, post-discharge ADHF readmission at 1-year is relatively common and confers poor prognosis. A simple pre-discharge prediction model accurately identifies those patients at high risk for this complication. More intensive care of patients with high risk clinical profile may be warranted to improve prognosis.

Table 1. Multivariate regression analysis forADHF

| | HR (CI 95%) | p |
|---|------------------|--------|
| Age (× year) | 1.06 (1.03-1.08) | <0.001 |
| Female | 1.77 (1.11-2.83) | 0.017 |
| Diabetes mellitus | 1.64 (1.03-2.63) | 0.039 |
| Atrial fibrillation | 3.09 (1.92-4.95) | <0.001 |
| Admission heart rate (× 10 bpm) | 1.13 (1.03-1.23) | 0.01 |
| Killip ≥2 during index hospitalization | 1.65 (1.01-2.69) | 0.047 |
| CKD-EPI (×10mL/min/1.73m ²) | 0.88 (0.78-0.98) | 0.023 |
| Anterior STEMI or undetermined ACS | 1.82 (1.10-3.01) | 0.019 |

Cardiac shock

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Concomitant implantation of cVAD on top of VA-ECMO improves survival of patients with cardiogenic shock: a retrospective, multicenter, propensity-matched study

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Background: Venoarterial extracorporeal membrane oxygenation (VA-ECMO) support stabilizes patients with cardiogenic shock (CS). Despite improved oxygenation and peripheral circulation, left ventricular (LV) unloading may be impeded due to the increased afterload, resulting in a failing static LV resulting in high mortality.

Methods and Results: We describe for the first time a large series of patients treated with the combination of VA-ECMO and a catheter-based ventricular assist device (cVAD) compared to patients with VA-ECMO only.

We retrospectively collected data on patients from two tertiary critical care referral centers. We enrolled 157 patients treated with VA-ECMO from January 2013 to April 2015: 123 received VA-ECMO support and 34 had concomitant treatment with VA-ECMO and cVAD. A propensity-matching analysis was performed in a 2:1 ratio on 42 patients undergoing VA-ECMO alone (control group) compared to 21 patients treated with VA-ECMO and cVAD.

Results: Patients in the VA-ECMO and cVAD group had a significantly lower hospital mortality (47% vs. 80%, p<0.001) and a higher rate of successful bridging to either recovery or further therapy (68% vs. 28%, p<0.001) compared to VA-ECMO patients. A higher need of CVVH (48% versus 19%, p=0.02) and hemolysis (76% versus 33%, p=0.004) were reported in the study group due to higher survival. There was no difference in major bleeding rates between the two groups (VA-ECMO and cVAD 38% vs. VA-ECMO 29%, p=0.6).

Conclusions: Concomitant treatment with VA-ECMO and cVAD improves outcome in patients with CS compared to VA-ECMO only. Nevertheless, randomized studies are needed to further validate these promising results

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Clinical outcomes of patients who underwent left atrial decompression with a transeptal cannula during extracorporeal membrane oxygenation

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Background/Introduction: Even though venoarterial extracorporeal membrane oxygenation (ECMO) is used for patients in severe cardiogenic shock, there are some concerns about left ventricular (LV) loading from increased cardiac afterload with retrograde aortic ECMO flow. In this setting, left atrial (LA) decompression seems to be needed for resolution of pulmonary edema and recovery of LV function.

Purpose: We sought to evaluate whether patients with ECMO might be beneficial from adequate LA decompression via percutaneous placement of a transeptal left atrial drain incorporated in the ECMO venous circuit.

Methods: Twenty four patients between February 2013 and April 2016 were enrolled. The supervising physicians decided that LA decompression was indicated. All patients underwent LA decompression with transeptal puncture and placement of a drain (15- to 18-Fr) incorporated into the ECMO venous circuit. Clinical, biochemical, echocardiographic, and ECMO data were obtained for each patient. Change in severity of pulmonary edema on chest radiography (CXR) pre and post procedure was also evaluated.

Results: Patients ranged in age from 13 years to 81 years, with a median age of 49 years. There were 17 males and 7 females. The mean weight was 65 kg, with a range of 38-92 kg. Ischemic cardiomyopathy or myocardial infarction were the most prevalent etiology (n=7, 29.2%) and dilated cardiomyopathy was the second (n=5, 20.8%). Pre ECMO LV ejection fraction was 30.2%, with a range of 12-61%. ECPR was observed in 7 patients. The median time from ECMO cannulation to LA decompression was 62.5 hours with a range of 5-314 hours. Major procedural complications were retroperitoneal hemorrhage (n=1) and LA perforation (n=1). However, they were not associated with in-hospital mortality. An improvement of pulmonary congestion in CXR after decompression (p<0.001) was seen (n=13, 54.2%), whereas there was no improvement (n=10, 41.7%) or worsening (n=1, 4.2%). Nine patients were successfully decannulated (37.5%), and eight survived to cardiac transplantation (33.3%). In-hospital mortality happened in nine patients (37.5%). On univariate analysis, serum lactate 24 hours after LA decompression, degree of pulmonary congestion before decompression, and ECMO weaning failure were associated with in-hospital mortality. Using multivariate analysis, serum lactate after LA decompression was

independently associated with in-hospital mortality (odd ratio 3.68, 95% confidence interval 1.17-11.63, p=0.026).

Conclusion: LA decompression can be safely performed by transeptal placement of a LA drain incorporated into the ECMO circuit. The procedure improved pulmonary venous congestion. About one third of the patients underwent transplantation and two third survived to hospital discharge. Thus, LA decompression with a transeptal cannula should be considered in patients with an uncontrolled pulmonary edema from severe LV loading.

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Comorbidity and dependency indexes in acute cardiac patients: one-year implications

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Background: Population ageing and improvements in acute treatment of diseases have led to chronification of illness. Elderly and pluripathological patients are often admitted to Acute Cardiac Units. Assessing comorbidity and dependency is the first step in facing the challenge of meeting their needs and expectations.

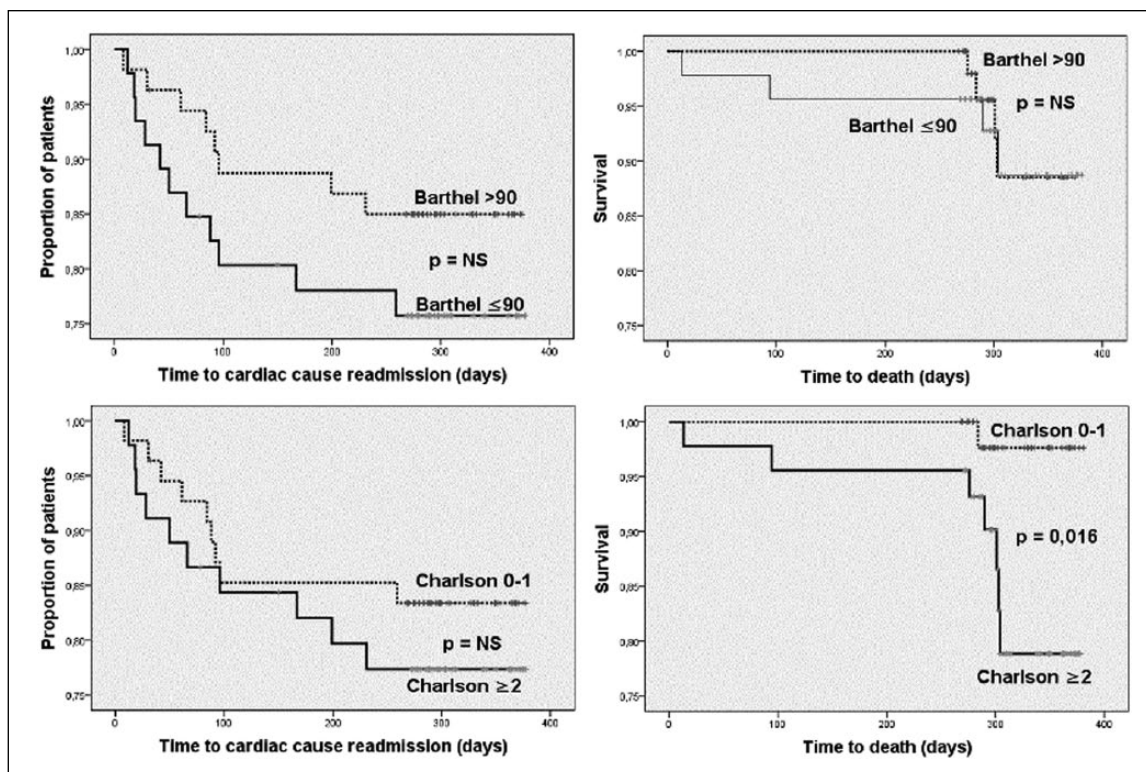
Purpose: To evaluate comorbidity and dependency in acute cardiac patients and their relation to one-year outcomes.

Methods: We studied 100 patients admitted to our Acute Cardiac Unit from January to March 2015. The nurse calculated Charlson comorbidity index and Barthel dependency index after an interview at admission, guided by the review of medical records. Clinical data and length of hospital stay were recorded, as well as cardiac cause hospital readmission and mortality at one year.

Results: Mean age was 68.9 years (SD=12.6), 68% were male. Main reason for admission was acute coronary syndrome in 68%, arrhythmia in 18%, acute heart failure in 7%, valvular disease in 3% and other cardiac disease in 4% of patients.

Comorbidity was evaluated as absent in 55% of patients with Charlson score 0-1, low in 26% with score=2 and high in 19% with score ≥3. Barthel index classified dependency as absent in 47% of patients (score=100), slight in 7% (91-99), moderate in 23% (61-90), severe in 18% (21-60) and complete in 5% (0-20).

For outcome analysis we split up patients in groups according to Charlson score 0-1 (no comorbidity) versus ≥2 (comorbidity) and based on Barthel index >90 (unrelevant dependency) versus Barthel ≤90 (marked dependency).



One-year follow-up.

Length of hospital stay tended to be longer in patients with comorbidity (mean=10.1, SD=5.9 versus mean=7.4, SD=4.2 days; $p=0.068$) and was significantly longer in patients with marked dependency (mean=10.6, SD= 6.2 versus mean=6.7, SD=3.0 days; $p=0.007$).

There was a trend toward lower cardiac readmission rate at one year in patients with no comorbidity compared to those with comorbidity (16% versus 22%; $p=NS$) and in patients with unrelevant dependency compared to those with marked dependency (15% versus 24%; $p=NS$).

One year survival was higher in patients with no comorbidity (98% versus 84%; $p=0.016$). No difference in mortality was shown according to Barthel index.

Conclusions: Patients admitted to Acute Cardiac Unit have a certain degree of comorbidity and dependency, only 55% do not have any comorbidity and 47% are independent. Dependency implies extended hospital stay. Both comorbidity and dependency seem to be related with higher readmission rates at one year. Charlson comorbidity index is significantly associated with one-year survival.

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Comparison of haemodynamic response to inodilators in an experimental model of chronic pulmonary hypertension

Orion Pharma

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Background: The management of patients with pulmonary hypertension (PH) and right ventricular (RV) dysfunction is challenging, particularly in the perioperative and critical care settings. As the mainstay treatment remains unsettled, comprehensive evaluations in animal models may provide further insight to support inodilator selection in this condition. The aim of this work was to compare acute dose-response hemodynamic effects of the inodilators dobutamine, milrinone and levosimendan in an experimental model of chronic PH.

Material and Methods: The monocrotaline (MCT) experimental model was used to induce PH in seven-week old male Wistar rats. The animals were randomly injected with monocrotaline or vehicle (Ctrl, $n=7$) and underwent systemic and pulmonary artery blood pressure and RV pressure-volume (PV) hemodynamic evaluation 24 to 26 days after injection. MCT-injected animals ($n=7$ each) randomly received dose-response infusions of dobutamine (DOB: 1, 3, 6 and 12 mg.Kg⁻¹.min⁻¹), milrinone (MIL: 1, 3, 6 and 12 mg.Kg⁻¹.min⁻¹) or levosimendan (LEV: 0.3, 0.6, 1.2 and 2.4 mg.Kg⁻¹.min⁻¹). Load-independent indexes

were obtained by inferior vena cava occlusion at baseline and at the highest dose.

Results: All MCT injected animals showed increased PA pressures, pulmonary vascular resistance index and PA arterial elastance, low ejection fraction (EF) and reduced cardiac index (CI), as well as a trend towards RV dilation as assessed by end-diastolic volumes, elevated end-diastolic pressure (EDP), upward shifted end-diastolic PV relationship (EDPVR) and delayed relaxation as assessed by tau(exp) compared with Ctrl. All inodilators increased RV ejection fraction, preload recruitable stroke work and ventricular-vascular coupling without jeopardizing systemic perfusion pressure. Also, all inodilators enhanced RV relaxation as assessed by decreased tau(exp). DOB raised heart rate and pulmonary artery pressure. Only LEV increased cardiac index, decreased pulmonary artery elastance and pulmonary vascular resistance. Moreover, LEV was the only inodilator to downward-shift the EDPVR, improving RV compliance.

Conclusion: Levosimendan had beneficial effects in acute systolic and diastolic function in an experimental model of chronic PH and RV afterload compared with dobutamine and milrinone. This results may support further clinical trials enrolling PH patients in the perioperative and critical care settings.

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Use of renal replacement therapies in patients hospitalized with acute myocardial infarction

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Background: Patients with acute myocardial infarction (AMI) may require a renal replacement therapy (RRT) during their index event, for acute heart failure, acute kidney injury, or both. Until now, however, data on this subset of AMI patients is still limited, as they have usually been pooled together with heterogeneous patient cohorts of critically ill patients.

Purpose: In this observational study we evaluated the incidence, clinical predictors, and in-hospital outcomes of patients requiring RRT in a single center AMI population. Moreover, we investigated the clinical factors associated with in-hospital mortality in RRT-treated patients.

Methods: All consecutive AMI patients admitted between January 1, 2007 and December 31, 2015, were identified through a search of our prospectively collected clinical

database. Patients were grouped according to whether they required RRT or not.

Results: Of the 2839 AMI patients (1581 STEMI and 1258 NSTEMI), 83 (3%) underwent RRT. The two most frequent indications were acute fluid overload (81% of cases) and oligoanuria (66%), alone or in combination. Among the variables found to be associated with RRT use at univariate analysis, the following were confirmed at cross validation analysis with great reproducibility: admission creatinine >1.5 mg/dl (OR 16.9, 95% CI 10.4-27.3; P<0.001), cardiogenic shock (OR 23.0, 95% CI 14.4-36.8; P<0.001), atrial fibrillation (OR 8.6, 95% CI 5.5-13.4; P<0.001), mechanical ventilation (OR 22.6, 95% CI 14.2-36.0; P<0.001), diabetes mellitus (OR 4.8, 95% CI 3.1-7.4; P<0.001), and LVEF <40% (OR 9.1, 95% CI 5.6-14.7; P<0.001). At ROC analysis, the AUC for need of RRT obtained with the combination of these 6 predictors, was 0.96 (95% CI 0.94-0.97; P<0.001). In-hospital mortality was significantly higher in RRT patients than in those not requiring RRT (41% vs. 2.1%, P<0.001). The following variables were found to be independently associated with in-hospital mortality in patients treated with RRT: oligoanuria as indication for RRT (OR 5.1, 95% CI 1.7-15.4; P<0.001), atrial fibrillation (OR 4.3, 95% CI 1.6-11.5; P<0.001), mechanical ventilation (OR 20.8, 95% CI 6.1-70.4; P<0.001), and cardiogenic shock (OR 12.9, 95% CI 4.4-38.3; P<0.001). At ROC analysis, the AUC for in-hospital mortality prediction in RRT patients, obtained with the combination of these 4 predictors, was 0.92 (95% CI 0.87-0.98; P<0.001).

Conclusions: In our study, 3% of AMI patients required RRT during their hospitalization, and they had a strikingly high in-hospital mortality rate. The need for RRT, as well as its associated mortality, were accurately predicted by simple clinical variables.

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The risk-treatment paradox in patients with diabetes mellitus hospitalized with acute myocardial infarction in Estonia IUT2-7: Impact of the changes in the arterial profile on the development of organ damage

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Background: Diabetes mellitus (DM) is a strong determinant of worse prognosis after acute myocardial infarction (AMI) and guidelines emphasize the use of

coronary angiography and revascularization for these high risk patients as a cornerstone of acute care. However, previous studies have demonstrated a ‘risk-treatment paradox’ – high risk patients tend to receive less guideline-recommended treatment.

Purpose: The aim of the study was to describe the baseline characteristics, use of coronary angiography and revascularization, and evaluate mortality among AMI patients with vs without DM in Estonia.

Methods: Study was based on the Estonian Myocardial Infarction Registry (EMIR), which collects data on all hospitalized AMI cases in Estonia. Reporting to the EMIR is mandatory by the law. The study included cases hospitalized during 2012 – 2014. Data on mortality were obtained from the Population Registry (linkage in May 2016). Analysis was performed using the ‘R’ software.

Results: According to the EMIR, 7765 patients were hospitalised due to AMI, 25% had DM. Patients with DM were more often female (54 vs 38%), older (71.8 vs 70.0 years) and in history had more hypertension (92 vs 77%), stroke (17 vs 11%), MI (34 vs 23%) and heart failure (53 vs 37%). Coronary angiography and revascularization were significantly less often used in patients with DM (Table 1). In-hospital mortality was similar, but after 2 years, mortality rate was significantly higher for patients with DM (Table 1).

Conclusion: We found that coronary angiography and percutaneous revascularization were less frequently used in AMI patients who had DM. It could at least partly explain the higher long-term mortality after AMI.

Table 1. Treatment and mortality of AMI patients

| | Diabetes mellitus | No diabetes mellitus | P-value* |
|------------------------|-------------------|----------------------|----------|
| All patients | n=1902 | n=5863 | |
| Coronary angiography,% | 68.1 | 74.7 | <0.001 |
| PCI, % | 50.9 | 58.0 | <0.001 |
| CABG % | 3.9 | 3.1 | 0.09 |
| STEMI | n=733 | n=2744 | |
| Primary PCI,% | 40.1 | 45.4 | 0.01 |
| Thrombolysis, % | 10.6 | 15.6 | <0.001 |
| Mortality | | | |
| In-hospital, % | 11.5 | 10.3 | 0.16 |
| 2-years, % | 35.9 | 26.5 | <0.001 |

*chi-squared test PCI – percutaneous coronary intervention, CABG – coronary artery bypass grafting, STEMI – ST-elevation myocardial infarction

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Results of left main percutaneous coronary intervention in diabetic patients at a very long-term follow-up

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The diabetics patients have coronary artery disease more severe with most re-stenosis rate after percutaneous coronary intervention (PCI). Other hand, left main coronary artery (LMCA) disease has poor prognosis with lesions in other levels of coronary arteries. Thus, the PCI in LMCA disease in this patients is controversial.

Purpose: The main objective of this study was to evaluate the efficacy and safety of PCI in LMCA disease in diabetic patients at 10 years follow-up.

Methods: We prospectively included 130 consecutive patients (71.01 ± 10.97 years, 66.4% male) with LMCA disease treated with PCI between June 2006 and April 2015. We evaluated the occurrence of major adverse cardiovascular events (MACE): cardiac death, nonfatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis after 10 years clinical follow-up (median 42.1 months).

Results: 54.2% of patients had stable coronary disease and 45.8% acute coronary syndrome (35.1% Non-STEMI and 10.7% STEMI). 68.7% had LMCA and three vessels disease and 73.3% had SYNTAX score ≥ 23. 40.5% of patients presented moderate-severe left ventricular systolic dysfunction. The most frequently bifurcation technique employed in LMCA was ‘provisional stenting’ in 66.9% and zotarolimus-eluting stent was used in 73.3% of cases. The angiographic success rate was 99.2% and complication rate intra-procedure was 2.66% without intraoperative death. During follow-up, MACE rate at 10 years was 12.5% (6.7% of cardiac death, 1.7% of nonfatal myocardial infarction, 5% of TLR and thrombosis rate 0.3%). MACE rate was significantly higher in patients with moderate-severe left ventricular systolic dysfunction (p=0.05) and hyperlipidemia (p=0.02). The 27.3% of patients had angiographic follow-up

Conclusions: In diabetic patients, the PCI on LMCA is effective and safe, with low complication rate and a low rate of long-term events. Patients with ventricular dysfunction and hyperlipidemia showed significantly worse outcome.

Young Investigators Award - Sunday, 16 October 2016 - 11:00 - 12:30

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Complete atrioventricular block in acute coronary syndrome. Prevalence, characterization and implication in outcome

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Purpose: The incidence of bradyarrhythmias in patients with acute coronary syndrome (ACS) is 0.3% to 18%, being complete atrioventricular (AV) block the more severe manifestation of AV conduction disturbance. The aim is to characterize the ACS patients with complete AV blocks and to assess the effect of this rhythm disturbance in outcome.

Methods: Retrospective analysis of patients admitted with ACS at a tertiary centre, from 2005 to 2015. Patients were divided according to the presence of complete AV block: G1 – with complete AV block; G2 - without complete AV block. Clinical, electro and echocardiographic characteristics were compared between study groups. The prognosis during 1 year follow up was also analysed.

Results: Among 4799 ACS patients admitted during study period, 91 (1.9%) presented complete AV block and were included in G1. These patients were older (66.0 ± 12.4 vs 46.3 ± 30.5 years; $p < 0.001$). There was no difference in gender, previous coronary artery disease and cardiovascular risk factors between two groups. At presentation, G1 patients presented lower systolic blood pressure (107.8 ± 27.8 vs 136.9 ± 28.6 mmHg; $p < 0.001$), higher Killip class (Killip > 1 in G1 25.0% vs G2 14.9%; $p = 0.013$) and incidence of syncope (13.6% vs 1.5%; $p < 0.001$).

In G1, 86.8% presented ST elevation myocardial infarction (STEMI) (vs 55.1% in G2; $p < 0.001$) and inferior STEMI was verified in 79.1% of patients in G1 comparing with 21.9% in G2 ($p < 0.001$). Right ventricular myocardial infarction was significantly more frequent in G1 (3.3% vs 0.2%; $p < 0.001$). Among patients whom underwent fibrinolysis complete AV block was observed in 7.3% contrasting with 2.5% in patients submitted to primary percutaneous coronary intervention ($p < 0.001$). During hospitalization G1 had worst outcome with higher incidence of cardiogenic shock (33.0 vs 4.5%; $p < 0.001$), ventricular arrhythmias (17.6% vs 3.6%; $p < 0.001$) and need of invasive mechanical ventilation (25.3% vs 5.1%; $p < 0.001$). Eight patients needed definitive pacemaker implantation. In hospital mortality was higher in patients with AV block (23.1% vs 3.5%; $p < 0.001$). However there was not significant difference in mortality after discharge: at thirty days follow up (2.2% vs 0.9%; $p = 0.183$) and at one-year follow up (5.5% vs 2.8%; $p = 0.136$).

Conclusion: Complete AV block was associated with inferior STEMI and conferred worst outcome during hospitalization, including higher incidence of cardiogenic shock, ventricular arrhythmias and death.

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Prehospital high-sensitivity troponin T and copeptin predicts outcome and may allow prehospital rule-out of acute myocardial infarction

Tryg fonden, Aarhus University, Roche Diagnostics

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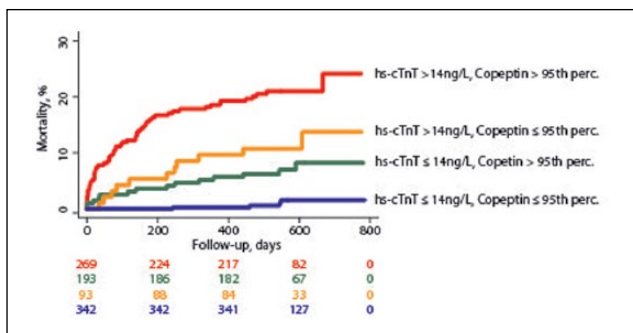
Purpose: Prehospital biomarker measurement may improve triage of patients with suspected of AMI. We studied the diagnostic and prognostic properties of prehospital high-sensitivity troponin T (hs-cTnT) and copeptin in patients with a suspected AMI.

Methods: Blood samples were collected in the ambulance from 962 consecutive cases (897 individuals) with symptoms of AMI. The samples were analyzed with an hs-cTnT and a copeptin assay. The diagnosis of AMI was established in accordance with the Universal MI definition. Survival data were obtained from The Danish Civil Registration System. The diagnostic proportions were calculated for the 99th percentile hs-cTnT cut-point (14ng/L), and the 95th percentile copeptin cut-point (9.8pmol/L), and for a combined model. Diagnostic accuracy was estimated by receiver-operating characteristics curve area under the curve (AUC) comparison. We constructed Kaplan-Meier curves for groups of patients with hs-cTnT values above or below 14ng/l combined with copeptin values above or below 9.8pmol/L. Multivariable cox regression models were established to estimate the individual and combined predictive value of both biomarkers. The diagnostic and prognostic reclassification effect of adding copeptin to hs-cTnT was estimated by calculation of the Integrated discriminatory Index (IDI).

Results: 178 (19%) cases had AMI. The diagnostic accuracy of prehospital hs-cTnT measurements was 0.81. 80% of patients with AMI had an hs-cTnT value > 14 ng/L. Adding copeptin to hs-cTnT increased the AUC to 0.85 ($P = 0.004$), added significant reclassification effect: Relative IDI: 6.7% ($P = 0.016$), and the combined model allowed a rule-out of 45% of patients without AMI with a predictive value of 98%. An elevated prehospital hs-cTnT combined with elevated copeptin was significantly associated with mortality,

Kaplan-Meier Log-rank: $P < 0.001$. Both biomarkers held strong independent prognostic information: hs-cTnT $> 14\text{ng/l}$: HR = 2.40 ($P < 0.012$), copeptin $> 95\text{th percentile}$: HR = 2.17 ($P = 0.021$) with an associated relative IDI of 244% ($P = 0.003$)

Conclusion: hs-cTnT and copeptin, measured in the ambulance may allow rule-out of 45% of patients without AMI already in the prehospital phase. In addition, elevated prehospital hs-cTnT and copeptin and may be used to identify high-risk patients even before hospital arrival.



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Cardiopulmonary exercise test predicts invasively measured pulmonary vascular resistance in end stage heart failure patients

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Introduction: A non reversible pulmonary vascular resistance (PVR) greater than 6 Wood Units is considered a contraindication to heart transplantation. Therefore heart transplant candidates are often submitted to several invasive evaluations of PVR due to lack of a reliable noninvasive method to estimate PVR. Cardiopulmonary exercise test (CPET) is a powerful prognostic tool that provides data on both functional capacity and ventilator efficiency in end stage heart failure patients. The purpose of this study was to evaluate several CPET parameters as predictors of invasively measured pulmonary vascular resistance in end stage heart failure patients.

Methods: Retrospective observational study that included 58 stable, end stage heart failure patients that performed CPET and invasive hemodynamic assessment in the same week. CPET results were reviewed and data regarding VE/Kg, VO₂/Kg, VCO₂/Kg, O₂ pulse, PETCO₂, PETO₂, EQO₂, EQCO₂ and VE/VCO₂ slope were retrieved. Invasive pressure curves were also reviewed and relevant hemodynamic data was collected.

Results: Scatter plots and Pearson correlations were computed to examine the intercorrelations of the variables. PVR was significantly correlated with VE/VCO₂ slope $r(34) = 0.43$, $p = 0.01$, peak O₂ pulse $r(51) = -0.378$, $p = 0.006$, EQO₂ at anaerobic threshold (AT) $r(33) = 0.380$, $p = 0.029$ and PETCO₂ at AT $r(34) = 0.50$, $p = 0.003$. Simultaneous multiple regression was conducted to investigate the best predictors of PVR. A regression model to predict PVR including VE/VCO₂ slope, peak O₂ pulse and EQO₂ at AT was statistically significant $F(3, 25) = 6.468$, $p = 0.002$. The adjusted R² value was 0.37, meaning that 37% of the variance in PVR was explained by the model. In this model only VE/VCO₂ slope ($\beta = 0.58$, $t = 2.302$, $p = 0.030$) and peak O₂ pulse ($\beta = -0.45$, $t = -2.926$, $p = 0.007$) were significantly contributing to the equation for predicting PVR.

Conclusion: PVR may be predicted by CPET parameters namely VE/VCO₂ slope and peak O₂ pulse in end stage heart failure patients being evaluated to heart transplantation.

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Immediate treatment and outcome of cancer patients with acute myocardial infarction

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Purpose: Cancer disease and its corresponding treatment have an important impact on the cardiovascular health of these patients. However, little is known on whether cancer patients receive adequate treatment and care after suffering an acute myocardial infarction (AMI). The aims of this study were to investigate whether AMI patients with a history of cancer receive the same kind of therapy as those without, and to determine how this affects outcome.

Methods: All patients with ST-elevation MI (STEMI) and non-STEMI (NSTEMI), enrolled since 2002 in the AMIS Plus registry with available data on co-morbidities based on the Charlson Comorbidity Index (CCI) were included in the analysis. Patients were classified as having cancer if one of the cancer diseases of the CCI was indicated. Immediate treatment and in-hospital outcome were compared between groups using propensity score matching.

Results: Of 35,249 patients, 1981 (5.6%) had a history of cancer. After propensity score matching for age, gender, Killip class > 2 , STEMI, and moderate to severe renal disease (1981 patients in both groups), there were no longer significant differences in hypertension, diabetes, cardiac insufficiency, cerebrovascular disease and past history of MI between cancer and non-cancer patients. No significant

differences were found for a left ventricular dysfunction (angiographic ejection fraction below 35%: 10.9% vs. 9.5%; $p=0.33$ or echocardiographic below 30%: 11.9% vs. 11.4%; $p=0.79$). However, cancer patients underwent less frequently percutaneous coronary intervention (67.8 vs. 73.4%, OR 0.76; 95% CI 0.67-0.88) and received less frequently P2Y12 blockers (70.3% vs. 74.3%, OR 0.82; 95% CI 0.71-0.94) and statins (67.5% vs. 70.4%, OR 0.87; 95% CI 0.76-0.99). The use of aspirin (92.7% vs. 94.1%, OR 0.80; 95% CI 0.62-1.03) and beta blockers (60.4% vs. 60.9%, OR 0.98; 95% CI 0.86-1.11) was similar in both groups. In-hospital complications (cardiogenic shock, re-infarction, stroke and bleeding) did not differ between the groups. However, in-hospital mortality was significantly higher in cancer patients (10.7% vs. 7.6%, OR 1.45; 95% CI 1.17-1.81). The main cause of death was cardiac with no differences between the groups ($p=0.06$).

Conclusion: These results showed that cancer patients with AMI were less likely to receive evidence-based treatment and had worse in-hospital outcomes than non-cancer patients. This shows that there could be room for improvement in the treatment of cancer patients with AMI.

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Nationwide study of factors associated with implantation of implantable cardioverter defibrillator after out-of-hospital cardiac arrest due to acute myocardial infarction in Denmark 2001-2012

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Background/Introduction: Implantable cardioverter defibrillator (ICD) is recommended for patients surviving an out-of-hospital cardiac arrest (OHCA) with an initial shockable rhythm, not caused by reversible conditions such as myocardial infarctions (MI). However, ICDs may still be considered indicated after OHCA due to MI,

Aim: We aimed to identify factors associated with the implantation of implantable cardioverter defibrillators (ICD) and subsequent survival in MI induced OHCA survivors in a nationwide registry.

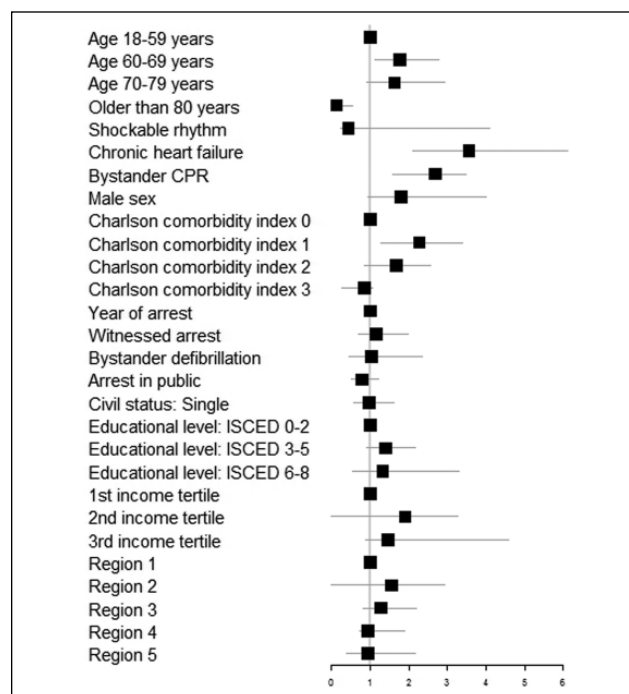
Methods: Of 36,950 OHCA, we identified 2,907 without prior ICD who were ≥ 18 years, successfully resuscitated and survived until discharge after OHCA in the Danish Cardiac Arrest Registry covering all 5 Danish geographic regions between 2001-2012. 974 of

these patients were diagnosed with acute MI within the first two days after OHCA, considered to be the cause of arrest. ICD implantation within 90 days after OHCA was considered to be associated with the arrest. Multiple logistic regression was used to identify factors associated with ICD implantation in these patients and an accelerated failure time model was used to find factors associated with mortality after 1 year.

Results: 152 (16%) of the 974 ICD naive patients with MI induced OHCA who survived until hospital discharge had an ICD implanted within 90 days post OHCA. An initial shockable rhythm was found in 125 (82%) of patients undergoing ICD implantation, and 481 (63%) of patients without ICD implantation, $p<0.001$. Patient age 60-69 years (OR: 1.8, CI: 1.1-2.8, $p=0.01$), chronic heart failure (OR: 3.6, CI: 2.1-6.1, $p<0.001$, bystander cardiopulmonary resuscitation (OR CPR: 2.7 (1.65-3.5), $p<0.001$) and Charlson Comorbidity index of 1 (ORCC1: 2.3, CI: 1.3-3.4, $p=0.01$) was associated with significantly higher odds of ICD implantation. Patients ≥ 80 years had lower odds of implantation (OR: 0.1, CI: 0.06-0.7, $p=0.02$). The incidence rates of ICD implantation did not change over the study period (OR: 1.0 per year, CI: 0.9-1.1, $p=0.94$).

ICD implantation was associated with lower mortality in adjusted analysis, HR: 0.6, CI: 0.6-0.7, $p<0.001$.

Conclusion: Chronic heart failure, age of 60-69 years, comorbidity index of 1 and bystander CPR were associated with higher odds of early ICD implantation in patients with MI induced OHCA. ICD implantation in these patients was associated with lower mortality.



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Mild troponin elevation in patients admitted to the emergency department with atrial fibrillation: 30-day prognostic significance after discharge

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Background: Many patients with atrial fibrillation (AF) undergo troponin testing in the emergency department (ED) without clinical suspicion of acute coronary syndrome. However, the short-term clinical significance of mildly elevated troponins in these patients remains to be determined.

Purpose: We aimed to evaluate 30-day adverse events in patients discharged from the ED with AF and mild troponin elevation.

Methods: 2181 consecutive patients with AF (as a primary or secondary diagnosis) who were evaluated in our ED in a 12 month period were included retrospectively in

our study. Among them, 423 patients were admitted for in-hospital management. All patients underwent routine clinical and laboratory exams. As in previous studies with similar troponin assays, mild elevation was defined as levels of troponin I between >0.05 and 5ng/mL . 30-day outcomes after discharge were defined as all-cause mortality, myocardial infarction and stroke.

Results: Mean age of our population was $72,8 \pm 12,4$ years, 41.1% were males and 383 patients (90.5%) were discharged. Among these 90.9% had at least one determination of troponin. 74.7% had normal troponin values, 19.0% had mild troponin elevation (median 0.10ng/mL) and 6.3% had troponin levels markedly elevated (figure 1). There were no differences between mild troponin elevation vs those with normal values regarding all-cause mortality (12.1% vs 6.9%, $p=0.200$), myocardial infarction (1.5% vs 0.0%, $p=0.202$) and stroke (4.5% vs 2.3%, $p=0.394$).

Conclusions: Troponin levels were determined in over 9 in 10 patients admitted to the ED with AF. Only 6.3% had troponin levels markedly elevated and in those with mild elevations we found no significant impact in short-term prognosis after discharge. These findings suggest that troponin levels should not be routinely obtained in these patients.

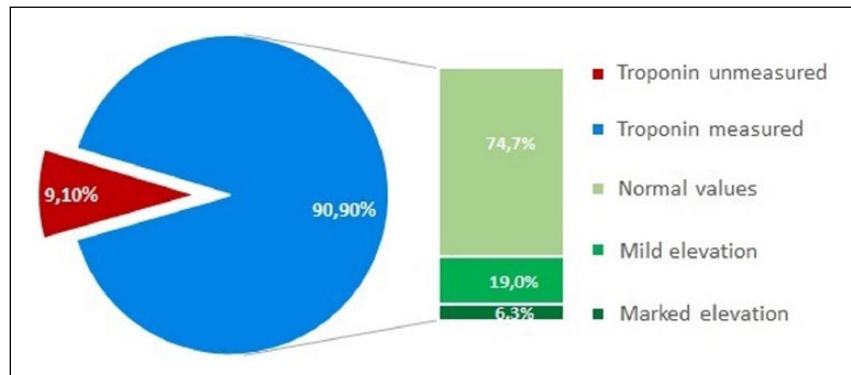


Figure 1. Troponin determination levels

Poster Session 3 - Sunday, 16 October 2016 - 08:30 - 12:30

Acute aortic syndrome

P441

Predictive factors of poor early outcomes following ruptured thoracic aortic aneurysm under the emergency aortic surgery

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Purpose: Although the operative results for thoracic aortic aneurysm has been improving markedly, that of the ruptured one is still poor. We evaluated the risk factors of poor early outcomes following ruptured thoracic aortic aneurysm.

Methods: From 2000 to 2015, 48 consecutive patients underwent emergency aortic surgery for ruptured thoracic aortic aneurysm: 6 patients of ascending aortic aneurysm, 19 patients of aortic arch aneurysm and 23 patients of descending aortic aneurysm. There were 22 patients of non-dissection, 11 patients of acute dissection, 9 patients of chronic dissection and 6 patients of pseudo-aneurysm. 41 patients were performed open surgery, and 7 patients with descending aortic aneurysm were performed thoracic endovascular aortic repair (TEVAR). Predictive factors of hospital mortality, major neurological complication and poor early outcomes (hospital mortality and major neurological complication) were analyzed.

Results: There were 8 hospital death (16.7%), 10 major neurological complication (20.8%) and 16 poor outcomes (33.3%). On univariate analysis, a significant risk factor for hospital mortality was preoperative cerebral complication (37.5% vs 7.5%, $p = 0.034$). There was no significant risk factor for major neurological complication. Significant risk factors for poor early outcomes were chronic renal failure (56.3% vs 21.9%, $p = 0.021$), shaggy aorta (37.5% vs 6.3%, $p = 0.014$) and operative time (489 ± 224 min vs 369 ± 157 min, $p = 0.036$). Extra corporal circulation and selective cerebral perfusion were not significant risk factor. On multivariate analysis, no other significant predictor was found.

In the patients of descending aortic aneurysm, 7 patients were performed TEVAR and 16 patients were performed open repair using extra corporal circulation. The operative times were 204 ± 83 min in the TEVAR group and 474 ± 200 min in the open repair group ($p = 0.003$). The rates of poor outcomes were 14.3% of the TEVAR group and 50.0% of the open repair group ($p = 0.132$).

Conclusion: Predictive factors of poor early outcomes were chronic renal failure, shaggy aorta and operative time. In the patients of descending aortic aneurysm, operative time of TEVAR was significantly shorter than it of open repair. The early result of TEVAR was found to be satisfactory.

P442

The survey of clinical use of nitrates in patients with acute coronary syndrome in China

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Background: Acute coronary syndrome (ACS) is a life threatening conditions due to decreased blood flow in coronary arteries. Nitrate is one of main drugs used in the management of ACS. However, the situation of nitrate clinical application in China is not fully understood.

Purpose: This is a multicenter, retrospective, cross-sectional survey, which for the first time understanding the current status of clinical use of nitrates in the patients with ACS in China, provide data and support for further standardizing clinical practice, and propose executable suggestions and opinions for standardized application of nitrates in ACS treatment.

Methods: The information of the patients hospitalized with the diagnosis of ACS who received nitrate treatment from May 1st to Nov 15th in 2014 was collected by standardized questionnaire sent to every center enrolled in the survey. The questionnaire included patients' demography, clinical characteristics, nitrate treatment information and so on.

Results: 800 questionnaires were collected from 19 hospitals, among which 794 records accorded with the inclusion criteria and were fit into final analysis. Among the 794 patients with ACS, 310 patients (42.23%) received continuously nitrates treatment intravenously, 464 patients (58.44%) were treated by oral medication of nitrates discontinuously, 356 patients (44.84%) received intravenous nitrates treatment discontinuously. Among the 310 ACS patients with received intravenous nitrates treatment continuously, treatments were suspended in 178 patients (57.41%) within 48 hours, owing to syndrome remission, hypotension, headache and others, and were continued in 130 patients (41.94%) after 48 hours, owing to cardiac insufficiency, continuous existence of ischemic symptoms and others. After discharged from hospital, a total of 408 patients with ACS continued nitrates treatment, among which 19 (4.66%) patients took isosorbide dinitrate, 385 (94.36%) patients took isosorbide monodinitrate and both drugs were taken by 4 (0.98%) patients. However, there were 65 patients with contraindication of nitrate were treated with nitrate, such as 21 patients with acute inferior wall myocardial infarction with right ventricular infarct (1 dead), 9 patients with systolic pressure < 90 mmHg (0 dead), 11 and 24 patients with heart rate < 50 and > 110 beats/min (1 and 1 dead), respectively. Moreover, the mean starting doses of nitroglycerin (22.08 ± 13.75 $\mu\text{g}/\text{min}$) and isosorbide dinitrate (61.09 ± 103.85 $\mu\text{g}/\text{min}$) were far more from the standard. 303

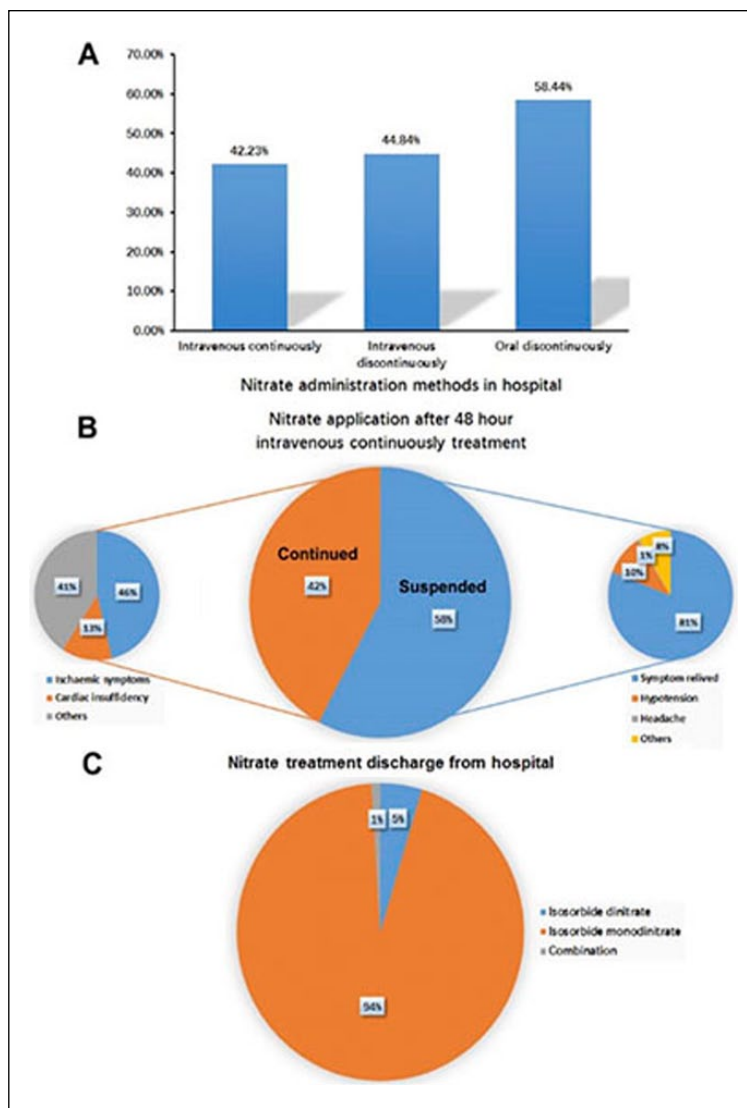


Figure 1

patients received complete revascularization, among them 211 (69.64%) patients were still using nitrates after complete revascularization.

Conclusion: In general, the clinical use of nitrates in ACS patients treatment in China is firstly reviewed and analyzed in this multicenter survey. Nevertheless, there is still problems in the application of nitrates in ACS for now.

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Effect of resistance exercise and different protein sources on the ascending aorta ovariectomized rats

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In women, the functional endocrine changes like menopause, leads to changes in the lipid profile and weight gain, contributing to a higher prevalence of adequate food arterial. A hypertension and physical activity are important interventions in the treatment and prevention of these doencas. Assim, the objective of this study was to evaluate the effects of resistance training associated with different protein sources on the extracellular matrix of the ascending aorta in elderly rats ovariectomizadas. Foram used 40 Wistar rats were divided into 8 groups: sedentary plant control (CVS), trained plant control (CVT), sedentary Animal Control (CAS), trained animal control (CAT); sedentary ovariectomized vegetable (VOS), vegetable ovariectomized trained (VOT), Animal sedentary ovariectomized (AOS), trained ovariectomized Animal (AOT). The animals were followed for 14 months and after 12 weeks of protocols, euthanized animais foram, the

aorta samples were removed and processed for performing histological techniques, histomorphometrically analyzed the collagen fibers I and III (Vv [FCI and III], elastic (Vv and Nv [lam]) and immunohistochemistry, using markers for metalloproteinase (MMP 2 and 9). The analysis of variance (ANOVA) one way, and post-hoc Tukey were properly applied to data analysis ($p \leq 0.05$).

Results: We observed that in the group (VOS) ovariectomy increased the Nv [lam] and Vv [FC I] and Vv [FC III] compared to the CVS control. Exercise in these animals (VOT) promoted decreased Vv [lam] Vv [FC I] and increased Vv [FC III] when compared to VOS. Analyzing the animals of the animal's diet (AOS), ovariectomy promoted decreased Vv [lam] and increased Vv [FCIII] compared to control. The exercise in this group (AOT) promoted decrease in V v [FC III] and increased Vv [lam] and Vv [FC I] when compared to sedentary AOS. By analyzing the expression of metalloproteinase 2 in ovariectomized animals from both diets (VOS and AOS), we found intense expression when compared with CVS and CAS respectively. The exercise promoted in these groups (VOT and AOT) moderate expression when compared to their sedentary. In the expression of matrix metalloproteinase 9 ovariectomized animals from both diets (VOS and AOS) showed moderate expression when compared to their CVS and CAS controls, and that the exercise was expressed moderately when compared to sedentary. We conclude that exercise in both diets, was able to minimize the events caused by menopause.

P444

Is the prognostic impact of renal function the same for all age groups in patients with acute coronary syndromes?

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Introduction: Renal function is an important prognostic factor in patients with acute coronary syndromes (ACS). However, its impact may be different according to age group, particularly because renal dysfunction is frequent in elderly patients.

Objectives: To evaluate the prognostic impact of renal function (glomerular filtration rate – GFR) in patients admitted with ACS, according to age.

Methods: Retrospective analysis of a single-centre registry of ACS patients. Patients were divided according to age and compared in terms of basal characteristics, treatment and short-term outcome. We used ROC curve analysis to compare the impact of GFR in hospital all-cause mortality, as well as 30-day mortality and hospital MACE (death, myocardial infarction and stroke) and NACE (MACE + major bleeding).

Results: From the 3125 patients analysed (64 ± 13 years, 71% males, 63% ST elevation infarction), 825 had an age < 55 years, 1896 between 55 and 79 years and 404 ≥ 80 years. With increasing age, we had an increase in prevalence of cardiovascular risk factors (except smoking), previous history of heart disease and stroke and fewer males. ST elevation myocardial infarction was also less frequent (73.3% vs. 59.1% vs. 57.7%) and worst clinical presentation, with Killip class > 1 (5.1% vs. 12.9% vs. 21.0%, $p < 0.001$). Renal dysfunction (GFR < 60 ml/min.) increased with age (2.1% vs. 24.8% vs. 79.9%, $p < 0.001$). Pharmacological treatment was similar, with the exception for lower use of clopidogrel and beta-blockers as well as for coronary angioplasty (87.0%, 79.5%, 66.3%, $p < 0.001$), with higher hospital mortality (1.6% vs. 4.0% vs. 12.9%), 30-day mortality (2.1% vs. 5.2% vs. 14.1%), MACE (2.4% vs. 5.2% vs. 15.6%) and NACE (2.8% vs. 6.2% vs. 16.8%) in elderly patients ($p < 0.001$). Predictive ability of GFR for hospital and 30-day mortality, MACE and NACE is higher for the age group 55 to 79 years, and lower in young patients (table), although without reaching statistical significance.

Conclusions: GFR has a predictive value for short-term outcome after ACS that is different according to age group. In younger patients, the impact is less significant, probably related to the low prevalence of renal dysfunction in this age group. Also in the elderly, we observed a reduction in the predictive ability of GFR.

Table 1. Results

| GFR AUC | < 55 years | 55-79 years | ≥ 80 years |
|--------------------|------------|-------------|-----------------|
| Hospital mortality | 0.669 | 0.802 | 0.757 |
| Hospital MACE | 0.660 | 0.762 | 0.705 |
| Hospital NACE | 0.663 | 0.737 | 0.713 |
| 30-day mortality | 0.710 | 0.746 | 0.718 |

AUC - area under curve

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Intramural hematoma and penetrating aortic ulcer: variations of acute aortic dissection

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Objective: L 'objective of the study and' to report our experience about surgical aortic intramural hematoma (EIA) and penetrating ulcer (UPA), such as less widely used variants of 'acute aortic syndromes.'

The aortic intramural hematoma and 'a disease which consists of bleeding between the aortic wall without intimal tear. The penetrating ulcer is a chronic condition defined by

a disintegration of the intimate ulcer-like experience within the aortic lumen.

Materials and Methods: From 2010 to 2015 at Division of Cardiac Surgery A. O. G. Giuseppe Moscati Avellino – Italy - underwent surgery, with emergency criteria, 38 patients diagnosed with ‘acute aortic syndrome’, of which 31 patients (81.57%), with acute aortic dissection type A, 7 pts (18.42%), affected by intramural hematoma (EIA) and one pat (2.63%) suffering from EIA + UPA: Of the 8 patients, suffering from EIA and EIA + UPA, all undergoing surgery with emergency criteria, we analyzed the following parameters:

General clinical conditions and hemodynamic

Presence of spontaneous breathing or IOT.

Neurological conditions

Time elapsed between diagnosis and surgical treatment

Type of work performed

Time of awakening

Survival at 30 days. and ‘it was 100%: 6 patients were discharged home, a distance of about 3 weeks after surgery, and two patients were transferred to rehabilitation centers cardiorespiratory about 3 weeks after’ intervention in overall clinical condition satisfactory.

Conclusions: The preoperative conditions of patients, the precocity ‘diagnosis and timeliness’ of surgical treatment are, in our experience, determining factors about the success of the procedure.

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Acute coronary syndrome registry in an ultra-peripheral region of the European Union. The cornerstone to learn and improve

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Introduction: Recorcanariensis is an ACS registry conducted in the Canary Islands (CI) - Spain, an ultra-peripheral region of the UE, where coordinate a local ‘AMI-code’ is difficult and, simultaneously, a challenge due to geographical reasons. The Canary Society of Cardiology started this registry in 2015 to identify clinical, demographic and logistical parameters to know and improve the healthcare network in AMI.

Methods: The first 597 patients were analyzed. Mean age was 63±12 and 18% were women. Patients were recruited from 9 different hospitals distributed within the seven islands of the CI. Clinical variables, type of ACS, time to admission and first-medical-contact and treatments received were recorded.

Results: 597 patients were included from 3 third-level hospitals and 5 secondary-level hospitals. Clinical variables are in Table 1. Sudden cardiac death or cardiogenic shock occurred on 2.4% and 3.1% respectively. 39.9% were STEMI, 50.5% NSTEMI and 12.6% UA. In 71.5% symptoms appeared at home, only 39.1% were transferred by EMS and 56.6% were admitted in PCI-hospitals. Patients received AAS in nearly 99% and ticagrelor was the most used second antiplatelet therapy (52.5%). AKI was present in 7.2% in STEMI and 10.6% in NSTEMI. HF was observed in 14.9% in STEMI and 12% in NSTEMI, while overall mortality was 6.5%. Primary-PCI was performed in 65% of the patients, while fibrinolysis was the election in the smaller islands. Primary-PCI showed a 300min-delayed from onset of symptoms to FMC and 75 minutes from FMC-to-balloon.

Conclusions: ACS management in the CI is complex due to the insularity and different resources. The results push us to increase promoting secondary prevention, awareness to achieve a higher use of the EMS and early recognition of symptoms. We should coordinate our efforts to increase primary-PCI rate and improve healthcare network organization in between the smaller islands.

Table 1. Table 1

| Demographic Variables | % |
|-----------------------|------|
| BMI | 27.9 |
| Foreign | 14.2 |
| Smoker | 62.5 |
| DM | 32.8 |
| Dyslipidaemia | 57.8 |
| Hypertensive | 65.3 |
| Previous CAD | 20.9 |
| COPD | 7.5 |

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Non-invasive indices of vascular function in acute coronary syndrome

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Background: Low-flow-mediated vasoconstriction (L-FMC) is a novel index used for assessing the response of radial artery to the vasoconstriction observed under conditions of reduced

flow. Whether L-FMC provides additional information to flow-mediated dilation of brachial artery (FMD) among patients with symptomatic cardiovascular disease is still unknown.

Purpose: We aimed to assess the changes in brachial artery L-FMC and FMD, their relation to the circulating levels of pro-inflammatory markers (high sensitive C-reactive protein, hsCRP; white blood cell count, WBC) and indices of myocardial damage during acute coronary syndrome (ACS). As a secondary goal we examined the prognostic significance of L-FMC and FMD following coronary event.

Material: One hundred and five patients with diagnosis ACS were recruited between August 2013 and May 2014. They were observed for a year and the occurred adverse events were recorded.

Results: The increased vasoconstrictor response during (lower values of L-FMC) was associated with higher circulating hsCRP ($r = -0,433$, $p = 0,019$), higher peak plasma levels of cardiac enzymes ($r = -0,486$, $p = 0,002$ for creatine phosphokinase, CPK; $r = -0,433$, $p = 0,007$ for MB fraction of CPK, CPK-MB) in the whole group and with borderline significance to higher incidence of adverse events among patients with obstructive coronary disease (L-FMC in patients with vs without complications, $-1,30 \pm 2,25$ vs $-3,47 \pm 3,32\%$, $p = 0,052$). In the setting of acute coronary disease the patients older than 75 years had exaggerated vascular response to resting shear stress (L-FMC in the highest quartile vs L-FMC in lower quartiles $-4,22 \pm 1,36$ vs $-2,30 \pm 3,33$, $p = 0,025$). The values of FMD during acute phase correlated negatively with the severity of myocardial necrosis ($r = -0,291$, $p = 0,028$ for CPK-MB; $r = -0,282$, $p = 0,033$ for CPK-MB) and left ventricular systolic function deterioration ($r = 0,349$, $p = 0,002$ for ejection fractions; $r = -0,314$, $p = 0,007$ for end-systolic volumes). A positive correlation between L-FMC and FMD was observed at presentation ($r = 0,311$, $p = 0,042$). It became statistically insignificant when the results of both tests repeated at three months, were compared ($r = 0,353$, $p = 0,164$).

Conclusion: The increase of vascular vasoconstrictor response at the time of ACS is significantly influenced by acute C-reactive protein levels in the highest quartile. L-FMC change in acute phase may have prognostic significance following coronary event among patients with obstructive coronary atherosclerosis.

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Timing of myocardial infarction expression in patients with previous revascularization

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Background: Circadian variation of onset of acute myocardial infarction (AMI) has been noted in many studies but there is no data about subgroup of patients with previous coronary artery bypass grafting (CABG). Because of abnormalities in the circadian rhythm of autonomic tone after operation, it was very interested to analyze the circadian patterns in the onset of symptoms of AMI in various subgroups of 2110 patients with previous CABG.

Methods and Results: As in the other studies, a peak occurred in the morning hours with 26.7% of the patients, but there was a second nearly equal, but higher peak (26.8%) in the evening hours. The subgroups with specific clinical characteristics exhibited different patterns which determined these peaks in all population. In patients older than 70 years of age, in both sexes, in smokers, diabetics, in patients with hypertension, in those with beta-blockers therapy and in patients without previous angina, two nearly equal peaks were observed, with higher evening peaks, except patients with hypertension and without angina. Only one peak in the evening hours was observed in subgroup of patients with previous congestive heart failure and non-STEMI. Subgroup of patients with previous angina and previous AMI exhibited no discernible peaks. The distribution of time of onset within the 4 intervals was not uniform and was statistically significant different only for patients with beta-blockers therapy at time of onset ($p = 0,0015$), nonsmokers ($p = 0,0292$) and patients with non-STEMI ($p = 0,0418$).

Conclusion: Analyzed these subgroups of patients probably appear to modify characteristic circadian variation of infarction onset, expressed a higher evening peak, respectively to the previous CABG with adverse consequences for central nervous system functioning.

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Alcohol consumption and acute coronary syndrome in patients with previous revascularization: a substudy of the POP study

The Belgrade Cardiology Club

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The prognosis of patients (pts) after coronary artery bypass surgery (CABS) has been noted in many studies, but there were no studies which analyzed prognosis of light-to-moderate alcohol consumers in patients with acute myocardial infarction (AMI) after prior CABS. This substudy of POP study (PostOperative Prognosis-study), aimed to evaluating the influence of light-to-moderate alcohol consumption on the AMI expression in patients after prior CABS.

Methods: The effect of light-to-moderate alcohol consumption was assessed in 360 pts with AMI after prior CABS (post bypass group) and control group of 620 pts with AMI and without prior CABS, who were followed from April 1988 to January 2016.

Results: At baseline post bypass group was slightly younger ($p=0.0486$), with more men ($p=0.4675$) and with more pts with previous angina ($p=0.0493$) and previous AMI ($p=0.0364$). Control group of pts had more hyperlipidemia ($p=0.0465$). Other baselines characteristics were similar in both groups of patients. After adjustment for cardiovascular risk factors by logistic regression, alcohol consumption displayed a protective effect against AMI in post bypass group of patients, but not in control group of pts.

Conclusions: The effect of light-to-moderate alcohol consumption is associated with decreasing risk of AMI in pts with prior CABS, but not in pts without prior CABS. This effect of light-to-moderate alcohol consumption is probably because of decreasing of cholesterol, triglycerides and fibrinogen, as well as physiological changes in coronary arteries and decreasing in sympathetic nervous system activity.

P450

Thrombolysis in acute myocardial infarction after previous revascularization: 28-year experience of the POP study

The Belgrade Cardiology Club

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There is a lack of data about patients (pts) who received thrombolytic therapy (TT) in acute myocardial infarction (AMI) after previous coronary artery bypass surgery (CABS). The primary aim of the POP study (PostOperative Prognosis study) is analyze, follow-up and making scores using clinical, angiographic, and procedural variables available 30-day after intervention. The aim of this substudy was to analyze influence of TT after 25 years of follow-up period in pts with AMI after previous CABS who were randomized to either treatment with TT or conventional therapy.

Methods: From April 1988 – January 2016 we studied 1124 pts, who developed AMI after CABS, mean age 61.2 ± 4.0 years, mainly men (82.8%). The pts with early perioperative AMI were excluded from the study. The average time interval from CABS to AMI was 94.2 ± 10.0 months. The average number of grafts was 3.2 grafts/pts. All pts were divided in two groups: group I - 447/1124 (39.8%) allocated to TT and group II - 677/1124 (60.2%) conventionally treated pts.

Results: Reinfarction and repeated CABS were more frequently after TT. On 5-year follow-up periods, after 25-year approximately 28% of the pts was free of subsequent cardiac events. The cumulative 1, 5, 10, 15, 20 and 25-year survival rates were 93%, 80%, 67%, 51%, 50% and 48% in pts treated with TT and 86%, 70%, 54%, 44%, 41% and 40% in the control group, respectively ($p<0.05$). Significant determinants of mortality in multivariate proportional hazards analysis were elderly age, diabetes, previous AMI, indicators of impaired residual left ventricular function and multivessel disease.

Conclusion: Improved survival after TT is maintained beyond the first 25 years. Age, diabetes, previous AMI, left ventricular function and multivessel disease were independent predictors for long-term mortality.

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Restless legs syndrome as a prediction factor for acute coronary syndrome expression

The Belgrade Cardiology Club

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It is well known, that the restless legs syndrome (RLS) is a disorder of the part of the nervous system that causes an urge to move the legs. Because it usually interferes with sleep, it also is considered a sleep disorder. People with restless legs syndrome have uncomfortable sensations in their legs and an irresistible urge to move their legs to relieve the sensations. The sensations are usually worse at rest, especially when lying or sitting. The symptoms are generally worse in the evening and at night. For some people, symptoms may cause severe nightly sleep disruption that can significantly impair their quality of life. It is well known, too, that sleep disorders influenced acute coronary syndrome (ACS) expression. The aim of this study was to analyze can RLS be first prognostic sign of ACS expression in patients with first episode of ACS.

Methods: From January 2013, we analyzed 460 consecutive patients (pts) with first episode of ACS. All pts were divided in two groups: Group RLS - 186 pts with RLS with first episode of ACS and Group non-RLS - 274 pts without RLS and with first episode of ACS (control group of pts).

Results: At baseline Group RLS was slightly younger ($p=0.0524$), with more men ($p=0.5816$). Control group of pts had slightly more hyperlipidemia ($p=0.0542$). Other baselines characteristics were similar in both groups of patients. There was no differences between groups in anxiety score ($r=0.12$, $p=0.12$). After adjustment for

cardiovascular risk factors by logistic regression, RLS displayed as only one prognostic sign of ACS expression in patients with first episode of ACS ($p=0.0318$).

Conclusion: This study provides support for use of RLS as one of the first prognostic sign of ACS expression in patients with first episode of ACS.

Acute coronary syndrome - ST-elevation myocardial infarction

P452

Does clinical characteristics of patients with STEMI undergoing primary percutaneous coronary intervention influence the system delays?

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Introduction and Objectives: Preventing delays in patients with STEMI who undergo primary percutaneous coronary intervention (PCI) is essential to prevent complications and improve prognosis. This emphasizes the importance of identify associated factors. The 'system delay' (SD) is defined as the time from first medical contact (FMC) to reperfusion therapy, including therefore the delay attributable to the diagnosis and the transfer. It is an indicator of quality care likely to be modified from the organization planning system, but we do not know if patient's clinical characteristics could influence in this delay, especially in time diagnosing. Our objective was to assess the existence of associated clinical factors to system delay.

Table 1. Table 1. Demographic, clinical and proce

| | |
|--|-----------------------|
| Hypertension / Diabetes mellitus / Dyslipidaemia | 60,4% / 26,3% / 37,2% |
| Smoking | 41,9% |
| Nocturnal angina | 23,1% |
| Femoral Access | 84,5% |
| Multivessel disease | 50,7% |
| Thrombus aspiration | 41,7% |
| Left ventricle ejection fraction (mean) | 48,5% |
| Patient delay (min) (mean \pm SD) | 119,7 \pm 137,6 |
| Total ischemic time (min) (mean \pm SD) | 232,5 \pm 158 |

Methods: We conducted a prospective, observational study of a cohort of 1577 consecutive patients ($64 \pm 13,7$ years, 77,5 % male) with STEMI who underwent primary PCI at our University Hospital from March 2006 to April 2016. We considered system delay as a total delay from FMC to primary PCI > 120 minutes. We analyzed clinical, procedure and time related variables.

Results: Clinical, angiographic and procedure characteristics are presented in Table 1. The median SD time was 109 minutes (5-552 minutes), being < 120 minutes in 60.5% of the cases. Although middle-aged patients (50-70 years), diabetic and non-smokers with nocturnal angina had higher SD, no significant differences were found. Past medical history of coronary artery disease (CAD) was significant associated with lower SD ($p = 0.01$).

Conclusions: Although system delays have been reduced since 'Code STEMI' protocols were established, target SD < 120 minutes was not achieved in 39.5% of the cases. Patients with prior CAD had lower SD. A non-significant trend to greater SD in middle age (50-70 years), diabetic and non-smokers patients who suffered from angina at night was observed.

P453

Effects of admission C-reactive protein (CRP) blood levels on outcome: Comparison of fibrinolysis and primary percutaneous coronary intervention

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Increased C-reactive protein (CRP) blood levels are related to the inflammatory response, atherosclerosis and outcome after ST-elevation myocardial infarction (STEMI). Treatment of patients with acute STEMI improved during the last decade and nowadays primary percutaneous coronary intervention (PPCI) is obligatory.

Aim: To test the hypothesis that PPCI eliminated the adverse outcome effects of admission CRP blood levels in patients with acute STEMI.

Methods: 243 patients, 123 presenting with acute anterior STEMI treated by PPCI were compared to 118 patients treated by fibrinolysis.

Results: In the fibrinolysis group, higher CRP levels on admission were associated with higher Killip class, ($p < 0.01$), lower left ventricular ejection fraction (EF), ($p < 0.01$), more frequent 3-vessel coronary artery disease ($p < 0.05$) and more frequent in-hospital complications ($p < 0.001$). In the PPCI group, TIMI and myocardial blush grades, ST-Elevation resolution, left anterior descending coronary artery (LAD) diastolic velocity parameters and deceleration

times, myocardial biomarker maximal blood levels and LV ejection fraction were not affected by the blood levels of CRP on admission. Larger increase in CRP levels and maximal CRP after hospitalization were related to worse myocardial blush, shorter LAD diastolic deceleration time and lower LV ejection fraction at admission and discharge. Maximal creatine phosphokinase blood levels, tended to be higher in those with higher maximal CRP levels.

Conclusions: Admission CRP levels predicted outcome in MI patients treated by fibrinolysis, however, outcome after PPCI and the novel adjunctive therapies was not affected by admission CRP levels in patients with acute STEMI.

P454

Effects of smoking on coronary flow, microcirculation and left ventricular systolic function in patients undergoing primary coronary intervention

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In the thrombolytic era, myocardial infarction in cigarette smokers was associated with better 6 months outcome compared to nonsmokers. Objective: To evaluate the effects cigarette smoking on coronary artery flow, myocardial perfusion, and left ventricular systolic function in patients with anterior myocardial infarction with ST-segment elevation (STEMI) treated by primary percutaneous coronary intervention (PPCI).

Methods: Ninety nine patients, 66 smokers, with anterior STEMI treated with PPCI were studied. Angiographic coronary artery flow TIMI grades, myocardial blush grades (MBG) before and after PPCI, ST-segment elevation resolution, maximal troponin I and creatine phosphokinase blood levels, left ventricular echocardiographic systolic function as well as left anterior descending coronary artery (LAD) velocity parameters at admission and at discharge were evaluated.

Results: Smokers and non-smokers were treated similarly. In smokers, age was significantly younger, 54±10 compared to nonsmokers, 71.8±10 years, p<0.05, and had lower prevalence of women, 13.6% compared to 36.6%. TIMI and MBG before and after PPCI were similar between smokers and nonsmokers. Smokers had lower prevalence of complete ST-elevation resolution, 33% compared to 50% in nonsmokers. Diastolic LAD velocity and integral were lower in smokers, P<0.05. Maximal biomarker blood levels as well as LV systolic function at admission and on discharge were similar.

Conclusion: Cigarette smokers with anterior STEMI treated by PPCI, were younger with lower prevalence of women and of complete ST elevation resolution, and

had lower LAD diastolic velocity and integral late after PPCI. However, angiographic parameters and LV systolic function parameters were similar.

P455

Elderly patients with st segment elevation treated with primary PCI

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Introduction: Percutaneous coronary intervention (PCI) is a well-established therapy for ST segment elevation myocardial infarction. However, for elderly patients, especially aged more than 90 years, conservative treatment is often considered as age is an independent predictor for death in AMI and for fear of age related complications. However, recent evidences demonstrate the crucial role and the beneficial effect of successful PCI on mortality also in elderly patients with STEMI despite an higher incidence of bleeding complications, renal insufficiency, larger number of diseased coronary vessels, elevated rate of PCI failure, and mortality.

The aim of this study is to report the experience of our Centre in the revascularization and management of elderly patients admitted with ST segment elevation.

Material and methods: All patients older than 80 years old admitted to the Coronary Care Unit with ST segment elevation myocardial infarction diagnosis were retrospectively evaluated from 2010. Patients were divided in two groups according to age (A: 80-85; B:>85) and evaluated for traditional risk factors, STEMI presentation (according to TIMI risk score, Killip), angiographic findings (diseased vessels), PCI procedure (culprit vs. complete revascularization; number of stents) and AMI related complications, hospital stay and mortality.

Results: 62 patients were considered for this retrospective study. Among them 33 were less than 85 years old. There were no differences in terms of Killip presentation, although TIMI risk score was higher in patients older than 85 (p 0.02). There were no differences in terms of in-hospital mortality among the 2 groups, although older patients were more prone to develop complications (p0.04) (i.e. arrhythmias, mechanical, bleeding and AKI). There were no differences in the 2 groups in terms of recovery of left ventricular function. No differences were documented in term of hospital stay.

Conclusion: Our study confirm the beneficial effect of successful PCI on in hospital mortality also in elderly patients with STEMI. However a careful selection of patients, according to the real life expectancy and comorbidities, need to be done before revascularization.

P456

Gender differences on cardiovascular risk perception and health-care seeking behaviour among patients surviving myocardial infarction

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Background: Many studies have shown that women fared worse than men when hospitalised for acute coronary syndrome. Gender difference on risk perception, awareness, and health-care seeking behaviour might contribute to this worse outcome, especially in our country, a developing nation with low level of education in women.

Purpose: We aim to investigate gender differences on cardiovascular health perception and health care seeking behavior among patients admitted with ST elevation myocardial infarction (STEMI).

Methods: The study was conducted in our Cardiovascular Center. We collected data from consecutive patients with STEMI during November 2014-June 2015. Data collected by questionnaire-guided interview before the patient was discharged.

Results: From 448 STEMI patients discharged alive during the study period, 377 (84.2%) were male and 71 (15.8%) were female. Women were older (mean age 60 and 57 years old, $p < 0.001$) and presented with more coronary risk factors (69.7% women and 48.1% men with > 3 risk factors, $p < 0.001$). Chest pain was the main chief complaints in both genders (86.3% in women and 83.7% in men, $p = 0.783$). Women presented to our hospital much later compared to men (240 min and 180 min, respectively, $p = 0.005$). There were significant differences in socio-economic status; only 64.9% women compared with 84.4% men ($p < 0.001$) graduated senior high school or higher, and women also reported lower income than men. Prior knowledge on signs and symptoms of heart attack were low in both genders; only 26.8% women and 41.4% of men reported that they had had received some information on this subject. Only 11.3% women compared to 31.8% men suspected their initial symptoms to be cardiac in origin ($p = 0.001$). Both genders thought that men are more likely to die out of heart attack than women (80.3% women and 76.4% men, $p = 0.57$) and that cancer is the main cause of death in women (53.5% women and 57.8% men, $p = 0.46$). More men stated their ability to make an independent decision for emergency medical procedures like primary percutaneous coronary intervention or coronary artery bypass grafting without waiting for approval from another family member, although this did not reach statistical significance (32.4% in men and 21.1% women, $p = 0.08$).

Conclusion: Female STEMI patients in our study had lower level of education, had lower income, and showed more

pronounced lack of awareness and prior knowledge on signs, symptoms and risks of heart attack than men, and this might contribute to the delayed admission to healthcare facilities.

P457

High pulse wave velocity is associated with a less effective recovery of left ventricular systolic function after acute myocardial infarction

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Objective: Left ventricular (LV) remodeling may occur following myocardial infarction. Estimate the likelihood of remodeling from the state of the infarcted may with speckle tracking echocardiography (STE). Research powerful predictors of outcomes in patients after myocardial infarction (MI) continue now. Increased pulse wave velocity (PWV), a non-invasive index of arterial stiffness, predicts cardiovascular event in different clinical conditions, but no study on the relationship between PWV and improvement of LV ejection function (EF) in patients with acute MI.

Methods: 93 patients with ACS and primary percutaneous coronary intervention (PCI) (70% male, age 61.5 ± 10.1 years ($M \pm SD$), 57 (61,3%) with ST-Elevation Myocardial Infarction (STEMI), smokers 25%, arterial hypertension 20%, blood pressure $129 \pm 6/82 \pm 7$ mmHg, left ventricular ejection fraction (LVEF) $47.4 \pm 4.3\%$. Arterial stiffness was assessed using applanation tonometry. Global longitudinal peak strain (GLPS) by STE was calculated in a 16-segment LV model as the average segmental value on the basis of three apical imaging planes. Mann-Whitney and Spearman tests were considered significant if $p < 0.05$.

Results: Baseline GLPS $> 18\%$ was not detected in any patient. GLPS increased from 14.3 ± 2.3 to $15.6 \pm 2.4\%$, $p < 0.04$ in 4 weeks after PCI. GLPS normalized ($> 18\%$) in 24 (25%) patients. Achieved GLPS differed significantly in patients without vs with normalization (14.5 ± 1.8 vs $18.6 \pm 0.3\%$, $p < 0.02$). Mean carotid-femoral pulse wave velocity (PWV) decreased from 11.5 ± 1.9 to $10.1 \pm 2.3\%$, $p < 0.05$. Patients without vs with GLPS normalization were older (63.2 ± 9.1 vs 56.6 ± 11.4 years, $p < 0.04$), more frequent male (71 vs 33%, $\chi^2 = 7.8$; $p < 0.01$), smokers (83 vs 50%, $\chi^2 = 6.5$; $p < 0.05$), STEMI (60 vs 67%, $\chi^2 = 4.6$; $p < 0.03$), had higher diastolic BP (84 ± 7 vs 80 ± 8 mmHg, $p < 0.02$), higher baseline PWV (12.9 ± 6.9 vs 9.9 ± 2.1 m/s, $p < 0.03$). EF increased non-significant between groups. A significant correlation was found between decreased Δ speckle tracking and higher PWV ($r = -0.21$, $p < 0.05$).

Conclusions: Arterial stiffening may result in a less effective recovery of LV function after acute MI. Measuring PWV values after acute MI important information could be obtained about LV function recovery.

P458

Influence of acute-phase systemic inflammatory status on no-reflow phenomenon after primary percutaneous coronary intervention (PPCI) in STEMI patients: a key role of serum albumin

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Purpose: Coronary no-reflow phenomenon in ST-segment elevation acute myocardial infarction (STEMI) is associated with a poor clinical prognosis. Its physiopathological mechanisms are not fully elucidated, although they seem closely related to cellular effectors and soluble mediators involved in the systemic acute-phase inflammation.

Objectives: To evaluate the predictive role of several clinical and acute-phase inflammation parameters, collected at the moment of hospital admission, on TIMI flow grade after PPCI in a wide population of STEMI patients.

Methods: We studied retrospectively 1056 consecutive STEMI patients, admitted to our Cardiology Unit from 2008 to 2013, and undergoing primary PCI (male 74.43%, mean age 63.61±11.95 SD). At the admission, the enrolled subjects underwent a routine laboratory evaluation, including the measurement of total and differential leukocyte count, platelet count, neutrophil to lymphocyte ratio (NLR), platelet to lymphocyte ratio (PLR), fibrinogen and serum albumin levels. A door-to-balloon (DTB) time was also collected for each patient. No-reflow was defined as TIMI flow grade ≤ 3 and myocardial blush grade < 2 at the end of primary PCI.

Results: on univariable logistic regression analysis, normalized for age and sex, we observed that higher admission levels of fibrinogen were significantly associated with no-reflow ($P=0.0184$), while a better post-procedural reperfusion was associated with higher values of serum albumin ($P=0.0005$), hemoglobin ($P=0.0054$) and hematocrit ($P=0.0151$). After multivariable logistic regression the serum albumin level remained the only significant independent predictor ($P=0.0320$) of a better post-procedural reperfusion.

Conclusions: A higher admission level of serum albumin represents an independent predictor of protection from the no-reflow phenomenon in STEMI patients after primary PCI.

P459

Influence of the obesity on clinical outcomes in the young patients with acute ST-elevation myocardial infarction

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Background: Previous reports have demonstrated that obese patients may have better clinical outcomes after percutaneous coronary intervention than non-obese patients; however this 'obesity paradox' remains still unknown in young patients with STEMI.

Methods: A total of 541 young patients (≤ 45 year old) with acute STEMI undergoing urgent PCI were enrolled in the Korea Acute Myocardial Infarction Registry between January 2008 and Aug 2013. These patients were categorized according to their body mass index as non-obese ($BMI < 27.5$, $N = 73$), obese ($27.5 \leq BMI < 32.5$, $N = 183$) and morbidly obese ($BMI \geq 32.5$, $N = 285$). At follow-up, the major adverse cardiac events (MACE) were compared among the three groups.

Results: Among the three groups, age, sex, cardiovascular risk factors and left ventricular ejection fraction were similar and number of infarct-related artery or stenotic coronary artery was also similar. The length of stay in the coronary care unit was shorter among the obese and morbidly obese group compared with that of the non-obese group. In-hospital death and clinical outcomes among the three groups were not significantly different. At follow-up, the one-year MACE-free survival rate of those groups was not significantly different (93% in non-obese, 94% in obese and 95% in morbidly obese).

Conclusion: In young patients with STEMI undergoing urgent PCI, influence of obesity on clinical outcomes was not observed as significant in the young Korean patients.

P460

Ivabradine in patients with acute coronary syndrome and left ventricle ejection fraction $< 40\%$ - prognosis to 1 year

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Introduction: Ivabradine is a negative chronotropic medication used in patients with heart failure (HF) and depressed left ventricular ejection fraction (LVEF). After an acute coronary syndrome (ACS), many patients with decreased LVEF have discharge with ivabradine.

Purpose: Evaluate the prognostic impact of the ivabradine use in patients with ACS and LVEF $<40\%$ evaluating the hospitalization and mortality rates in the follow-up of 1 year.

Methods: A retrospective, descriptive and correlational study was carried out, encompassing all patients admitted for ACS in a Cardiology Service of 1 October 2010 to 31 August 2014. The patients with LVEF $<40\%$ were selected and divided into 2 groups: one group of patients with ivabradine in discharge and another with discharge without ivabradine. Baseline characteristics, data on admission and therapeutic strategies were evaluated. Follow-up was performed by telephone

contact done by cardiologist. Univariate and multivariate analysis of mortality and hospitalization in 1-year follow-up was performed. For statistical analysis we used the SPSS 20.0.

Results: In study period were admitted 2818 patients with ACS, 343 (12.2%) with LVEF<40%, of these 23 (6.7%) had discharge with ivabradine. When compared to patients with LVEF<40% and discharge without ivabradine, patients with ivabradine use had more often medical history of: angina pectoris (70%vs42%, $p=0.01$), myocardial infarction (MI) (70%vs42% $p=0.01$) and percutaneous coronary intervention (PCI) (61%vs25%, $p<0.01$). There were no significant differences between groups regarding age, gender, LVEF, heart rate and history of HF.

The patients with discharge under ivabradine use were submitted less frequently to invasive treatment: coronary angiography (26%vs52%, $p=0.01$) and PCI (22%vs44%, $p=0.03$) and more often medicated with nitrates (65%vs39%, $p=0.01$), calcium antagonists (22%vs3%, $p<0.01$), angiotensin II receptor antagonists (13%vs2%, $p=0.02$) and insulin (22%vs6%, $p=0.01$).

In 1-year follow-up patients with LVEF<40% and ivabradine use had a higher hospitalization rate (79%vs39%, $p<0.01$). There were no differences in mortality.

Conclusion: In the group of patients with ACS and LVEF<40%, those who had discharged with ivabradine:

- 1 – Had more often history of coronary artery disease, in particular, angina pectoris, MI and PCI.
- 2 – Had more anti-ischaemic drugs prescribed.
- 3 – Were submitted less often to invasive treatment.
- 4 – In 1-year follow-up had higher hospitalization rate but without differences in mortality rate.

P461

Left ventricular remodeling in post myocardial infarction: effects of colchicine and echocardiographic predictors factors

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Introduction: Left ventricular remodeling is a major cause of heart failure and mortality. Its complex pathogenesis is influenced by many factors including inflammation. Colchicine is an anti-inflammatory drug with potential interest in the post-infarction remodeling as recently highlighted. Imaging methods such as echocardiography and MRI are accurate tools to evaluate remodeling.

Purpose: The study COLIN aims to assess the impact of colchicine in post myocardial infarction on Peak of CRP (NCT02363725, submitted). The main objective of our study is to investigate the impact of colchicine treatment on

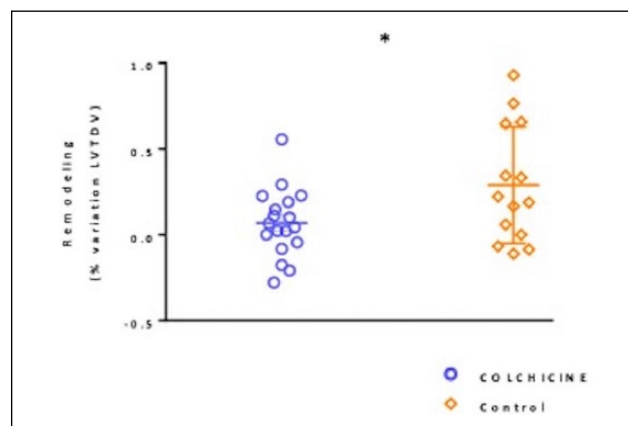
ventricular remodeling and identify its predictive imaging parameters.

Methods: Between December 2014 and May 2015, all patients with a STEMI with a coronary occlusion and successfully revascularized with primary angioplasty were included. The exclusion criteria were the presence of cardiogenic shock, severe renal impairment (creatinine clearance <30mL/min), or intolerance to colchicine. They were randomized 1: 1 either in the colchicine group and optimal treatment or in the optimal treatment group alone. Treatment with colchicine was administered on the first day of the STEMI, for a period of 1 month at 1mg dose per day. The left ventricular remodeling was defined as the increase in left ventricular telediastolic volume (LVTDV) greater than 20% at 1 month (echocardiography)

Results: 44 patients were included in the study, 23 in the colchicine group associated with optimal treatment and 21 in the optimal treatment group alone. Remodeling was observed in 12 patients. The percentage of necrosis is similar (independently of the remodeling): in 4 patients of colchicine group against 8 of the optimal treatment group alone (Fig 1). The percentage of variation in LVEDV is 6,8% (95% CI -3,1 - 16,6 ; $p 0,3$) for the colchicine group and 28,9% (95% CI 9,3 - 48,5 ; $p 0,4$) for the control group (Figure 1). The LVEDV was correlated to the remodeling, negatively at baseline (coefficient -0.43; $p <0.05$), and positively at 1 month (coefficient 0.43; $p <0.05$). LVEF was negatively correlated remodeling at baseline (coefficient -0.33; $p 0.06$) and at 1 month (coefficient -0.40; $p <0.05$). Left ventricular global longitudinal strain was correlated with the remodeling: at baseline (coefficient 0.24; Not significant) and at 1 month (0.34 coefficient; $p 0.05$). We did not find any correlation between the No Reflow and remodeling. It was the same if one is interested in setting LV (Left ventricular strain; in aortic ITV) or right ventricular parameters (TAPSE, S wave, Right ventricular strain).

Conclusion: 1/Colchicine appears to be an interesting therapeutic to limit the left ventricular remodeling in post infarction.

2/LVEF, volumes (EDV) and strain VG are predictive markers of left ventricular remodeling in post myocardial infarction, showing no superiority of one parameter against another.



P462

Low dose ezetimibe / atorvastatin combination in acute ST elevation myocardial infarction

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Statins are recommended for all patients with acute coronary syndromes independently of baseline lipids level. Some patients do not tolerate statin therapy early after acute coronary syndrome. The aim of the study was to examine the safety and efficacy of combined low-dose lipid-lowering therapy compared with statin monotherapy in patients with acute myocardial infarction (AMI).

A total of 70 patients with AMI admitted within the first 24 hours (mean 5.2±1.0 hours) of symptoms development were randomized into two groups: 1-st — 35 patients receiving low-dose combination of atorvastatin 10 mg/ ezetimibe 10 mg p/day (A10/E10), 2-nd — 35 patients treated with atorvastatin 40 mg p/day (A40) on the background of basic therapy. Groups did not differ in regards of baseline, demographic, clinical characteristics, reperfusion and initial treatment. The treatment period was 90 days. Lipids, C-reactive protein, and endothelium dependent reactive hyperemia were analyzed in dynamics.

Low dose lipid-lowering combination was safe and well-tolerated. It was similar to atorvastatin monotherapy with cholesterol-lowering and antiinflammatory efficacy. Significantly greater decrease of serum triglyceride (TG) levels in patients treated with combined therapy was noted (35 and 19.5% in the A10/E10 and A40, respectively; $p<0.05$). A10/E10 treatment was also associated with better endothelial function after 10 and 90 days of treatment (relative increase of brachial artery diameter after 90 days of treatment was 12.19±1.09% vs 9.25±1.16% in A10/E10 and A40 groups, respectively; $p<0.05$).

Low-dose A10/E10 combination has the same lipid-lowering and antiinflammatory effects, but more pronounced influence on endothelial function as compared to atorvastatin 40 mg in STEMI pts.

P463

No sex disparities of reperfusion therapy for STEMI patients admitted to a tertiary care academic hospital

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Aims: Prior studies have shown that women with ST-elevation myocardial infarction (STEMI) are less likely to receive newer evidence-based therapies of reperfusion therapy compared with men. We evaluated the characteristics of STEMI patients in order to determine whether there are disparities in the use of evidence-based therapies for reperfusion strategies between women and men who were admitted to a tertiary care academic teaching hospital and hosting a regional STEMI networking.

Methods and results: A total of 1,636 STEMI patients who underwent primary PCI between January 2008 and May 2015 were analyzed. Descriptive analysis was performed and multivariable survival analysis was used to estimate the relationship between gender and all-cause mortality at 1-year using women as the reference. Of 1,636 patients, women accounted for 13% (N=214). The use of dual anti platelet therapy within 24 hours was 97% and 95% in women and men, respectively. Compared with men, there was a higher proportion of women with TIMI risk score >4 (53% vs. 32%, $p<0.001$), and higher proportion with STEMI onset 6-12 h (48% vs. 36%, $p<0.001$). The proportion of patients with door-to-device time ≤90 minutes and achievement of post-procedural TIMI 2/3 flow was similar between women and men (41% vs. 45% and 98% vs. 99%, respectively). After adjustment for potential confounders, there was no significant difference between men and women with respect to in-hospital mortality (adjusted hazard ratio 1.32; 95% CI 0.65-2.66, $p=0.43$). Of the 1,123 STEMI patients (149 women) who were followed at 1 year, one-year mortality was similar between women and men (14% vs. 11%; adjusted hazard ratio 1.20; 95% CI 0.71-2.03, $p=0.48$).

Conclusion: There were no disparities for evidence-based treatment of STEMI between women and men who were admitted to a tertiary care academic teaching hospital hosting a regional STEMI network.

Table 1.

| | Hazard ratio | 95% confidence interval | P-Value |
|--------------------|--------------|-------------------------|---------|
| Women | 1.20 | 0.71-2.03 | 0.48 |
| Diabetes mellitus | 1.55 | 1.05-2.31 | 0.02 |
| Hypertension | 0.74 | 0.51-1.10 | 0.14 |
| Anterior MI | 0.87 | 0.59-1.28 | 0.49 |
| TIMI risk score >4 | 1.80 | 1.23-2.65 | 0.003 |

Hazard ratio of 1-year mortality in all patients who underwent primary PCI (N=1123).

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Outcome of primary PCI in older patients

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Introduction: STEMI is a leading cause of mortality. Several factors are associated with poor outcome. A major factor in increasing mortality and morbidity is increasing age.

In this brief report we highlight the mortality and the characteristics of elderly patients above 75 years of age, who presented with STEMI to our PCI center.

Methods: A retrospective review of clinical records of all patients who presented to PCI center in University Hospital Limerick in the period from January 2013 to December 2014. Patients were allocated into two groups according to their age at the time of presentation with group 1 with patients who were 75 year-old or older and group 2 with patients who were younger than 75 year-old.

Results: Total of 317 confirmed STEMI patients were reviewed. Mean age is 65 years. 27.13% were females. Patients were divided into two groups according to age, group 1, ≥ 75 years old (27.6%), and group 2 with patients younger than 75 years of age.

In hospital mortality was 22.73% vs 2.62% ($P < 0.000$) up to 26.19% vs 4.67% 1-year mortality. The median length of stay (LOS) was 5 days in the first group and 4 days in the second group ($P = 0.45$).

Older patients tend to have multivessel disease 72.15% vs 53.95% ($P = 0.005$), no-reflow 35.90% vs 19.74% ($P = 0.004$), more medical treatment 18.18% vs 1.31% because of different contraindications to PPCI ($P = 0.000$), and lower mean ejection fraction 38% vs 44%, with 48.86% vs 34.06% of patients with low EF (less than 40%) ($P = 0.015$). Although not statistically significant, there was a signal of increased IABP use, LAD occlusion and recurrent myocardial infarction.

There was similar rates of revascularisation, readmission, and new heart failure.

Age above 75 year-old, was independent predictor of mortality beyond the use of medical treatment alone, multivessel disease, sex, LAD pathology and no-reflow.

Conclusion: Age above 75 years was an independent predictor of in-hospital mortality and 1 year mortality. Older patients also have higher rates of no-reflow, reduced EF, multivessel disease and longer hospital stay.

P465

Prevention of acute kidney injury in patients with ST-elevation myocardial infarction undergoing PCI (comparison of atorvastatin and rosuvastatin in 'case-match-control' study)

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Aims: Widespread use of Roentgen contrast media (RCM) infusion during percutaneous coronary interventions (PCI) leads to increase in rate of occurrence of acute kidney injury (AKI) in patients with ST-elevation myocardial infarction (STEMI). Although this condition tends to significantly worsen the prognosis of such patients, all the methods of AKI prevention are just on a development stage. Early use of statins is a promising approach to diminish the harmful action of RCM, but the effectiveness of different statins in this case is a point of investigation.

Methods and results: The retrospective cohort of 264 STEMI was studied. All the patients underwent the PCI (angiography alone, or followed by angioplasty/stenting) and have the serial serum creatinine data. AKI (determined as rise in serum creatinine $\geq 44 \mu\text{mol/l}$ or $\geq 25\%$ rise in creatinine over baseline) was present in 45 cases (17%). Then all the cases were brought to the automated case-match-control pairing algorithm. Two matched groups of patients with early statin treatment were elected: 23 patients were treated with rosuvastatin (R-group) and 23 patients were treated with atorvastatin (A-group). Cases were matched by 8 clinical criteria, including: age, gender, weight, baseline creatinine level, prescription of drugs, which could affect serum creatinine levels (ACE inhibitors, intestinal adsorbents, trimetazidine, quercetin). Also groups were equal in terms of statin dosage, diabetes mellitus history, rate of left ventricular heart failure (LVHF) at baseline. Patients with severe congestive heart failure, nephropathy, anemia and systemic hypotension/shock at baseline were excluded. Mean baseline serum creatinine level was $92 \mu\text{mol/l}$ in both groups. Incremental dynamics in serum creatinine level was observed in 30.4% and 47.8% of R-group and A-group, respectively (mean $16.1 \pm 3.2\%$ vs $31.5 \pm 3.5\%$ of increase, respectively, $p < 0.05$). Rate of AKI incidence was 4.3% in R-group and 26.1% in A-group ($p < 0.05$). The cumulative rate of 2-10 day STEMI-related adverse events (recurrent ischemia/MI, persistent LVHF, acute aneurysm of LV, late ventricular arrhythmias) and hemorrhagic events was 8.7% in R-group and 43.5% in A-group ($p < 0.01$).

Conclusion: Although recent data shows the preventive effect of contemporary statin treatment on AKI development in STEMI patients after coronary angiography, our data

suggest that different statins may not have the same impact in this course. Data about superiority of rosuvastatin over atorvastatin in prevention of AKI and related worsening of STEMI clinical course requires further investigation with a larger number of patients in a prospective trial.

P466

Primary percutaneous coronary intervention in women. independent risk factors for death and major events after immediate and medium-term follow-up

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Background: Coronary heart disease is the leading cause of mortality and morbidity. A higher mortality risk for women with acute ST-elevation myocardial infarction has been a common finding in the past, even after acute percutaneous transluminal coronary angioplasty (PTCA). Prior studies have reported worse results after PTCA in women than in men. However, recent data suggest that this difference is less marked. To determine gender-related differences and risk factors for death and major events, both in-hospital and at six-month follow-up, of patients that have been admitted within the first twelve hours of ST-segment elevation acute myocardial infarction (AMI) and primary PTCA in order to set out whether there are gender differences in a real-world contemporary treatment and outcome.

Methods: For two consecutive years, between July 1998 and December 2000, 199 consecutive patients were enrolled in the study, with ST-segment elevation AMI and primary PTCA without cardiogenic shock. The immediate outcome, in-hospital and six-month follow-up were studied. Multivariate Cox analysis were performed to identify independent predictors of death and major events.

Results: Clinical characteristics were similar in both groups, except that women were older than men (67.04 ± 11.53 x 59.70 ± 10.88 , $p < 0.0001$). In-hospital mortality was higher among women (9.1% x 1.5%, $p = 0.0171$), as was the incidence of major events (12.1% x 3.0%, $p = 0.0026$). The difference in mortality rates remained the same at six months (12.1% x 1.5%, $p = 0.0026$). The independent predictors of death in multivariate analysis were: female gender and age >80 years old. Independent predictors of major events and/or angina were: multivessel disease and severe ventricular dysfunction.

Conclusion: After ST-segment elevation AMI and primary PTCA, the independent predictors of mortality throughout the follow-up were female gender and age >80 years, in both in-hospital and six months follow-up

| | WOMEN | MEN | P |
|-------------------------|--------------|-------------|----------|
| AGE | 67.04 ±11.53 | 59.70±10.88 | P<0.0001 |
| IN-HOSPITAL MORTALITY | 9.1% | 1.5% | P=0.0171 |
| MAJOR EVENTS | 12.1% | 3.0% | P=0.0026 |
| MORTALITY AT SIX MONTHS | 12.1% | 1.5% | P=0.0026 |

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Prognostic impact of lipoprotein(a) on adverse vascular events in patients with acute myocardial infarction

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Background: Lipoprotein(a) [Lp(a)], which is genetically determined, has been reported as an independent risk factor for atherosclerotic vascular disease. However, the prognostic impact of Lp(a) for adverse events in patients with coronary artery disease has not been fully elucidated.

Purpose: We investigate the prognostic value of Lp(a) for secondary vascular events in patients after acute myocardial infarction.

Methods: This 3-year observational study consisted of a total of 342 patients with ST-elevated myocardial infarction (STEMI), whose Lp(a) levels were measured within 24hrs after primary percutaneous coronary intervention. We divided enrolled patients into 2 groups according to Lp(a) level and investigated the association between Lp(a) and the incidence of major adverse cardiac and cerebrovascular events (MACCE) for 3 years. MACCE was defined as a composite of cardiac death, acute coronary syndrome at de novo lesion, and ischemic stroke.

Results: A Kaplan-Meier analysis demonstrated that patients with higher Lp(a) levels had higher incidence of MACCE than those with lower Lp(a) levels (Log-rank $P=0.015$). A multivariate cox regression analysis revealed that Lp(a) levels were independently correlated with the occurrence of MACCE after adjusting for other classical risk factors of atherosclerotic vascular diseases (hazard ratio 1.019, 95% confidence interval: 1.007 – 1.030, $P = 0.001$). The net reclassification improvement afforded by Lp(a) was 31.8% ($P = 0.021$).

Conclusions: In patients with STEMI, Lp(a) levels independently predict secondary vascular events in patients with STEMI. Lp(a) might provide useful information for the secondary prevention strategies in patients with myocardial infarction.

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Right ventricular dysfunction in right coronary artery infarction: a primary PCI registry analysis

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Aims: Right ventricular involvement in inferior MI is associated with an increased risk of death, cardiogenic shock, arrhythmia. Primary PCI leads to lower mortality rates than thrombolytic therapy in patients with RVMI, benefit more pronounced in RV failure and in cardiogenic shock. Few studies addressed RV dysfunction in the primary PCI era. Our aim was to assess the prognostic significance of RV dysfunction in right coronary artery MI.

Methods: We analyzed 807 consecutive patients enrolled in the Trieste pPCI-Registry from January 2011 to June 2015 (median follow up 29 months, IQR 29 months). To identify the specific role of RV dysfunction we further selected 298 consecutive patients with a RCA culprit artery.

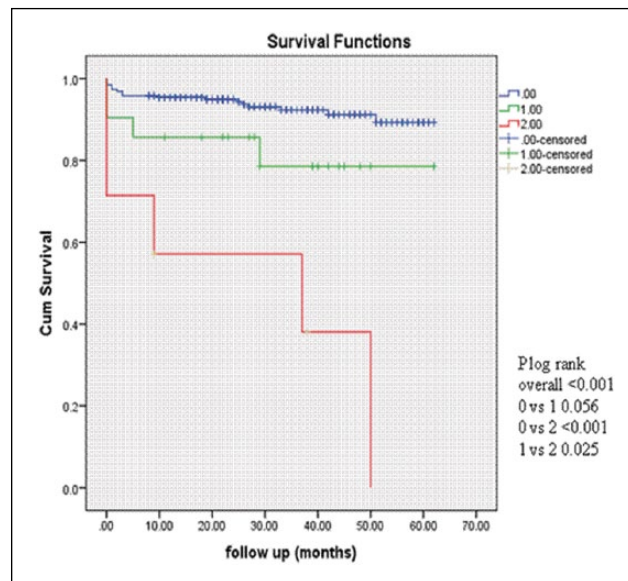
Results: RCA culprit population (298 pts) was further stratified according to presence of RV dysfunction (RV fractional shortening[FAC] <35%, 83 pts) or absence of RV dysfunction (215 pts).

In RCA MI, patients with RV dysfunction presented more advanced Killip class (Killip3-4 in 22 vs 4%, $p < 0.001$), more frequent and VT/VF (18 vs 7%, $p 0.006$), bradyarrhythmias, HF (52 vs 13%, $p < 0.001$). Proximal RCA was more frequently involved (60 vs 26% $p < 0.001$), GpIIb/IIIa inhibitors and thrombectomy were more employed. Ischemic time was longer. Patients more often needed inotropic support (36 vs 5%, $p < 0.001$).

In RCA MI, persistent moderate-severe RV dysfunction (RV FAC<25%) at discharge predicted worse survival. Conversely, patients with a RV FAC<25% at admission, which improved to mild/no RV dysfunction at discharge, had a mortality not significantly different from patients without RV dysfunction at presentation. At multivariable analysis predictors of in hospital mortality result RV FAC<25%, advanced Killip class and renal dysfunction (OR 13.350, $p 0.001$; OR 9.525, $p 0.004$; OR 10.981, $p 0.030$). Predictors of follow up mortality were RV FAC<25%, age and augmented systolic pulmonary pressure (OR 7.149, $p 0.002$; OR 1.122, $p < 0.001$; OR 5.064, $p 0.002$) with a ROC AUC 0.871.

Conclusions: RV dysfunction independently predicts short and medium term mortality in RCA MI. Patients who improve to mild /no dysfunction at discharge show a mortality not significantly different from patients with no RV dysfunction. This emphasizes the role of prompt reperfusion, as complete revascularization improves mortality and RV function

recovery. Echocardiographic evaluation at admission and pre discharge is essential for guiding therapy in the ICU and planning follow up at discharge. The prognostic role of RV recovery needs further validation in larger patients series.



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Stemi results in a university hospital. Comparison between conventional primary pci and thrombus aspiration

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Background: Due to the results in the last randomized trials (Tapas, TASTE and TOTAL) comparing conventional PCI and thrombus aspiration in the ST elevation myocardial infarction (STEMI), we aimed to study the situation in our own area. The primary end points were all cause of Mortality, stent Thrombosis and stroke rate in that two groups of patients.

Methods: We conducted a retrospective revision of 300 consecutive patients with STEMI referred to our center. All patients were followed-up for 1 year minimum. Women were 29,7%, mean age of patients was 61,5. In 6,4% of the patients (19 of 300) no PCI was performed due to several causes (most of them because of the comorbidities). In 93,6% (281 of 300) primary PCI was performed; 191 (68%) underwent to thrombus aspiration and 90 (32%) to conventional PCI. Radial access was performed in 74,3%, and Drug eluting stent (DES) were used in 75,4%. Antiplatelet therapy use was: Aspirin in 99,3%, Clopidogrel

48,7%, Prasugrel 46,7% and Ticagrelor in 2,3%, IIB-IIIa Glycoprotein Inhibitors (Abciximab) were used during the procedure in 29,7% and Bivalirudin in 7,7%.

Results: In patients referred to primary PCI all cause mortality rate was 6,3% (30-days) and 8,3% (1 year), and in patients non referred to primary PCI was 14,5% (30 days) and 18% (1 year) $p < 0,01$. 1 Year Stent Thrombosis and stroke rate was 2% and 4% respectively. No statistically significant difference between 2 groups (Trombus aspiration and conventional PCI) in terms of mortality, stent Thrombosis and stroke rate.

We performed a subgroup analysis between patients with high thrombus charge previous to PCI (G4-G5 referred in TASTE) and patients with low thrombus charge (G1-G3), with lower Mortality and stent thrombosis rate in (G4-G5 group) but not statistically significant. (3,7% vs 5,8% at 30 days, and 5,6% vs 9,1% at 1 year). Stroke rate was higher in G4-G5 group but not statistically significant.

Conclusions: Nowadays Trombus aspiration continues being a useful tool for the Interventional Cardiologist during the Primary PCI. Due to the results of our study we can't recommend the routine use in all the cases but it could be useful in high thrombus rate cases of STEMI.

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Symptom differences between genders in patients with acute coronary syndrome

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Introduction: Acute Coronary Syndrome (ACS) is one of the important conditions causing death among cardiovascular diseases. Myocardial Infarcts is the most commonly seen in ACS and the most commonly death causing disease.

Purpose: This descriptive study aimed to determine the differences related to gender in patients applying with ACS.

Method: Study was conducted at cardiology intensive care unit of an university hospital on 367 patients with ACS diagnosis. The data were collected according to 35 questions formed after scanning related literature. Study was done between dates of 1.12.2014 and 1.12.2015 Related academical committee approvals and ethical board and hospital permissions were taken.

Results: It was detected that 74.0% of individuals attending study were male, 52.7% of them were retired or housewife, 66.9% of them had diseases other than cardiac related, 60.9% of them stayed at the hospital due to heart disease and 66.9% of them had at least one MI before. It was determined that 42.1% of attendants had

heart condition, 42.6% of them were currently smokers and it was found that 41.0% of MI type entering hospital was NON STMI. When treatments were investigated after MI treatment, it was detected that 39.1% of them had PTCA/stent application, only 2.5% of them were discharged with medicine treatment. When patients had MI, it was detected that 82.8 of them were accompanied, 61.7% of them arrived hospital with their private car and it was determined that individuals arrived hospital in 66.71 ± 190.02 minutes in average and stayed at emergency unit 95.56 ± 221.42 minutes in average. It was detected that individuals arriving hospital most commonly had chest pain (95.4%), sweating (82.2%), arm-shoulder pain (59.8%), nausea (55.2%), fatigue (51.4%), back pain (48.1%), uneasiness (47.5%), breath problem (45.6%), palpitation (39.3%), stomach pain (39.3%), dizziness (38.3%) and vomiting (35.0%). When individuals were observed depending on gender, women arrived hospital at most in 60 minutes whereas men in 30 minutes. Moreover it was found that women mostly arrived with private car whereas men arrived with ambulance. When symptoms were studied according to gender, it was determined that men had arm pain, chest pain, dyspepsia, sweating, uneasiness, back pain, palpitation, dizziness, vomiting, nausea and breath problem more than women in the order of intensity whereas women had more stomach pain than men.

Conclusions: In this study it was found that women had similar symptoms like men did however they applied to hospital later than men did after symptoms occurred. Therefore it was suggested that awareness should be increased about the importance and symptoms of MI, particularly for women.

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The impact of nighttime and weekend admission for patients with ST elevation myocardial infarction

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Background: For most patients admitted with a ST elevation myocardial infarction (STEMI), the European guidelines recommend primary angioplasty (PPCI) within 90 minutes (min) of admission. When patients present initially in a PPCI capable hospital, the maximal recommended door to balloon (D-B) time is 60 min.

Purpose: Evaluate the impact of nighttime and weekend admissions on D-B time and on prognosis.

Methods: Retrospective analysis of patients admitted for STEMI included in a National Acute Coronary Syndrome Registry, between October 1st 2010 and November 4th 2015, selecting the patients submitted to PPCI. We defined 'daytime admission' as admission on a working day, from

8 am until 8 pm. The 'Off-hours' group was defined as admission from 8 pm until 8 am, or during the weekend. Then we calculated the average D-B time on both groups, and evaluated the percentage of patients with a D-B time <60 min and <90 min, for each group. Finally, we looked for correlations between off-hours admission and adverse outcomes, including in-hospital and one-year mortality.

Results: From a total of 5509 patients with STEMI, 4129 were submitted to PPCI. The final sample included the 4047 patients with a registered D-B time. Patients had an average age (SD) of 63 (14) years, with 76.8% males.

Patients with a daytime admission had an average D-B time of 113 min, with median (Q25-Q75) values of 73 (28-146) min; 43.4% had a D-B time <60 min and 57.3% had a D-B time <90 min.

Patients on the off-hours group had an average D-B time of 123 min, with median (Q25-Q75) values of 71 (30-145) min; 42.9% had a D-B time <60 min and 58.6% had a D-B time <90 min (there were no significant differences between the two groups).

Off-hours admission was associated with a younger age (mean 62 vs. 64 years, $p < 0.001$), tobacco use (41.0 vs. 36.3%, $p = 0.002$), need for intra-aortic balloon pump (2.1 vs. 1.1%, $p = 0.009$) and non-invasive mechanical ventilation (2.5 vs. 1.6%, $p = 0.046$).

The in-hospital mortality was similar in both groups (4.3 vs. 4.4%, $p = 0.83$). Importantly, the off-hours group showed a trend towards increased one-year mortality (6.0 vs. 5.1%, Log Rank $p = 0.451$), which was accentuated in the adjusted one year mortality (Cox Regression $p = 0.14$).

Conclusions: PPCI is not performed on the recommended time in a significant number of patients. Patients admitted 'off-hours' show a similar D-B time, a younger age, but possibly a worse prognosis.

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The results of routine early coronary angiography after successful thrombolytic therapy in elderly patients with acute myocardial infarction

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Purpose: The aim of this study was to investigate the efficacy and the safety of routine early coronary angiography (CAG) after thrombolytic therapy in elderly patients with acute myocardial infarction (AMI) and indirect reperfusion signs.

Material and methods: We analyzed a total of 96 medical records from patients aged 75 years or older admitted

to our hospital with AMI between 2011 and 2014. All patients received thrombolytic therapy and had indirect reperfusion signs according to electrocardiography (ECG). The criterion of exclusion was patient's death at day 1 after admission to hospital.

Results: 31% of patients were selected for routine early CAG which was performed 3 to 24 h after AMI onset according to the guidelines. In comparison, patients who were not selected for CAG were older (81 (78-84) years vs. 77 (75-82) years, $p < 0.01$), more often were women (71.2% vs. 46.7%, $p < 0.05$), more often had stroke in past medical history (18.2% vs. 3.3%, $p < 0.05$), and less often presented with cardiogenic shock (3% vs. 10%, $p < 0.05$). Despite the presence of ECG signs of reperfusion, CAG revealed an occlusion of infarct-related artery in 56.7% of these patients. After CAG, stents were placed in 70% of patients. Stent placement was not performed in patients who had severe coronary disease with calcinosis (67%) and in patients with mild stenosis $\leq 70\%$ which did not require stenting (33%). The rates of recurrent myocardial infarction (ReMI) and in-hospital lethality in these patients did not significantly differ between groups of conservative therapy and routine early CAG: 9.1% vs. 6.7% and 13.6% vs. 10.0%, respectively. One year after AMI, the rates of ReMI and lethality also did not significantly differ between groups of conservative therapy and routine early CAG: 12.1% vs. 10% and 12.1% vs. 13.3%, respectively.

Conclusions: Coronary angiography revealed an occlusion of infarct-related artery in 56.7% of AMI patients who had electrocardiographic signs of reperfusion. Routine early coronary angiography after successful thrombolysis in elderly patients was safe, but benefits of this procedure still remain unclear.

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Tissue Doppler E/E' ratio is a strong predictor of death and heart failure in patients with ST-segment elevation MI treated with primary percutaneous coronary intervention

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Purpose: The Tissue Doppler E/E' ratio, a marker of left ventricular filling pressures (LVFP), has been reported as an event predictor in patients with myocardial infarction (MI). However, its value in patients with left ventricular is a matter of debate, as well as the ideal timing to its measurement. We sought to evaluate the impact of E/E' ratio in patients with ST-segment elevation MI (STEMI).

Methods: Consecutive patients with non-fatal STEMI treated with primary percutaneous coronary intervention who underwent a comprehensive echocardiographic examination, including Tissue Doppler Imaging, during index hospitalization from 2011 to 2014 were included. The E/E' ratio was computed by dividing the early transmitral flow velocity (E) by early diastolic velocity of the mitral valve annulus (E'). Patients with mitral stenosis, more than mild mitral regurgitation, heavy annular calcification, surgical rings and prosthetic mitral valves were excluded. Increased LVFP were defined as average E/E' ratio ≥ 13 . The primary endpoint was a composite of death and heart failure (HF) during follow-up.

Results: One hundred and sixty-four patients were included, with ejection fraction (EF) of $47.4 \pm 9.3\%$ and symptoms-to-pPCI time of 7.2 ± 4.7 hours. Patients with average E/E' ratio ≥ 13 were older (70 ± 11 vs. 60 ± 13 years, $p < 0.001$), more often men (56.9% vs. 43.1% , $p = 0.002$) and had higher prevalence of hypertension (79.3% vs. 20.7% , $p < 0.001$) and lower of diabetes (32.8% vs. 67.2% , $p = 0.003$). They had higher cardiac biomarker release (T-troponin peak: 7.1 ± 3.6 vs. 5.3 ± 3.4 , $p = 0.002$) and lower EF (44.1 ± 9.1 vs. 49.2 ± 8.7 , $p = 0.001$). The incidence of HF during index hospitalization was higher in those with increased LVFP (Killip class $> I$: 54.4% vs. 21.7% , $p < 0.001$). Patients were followed for 15 (IQR 10-25) months. During follow-up, 11 (6.7%) patients died and 29 (17.8%) had the composite endpoint. In univariate analysis, increased average E/E' was associated with all-cause death (OR: 9.459, 95% CI: 1.969-45.443) and with the composite endpoint of death or HF (OR: 5.614, 95% CI: 2.348-13.424). The other diastolic function parameters (early diastolic/late diastolic wave velocity of mitral inflow and deceleration time) were not associated with the composite endpoint. In a multivariable model, which included EF, E/E' ratio was an independent predictor of the composite endpoint (OR: 1.101, 95% CI: 1.013-1.198, $p = 0.024$).

Conclusions: E/E' ratio evaluated during index hospitalization was a strong independent predictor of death and HF during follow-up in patients with STEMI. Increased LVFP were also associated with HF during index hospitalization.

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Treatment of ST-elevation myocardial infarction in Japan

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Background: There is little clinical data about the treatment of acute myocardial infarction (AMI), and no regional systems for treating AMI have been established in Japan.

Purpose: To improve the quality of AMI treatment and establish a medical practice system for AMI in Japan, we

collected and analyzed medical data for cases of ST-elevation myocardial infarction (STEMI), such as the door-to-balloon (D2B) time and the modes of transport used by the patients to get to hospital.

Subjects and Methods: The subjects were STEMI patients who underwent direct percutaneous coronary interventions (d-PCI) at acute care hospitals in Japan and were discharged between April 1, 2013, and September 30, 2015. The Disease Control Working Group Secretariat collected and analyzed the medical data. The data were reviewed and compared among each 6-month period by the representatives of each participating medical institution.

Results: Six hundred and five patients (453 males, 152 females) underwent d-PCI for STEMI. The methods of transport employed in these cases consisted of direct ambulance transport (without a referral) (45.6%), ambulance transport based on a referral from another hospital (28.3%), non-ambulance transport (direct walking-in without referral: 20.9%), and non-ambulance transport based on a referral from another hospital (walking-in with referral: 5.1%). During the study period, the mean D2B time fell significantly from 113 ± 5 (mean \pm SE) to 100 ± 4 ($p < 0.01$) minutes, and the percentage of patients whose D2B time was < 90 minutes increased significantly from 42.4% to 55.9% ($p < 0.05$). The difference between the mean door-to-catheterization laboratory times of the patients that underwent direct ambulance transport (65 ± 2 minutes) and those that underwent ambulance transport based on a referral from another hospital (62 ± 3 minutes) was not significant. Among the patient that underwent non-ambulance transport based on a referral from another hospital, the percentage of patients whose ECGs were recorded at another hospital was 60.9%.

Conclusions: We investigated the current status of AMI treatment in Japan. The number of patients brought to hospital by ambulance was low, and the mean D2B time exceeded 90 minutes. Community education aimed at promoting the ambulance-based transportation of patients who develop thoracic pain that is suggestive of AMI early after the onset of their condition might be necessary. Cooperation between acute care hospitals and other medical practitioners must be improved to reduce the D2B time. Such study that medical data are reviewed by the representatives of each participating medical institution will help to improve the quality of treatment for AMI.

Acute coronary syndrome - Non ST-elevation myocardial infarction

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Diagnostic value of electrocardiographic st-t wave changes in lead aVL in patients with chronic stable angina

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Objectives: The clinical value of ST-T wave inversion in lead aVL in diagnosing coronary artery disease (CAD) remains unclear. Aims to investigate the correlation between aVL ST-T wave inversion and CAD in patients with chronic stable angina.

Methods: Electrocardiograms (ECGs) of 156 consecutive patients undergoing coronary angiography were analyzed. All patients had chronic stable angina. All patients with secondary ST-T wave changes are excluded. Detailed ECG interpretation and coronary angiographic findings were conducted by experienced cardiologists.

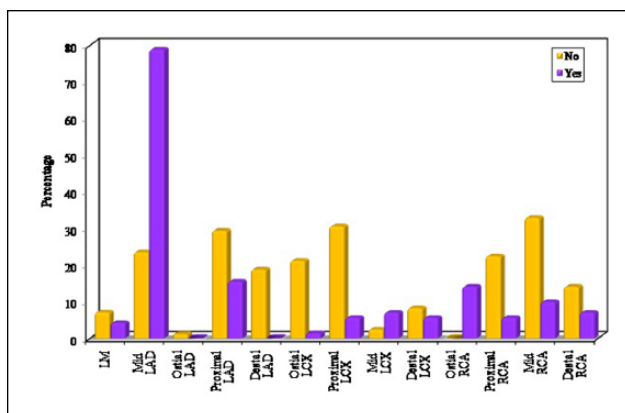
Results: Inverted T wave in lead aVL was reported in 71 patients (45.5%), 58 patients (37.2%) were with upright T wave in lead aVL and 27 patients(17.3%) were with flat T wave in lead aVL. ST segment in lead aVL was isoelectric in 126 patients (80.8%),

Conclusion: This study provides new information relating to T wave inversion in lead aVL to mid segment LAD lesions. Implication of this simple finding may help in bedside diagnosis of CAD typically midLAD

Table 1. T wave inversion and lesions affected

| | Inverted Twith in lead aVL | | | |
|--------------|----------------------------|------|--------------|------|
| | No (n = 85) | | Yes (n = 71) | |
| | No. | % | No. | % |
| LM | 6 | 7.1 | 3 | 4.2 |
| Mid LAD | 20 | 23.5 | 56 | 78.9 |
| Ostial LAD | 1 | 1.2 | 0 | 0.0 |
| Proximal LAD | 25 | 29.4 | 11 | 15.5 |
| Destal LAD | 16 | 18.8 | 0 | 0.0 |
| Ostial LCX | 18 | 21.2 | 1 | 1.4 |
| Proximal LCX | 26 | 30.6 | 4 | 5.6 |
| Mid LCX | 2 | 2.4 | 5 | 7.0 |
| Destal LCX | 7 | 8.2 | 4 | 5.6 |
| Ostial RCA | 0 | 0.0 | 10 | 14.1 |
| Proximal RCA | 19 | 22.4 | 4 | 5.6 |
| Mid RCA | 28 | 32.9 | 7 | 9.9 |
| Destal RCA | 12 | 14.1 | 5 | 7.0 |

In our study, we found t wave inversion in 71 patients and wasn't inverted in 75 patients, most of the t wave inversion in patients with mid LAD lesions 56 patients.



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Efficiency of endovascular treatment of patients with NSTEMI

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Aims: to estimate results of endovascular treatment in NSTEMI patients with multivessel diseases, depending on depending on the volume of myocardial revascularization.

Methods and Results: 346 patients were included in the study and divided into 3 groups. In I group (n=100), who were underwent complete myocardial revascularization during primary PCI procedure; in II group (n=124) - complete myocardial revascularization during hospitalization and III group (n=122) - complete myocardial revascularization in the delayed period following hospitalization. The average period of execution complete revascularization in this group was 4.5±0.2 months. The randomization was performed depending on the selection of arterial access. All patients have been randomized into 2 subgroups. In I subgroup were included 155 patients who had PCI performed transfemoral access. In II subgroup were included 191 patients who had PCI performed transradial access. All patients underwent PCI only with drug eluting stents. Criteria for evaluation the immediate results: MACE (death, MI, repeat intervention); major bleeding (BARC 3 or 5). Criteria for evaluation the long-term results (12 months): MACE (death, MI, TLR, TVR), restenosis and late stent thrombosis. Secondary endpoints: vascular access site complications and a switch to another arterial access.

Cumulative MACE were 4, 4.8 and 4.9% respectively in group I, II and III (p>0.05). Major bleeding (BARC 3 or 5) were 1, 2.4 and 1.6% respectively in group I, II and III (p>0.05). However, when we analyzed the results depending on the type of arterial access, ratio of major

bleeding (BARC 3 or 5) were significantly higher in subgroup I and were 3.2%, whereas in subgroup II it was 0.52% ($p=0.032$). The cumulative MACE were 8.4 and 1.6% respectively in subgroup I and II ($p=0.001$). The ratio of vascular complication was 3.87% in subgroup I and 7.33% in subgroup II ($p=0.024$). Survival in long term period was 100% in I and II group, 91.8% in group 3 ($p=0.0017$). The ratio of restenosis was 6.0, 4.03 and 4.92% respectively in group I, II and III ($p>0.05$). Late stent thrombosis was 2.0, 0 and 0.8% respectively ($p>0.05$). TLR were 3.0, 2.5 and 4.1% respectively ($p>0.05$). TVR were 2.0, 2.5 and 1.7% respectively ($p>0.05$), at that cumulative MACE were 5 and 4.8% respectively in group I and II ($p>0.05$), but in group III MACE were 12.3% ($p<0.001$). The cumulative MACE in subgroup I and II also were 12.2 and 3.7% respectively ($p<0.001$).

Conclusions: the transradial access should be recommended as first-choice vascular access in patients with NSTEMI undergoing cardiac catheterization. Performing a complete myocardial revascularization in the delayed period following hospitalization in NSTEMI patients with multivessel disease differs power clinical outcomes, compared with the results of revascularization performed during hospitalization.

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Grace and timi risk scores in non ST-elevation myocardial infarction: Are they valid in a non-european population?

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Background: Nowadays, the management of non ST-elevation myocardial infarction (NSTEMI) is based on the assessment of prognosis through the calculation of prognosis risk scores. The most used scores are GRACE and TIMI that have been validated in European population through the records of GRACE and TIMI registries.

Purpose: The aim of our study was to assess the validity of GRACE and TIMI scores in a non-European population with different epidemiological features, and therapeutic tools.

Methods: We enrolled 250 consecutive patients managed as a NSTEMI. We calculated for every patient, TIMI and Grace Scores. The primary endpoints were defined as all-cause mortality, myocardial infarction, over one year follow-up. We try to validate these scores using the ROC curve.

Results: The mean age was $61,65 \pm 11,9$ years. The sex ratio was 1,65. Cardiovascular risk factors were as follows: 62.8% of patients were hypertensive, 52% were smoking,

47.2% had diabetes, and 34% had dyslipidemia. According to the TIMI score: 31.60% were at low risk, 51.60% were at intermediate risk and only 16.80% were at high risk. According to the GRACE score: the in-hospital mortality was low in 36%, intermediate in 35.20% and high in 28.80%; The 6 months mortality was low in 36%, intermediate in 35.60%, and high in 28.40%. A GRACE score > 140 and a TIMI score of > 5 were predictive of cardiac death and cardiovascular major event during follow-up ($P \leq 0,001$). The TIMI score at 1 year and the GRACE score at 6 months had a significantly large area under the curve making this test valid in our population. Paradoxically we found that on admission, the GRACE score approximates reliability, while the TIMI score is far from being valid.

Conclusion: We conclude that the GRACE score and TIMI score are valid in our population to predict the prognosis of NSTEMI at long term but not at short-term. This could be explained by the fact that the care is different from those of GRACE and TIMI population particularly the use of new antiplatelet and anticoagulant as well as a delay in achieving coronary angiography.

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Linsulin-growth factor I in patients with Infarction acute phase non STEMI

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Introduction: Worldwide deaths from cardio - vascular disease ranks first among all causes of overall mortality. To improve risk stratification and diagnosis of acute coronary syndrome are open and actively exploring new protein growth factors and damage, insulin-like growth factor 1.

The purpose of the comparative analysis of IGF-1 plasma levels in patients with acute coronary syndrome.

Material and methods: In the study 71 patients were enrolled with acute coronary pathology, the average age was $57 \pm 8,5$ years. In the blood plasma of patients was measured IGF-1. Blood sampling was carried out at the time of patient's admission to the verification of the final diagnosis. The concentration of IGF-I was determined by enzyme immunoassay (ELISA). The control group consisted of 20 healthy individuals. The comparison group consisted of 40 patients with hypertension and coronary heart disease with stable forms of angina. The statistical processing of the material held by a 'Statistics 8.0' package.

Results: IGF-1 levels in 34 patients with Infarction acute phase non STEMI were the highest $179,15 \pm 41,29$. In 37 patients with Infarction acute phase STEMI concentrations of IGF-1 were slightly below $156,05 \pm 44,78$, but fairly significantly ($p < 0,05$) higher than that of patients with a diagnosis of unstable angina- $179,68 \pm 44,09$. A decrease in

IGF-I levels in 9 deaths from acute myocardial infarction - the concentration of IGF-I declined and amounted to $126,06 \pm 15,12$.

Conclusion: IGF-1 levels are significantly higher in patients with acute coronary artery disease compared to healthy people and patients with arterial hypertension and coronary heart disease (stable form). In patients with Infarction acute phase non STEMI IGF-1 are close to the

values of unstable angina. IGF-1 levels in patients with Infarction acute phase non STEMI rise 1.2 times greater than in patients with Infarction acute phase STEMI, and 1.4 times higher than in the cases of mortality from acute myocardial infarction. IGF-I is represented as a protein growth factor and damage, and can be used a marker of acute coronary syndromes having clinical - prognostic significance to the outcome of the disease.

Table 1. validity of Risk Scores in Tunisia

| | Cardiovascular event | Area under the curve | P | Sensibility | Spécificity |
|------------|------------------------|----------------------|--------------------------------|-------------|-------------|
| TIMI Score | 1 month death or STEMI | 0,626 | 0,113 | - | - |
| | 1 year death or STEMI | 0,709 | 0,001 | 87% | 66,5% |
| | | | discriminative threshold = 3 | | GRACE Score |
| | Intrahospital death | 0,781 | 0,097 | - | - |
| | 6 months Death | 0,79 | 0,009 | 71,4% | 73,7% |
| | | | discriminative threshold = 120 | | |

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Long-term clinical impact of totally occluded culprit coronary arteries in patients presenting with non-ST-segment elevation myocardial infarction

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Background: Recent studies have suggested that a subset of patients (pts) with non-ST-elevation myocardial infarction (NSTEMI) with an occluded culprit artery had worse outcomes compared to those with a non-occluded culprit artery. However, long-term prognostic impact of this subset of myocardial infarction (MI) when compared to STEMI events has not been investigated.

Purpose: we aimed to analyse clinical characteristics and long-term prognosis between NSTEMI and STEMI pts with an occluded culprit artery.

Methods: between 2005 and 2010, 400 pts with an acute MI who had a total occlusion (TIMI 0 or 1) of the culprit coronary artery on the baseline angiography were included. After propensity-score matching for baseline clinical features, 330 pts were classified into two groups by the initial electrocardiographic findings: NSTEMI vs STEMI. Clinical and angiographic profile as also major adverse cardiovascular events (MACE: death, myocardial infarction and any revascularization) were compared.

Results: 165 NSTEMI pts and 165 STEMI pts were considered and followed during 4.72 ± 1.7 years. Overall, coronary occlusion led to an anterior, inferior and lateral

MI in 35.5%, 32.4% and 10.9%, respectively. Both groups were similar in terms of number of vessels with significant disease (1.70 ± 0.77 vs. 1.76 ± 0.83 , $p = ns$), stent use (74.5% vs. 77.6%, $p = ns$) and left ventricle dysfunction (32.7% vs 30.9%, $p = ns$). NSTEMI pts had more intraventricular conduction disturbances on electrocardiogram (7.3% vs 1.2%, $p = 0.006$). Five-year outcomes, including related cardiac death (16.9% vs 15.2%, $p = ns$), myocardial infarction (10.9% vs 12.7%, $p = ns$), and revascularization (13.9% vs 15.2%, $p = ns$) did not differ significantly between NSTEMI versus STEMI subjects. In the multivariate Cox regression, age > 75 years (adjusted HR: 1.8, 95% CI: [1.0-3.2], $p = 0.037$), and anterior MI (0.57 [0.34-0.97], $p = 0.037$) were independent predictors for MACE occurrence.

Conclusions: At end follow-up, occluded culprit arteries were associated with a dismal prognosis irrespective of MI type. A precise early risk stratification followed by an early intervention should be considered for these high-risk NSTEMI pts.

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Percutaneous coronary intervention in left main coronary artery disease concomitant with acute coronary syndrome. Clinical results at long-term follow-up

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Introduction: Left main coronary artery (LMCA) disease is encountered in approximately 3%-10% of coronary angiograms and in about 4% of acute coronary syndromes (ACS). The survival of patients with LMCA disease presenting with acute ACS depends on different variables and it's lowest in those with cardiogenic shock. The percutaneous coronary intervention (PCI) in ST-segment elevation (STEMI) and non-ST-segment elevation myocardial infarction (NSTEMI) due to left main coronary artery (LMCA) disease were not been sufficiently studied.

Purpose: The main objective of this study was to evaluate the efficacy and safety of PCI in patients with concomitant LMCA disease and ACS at long-term follow-up.

Methods: We prospectively included 151 consecutive patients (69 ± 13 years, 70.9% male) with concomitant LMCA and ACS disease treated with PCI between June 2006 and April 2015. We evaluated the occurrence of major adverse cardiovascular events (MACE) defined as cardiac death, nonfatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis after 10 years clinical follow-up (median 39.4 months).

Results: 71.5% of patients were presented as NSTEMI and 28.5% as STEMI. 40.5% were diabetic patients and 23.3% had Killip class 3-4 at presentation. An intra-aortic balloon pump was needed in 12.6% of the cases, glycoprotein-IIb/IIIa inhibitor was used in 10.6% of patients and thromboaspiration was required in 9.3% of cases. The most frequently bifurcation technique employed in LMCA was 'provisional stenting' in 70.7% of cases and final 'kissing balloon' was done in 61.7% of procedures. We implant zotarolimus eluting stent in 74.8% of patients and complication rate in the procedure was 1.3%. Global rate of in-hospital mortality was 6.6%. During follow-up, MACE rate at 10 years was 15.8% (10.9% cardiac death, 1.4% nonfatal myocardial infarction, 5.4% TLR and thrombosis rate 0%). We observed significant differences in the occurrence of MACE in patients with STEMI, moderate-severe left ventricular systolic dysfunction ($p=0.001$), Killip class 3-4 at presentation ($p<0.001$) and patients in which we didn't perform final kissing balloon ($p=0.006$). 17.8% of patients had an angiographic follow-up.

Conclusions: Patients treated with PCI in ACS concomitant with LMCA disease presents higher in-hospital mortality. Those patients who get to be discharged from the hospital have very favourable results with a low rate of mayor cardiac events at very long-term follow-up.

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Background: Spontaneous coronary artery dissection (SCAD) is a rare cause of acute coronary syndromes (ACS) without standardized management.

Purpose: To describe the prevalence, in-hospital management and prognosis of SCAD in unselected ACS patients.

Methods. Retrospective analysis including 1726 consecutive patients with ACS. SCAD was defined as the presence of a double light inside the artery divided by an intimal flap. During hospitalization, baseline clinical characteristics and management were collected. Patients were clinically followed for at least 1-year.

Results: We identified 6 (0.3 %) cases with SCAD. The mean age was 59 ± 12 years and 83 % were women. The presence of cardiovascular risk factors was high. The clinical profile and abnormalities of the EKG at presentation were wide variable. Chest pain appeared in all cases and ST-segment elevation was the commonest abnormalitie. On coronary angiography 2 patients had SCAD affecting left main artery and left anterior descending artery. Two patients underwent percutaneous coronary intervention. They were $>50\%$ stenosis lesions without technical difficulty. In the other 4 cases pharmacotherapy was performed. They were clinically stable at presentation, had small dissection or technical difficulty). Dual antiplatelet therapy was prescribed in all cases at discharge. 5 of 6 patients were clinically followed for more than one year. For that time, two patients suffered an ACS and a patient had mayor bleeding requiring transfusion. All events have had good prognosis, without other added complications.

Conclusions: In our cohort of patients, the SCAD represents a rare cause of SCA which occurs predominantly in young female. In clinically and hemodynamically stable patients with normalised TIMI flow conservative approach is defendable, while in patients with persistent chest pain, progressive ischemia or hemodynamic instability, percutaneous or surgical revascularization seem to be the best strategy. The prognosis during follow-up of these patients with SCAD is good.

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Prevalence, management and prognosis of spontaneous coronary artery dissection in acute coronary syndromes

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Renal dysfunction and non-ST elevation acute coronary syndromes: is there any benefit with an early invasive strategy?

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Table 1.

| Patient | Age(year) and sex | Cardiovascular risk factors | EKG | Presentation | Echocardiography | Coronary artery and size. | Acute treatment | Antiplatelet drugs at discharge. | Treatment at discharge. | Follow-up |
|---------|-------------------|------------------------------|---------------------------------------|--|---|--|------------------------------|----------------------------------|-------------------------------|-----------------------------|
| 1 | 57 Female | Hypertension Diabetes | ST elevation | Cardiac respiratory arrest. STEMI Chest pain. NSTEMI | LVEF 58% Regional wall motion abnormalities. LVEF 66% | LAD. (>50% stenosis). | NO PCI | Acetylsalicylic acid Clopidogrel | ARB II, beta blocker, Statins | 395 days No events. |
| 2 | 49 Female | Smoking | No ST elevation. Dynamic changes EKG. | Chest pain. NSTEMI | LVEF 66% | LAD. (<50% stenosis). | NO PCI | Acetylsalicylic acid Clopidogrel | Beta blocker, Statins | 1095 days No events |
| 3 | 58 Female | Smoking | No ST elevation. | Chest pain. NSTEMI | LVEF 66% | Left main artery and LAD. (>50% stenosis). | NO PCI | Acetylsalicylic acid Clopidogrel | Beta blocker, Statins | 387 days NSTEMI |
| 4 | 83 Female | Hypertension Dyslipidemia | ST elevation | Chest pain. STEMI | LVEF 75% Regional wall motion abnormalities. | LAD. and right coronary (>50% stenosis). | PCI: 2 DES in right coronary | Acetylsalicylic acid Clopidogrel | ACEIs, Statins | 414 days Major bleeding |
| 5 | 51 Female | Dyslipidemia Smoking | Normal ST | Chest pain. NSTEMI | LVEF 60% Regional wall motion abnormalities. | Right coronary (<50% stenosis). | NO PCI | Acetylsalicylic acid Clopidogrel | ACEIs, Beta blocker, Statins | 455 days Unstable angina |
| 6 | 61 Male | Dyslipidemia, Smoking | ST elevation. Dynamic changes EKG.. | Chest pain. STEMI | LVEF 37% Regional wall motion abnormalities. | Left main artery and LAD. (>50% stenosis). | PCI: 1 DES in LAD | Acetylsalicylic acid Ticagrelor. | ACEIs, Beta blocker, Statins | <365 days No events. |

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Background: Renal dysfunction (RD) is common among patients with acute coronary syndromes (ACS) and it is often associated with adverse outcomes. In this population percutaneous coronary intervention (PCI) is less successful and correlates with more complications, including bleeding, stent thrombosis and contrast nephropathy, leading to an occasional delay in the procedure.

Purpose: This study intends to evaluate the impact of early PCI in patients with RD with non-ST elevation ACS (NSTACS) in the long-term prognosis.

Methods: Prospective data of 258 consecutive patients, admitted in a single coronary unit, between October 2009 and September 2014, with NSTACS and moderate to severe RD (Glomerular Filtration Rate [GFR]<60ml/min/1.73m², measured by the Cockcroft-Gault formula). Patients submitted to conservative therapy were excluded from this study. They were divided in 2 groups according to the moment PCI was performed, after NSTACS was diagnosed: group A- patients submitted to PCI ≤ 24h (n=110; 60.9% men); group B - patients submitted to PCI > 24h (n=148; 57.4% men). The groups were compared according to the composite primary endpoint (CPE - re-infarction, stroke, cardiovascular death) and secondary endpoints during hospitalization and at one year of follow up.

Results: Moderate to severe RD was identified in 46.7% of our NSTACS population. Patients in both groups presented with similar age and there was no statistical differences regarding other baseline characteristics. At admission, patients within group B, presented with more atypical symptoms (A= 90.0% vs B= 75.0%, p=0.001), higher GRACE score (A=146.0±30.1 vs B=149.0±34.8, p=0.037) and more Killip class > 1 (A= 22.0% vs B= 33.1%, p=0.035). There was no difference between glomerular filtration rate (A=47.1±11.7 vs B=45.7±14.5, p=0.062). Regarding in-hospital management, group B was less prescribed with GPIIb/IIIa inhibitors (A= 22.7% vs B=8.1%, p<0.001) and needed more non-invasive ventilation (A=0.0% vs B=6.1%, p=0.006). There were no other statistical differences. In respect with in-hospital outcomes, in group B, there was a tendency to a higher mortality (A=2.7% vs B=6.1%, p=0.232) and to the occurrence of cardiogenic shock (A=5.5% vs B=6.8%, p=0.438), heart failure (A=5.5% vs B=8.1%, p=0.279) and CPE (A=5.5% vs B=8.8%, p=0.222). The occurrence of contrast nephropathy was similar in both groups. At 1-year follow-up, group B evidenced higher mortality (A=13.6%

vs B=18.9%, p=0.169) and PCE rates (A= 18.2% vs B= 24.3%, p=0.151).

Conclusion: Although there was no significant difference, patients with renal dysfunction and NSTACS submitted to an early invasive strategy evidenced a better prognosis on long-term follow-up.

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Sex-based differences in the clinical presentation and prognosis of patients with acute coronary syndrome

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Purpose: The study purpose was the investigation of sex-based contrasts regarding clinical characteristics and prognosis of patients with acute coronary syndrome.

Material: The study group included 259 patients (144 men, 55,6% and 115 women, 44,4%) with diagnosed acute coronary syndrome (ACS). Data about risk profile, type of presenting symptoms, echocardiographic indices (ejection fraction, EF and end-systolic volume, ESV), coronary disease severity (SYNTAX scores), plasma concentrations of inflammatory (high sensitive C-reactive protein – hsCRP, white blood cells – WBC) and oxidative stress markers (oxidized low density lipoproteins – oxLDL and extracellular superoxide dismutase – ecSOD) and incidence of adverse events during one year follow up were gathered and analysed.

Results: Women were significantly older (men vs women – 62r.±13,2r. vs 69,5r.±10,9r., p<0,0001), had more frequently arterial hypertension (men vs women - 84% vs 96,5%, p=0,001) and chronic noncardiac diseases (men vs women - 33,3% vs 55%, p=0,001). Smoking was more prevalent among male patients (men vs women - 66,2% vs 20,9%, p<0,0001). Atypical angina was encountered with similar frequency among the examined female and male patients (men vs women - 22,2% vs 32,2%, p=0,089). The incidence of obstructive coronary disease (men vs women – 90,1% vs 76,6%, p=0,005) and acute myocardial infarction with persistent ST elevation were higher in the examined male group (men vs women - 65% vs 35%, p=0,008). In contrast to women more rehospitalisations (men vs women - 57% (n=61) vs 40% (n=36), p=0,022) and percutaneous interventions (men vs women – 32,4% (n=35) vs 19,1% (n=17), p=0,037) were observed among male patients during follow up. The intensity of inflammatory response in acute phase was related to worse systolic function both in acute (hsCRP: r= - 0,328, p=0,003 for EF; r=0,327, p=0,003 for ESV; WBC: r= - 0,379, p= 0,012 for EF) and chronic phases (hsCRP: r= - 0,316, p=0,032 for EF; r=0,420, p=0,005 for ESV) among male patients.

In univariate analysis age (OR 1,033, CI 1,001-1,066, $p=0,045$), diabetes mellitus (OR 2,661, CI 1,097-6,455, $p=0,030$), SYNTAX score (OR 1,045, CI 1,000-1,093, $p=0,050$), EF in acute (OR 0,893, CI 0,844-0,945, $p<0,0001$) and chronic phase (OR 0,908, CI 0,846-0,976, $p=0,009$) were associated with prognosis among male patients; diabetes mellitus (OR 0,390, CI 0,153-0,996, $p=0,049$) and coronary disease severity (OR 1,071, CI 1,018-1,127, $p=0,008$) - among female patients. Multivariate analysis identified the acutely increased hsCRP levels in female group as the only significant sex related prognostic indicator (OR 1,043, CI 1,003-1,085, $p=0,028$).

Conclusion: The sex-based gap concerning outcome of ACS is dependent on sex specific distribution of obstructive coronary atherosclerosis and left ventricular systolic dysfunction and is modulated by the intensity of inflammatory response.

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The value of the Clinical SYNTAX Score in predicting long-term prognosis in patients with non ST-segment elevation acute coronary syndrome

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Background: The Clinical SYNTAX Score (CSS) combines anatomical and clinical risk assessment.

Objectives: This study was designed to evaluate CSS as a predictor of prognosis in patients with non ST-elevation myocardial infarction (NSTEMI) undergoing a primary percutaneous coronary intervention (p-PCI).

Methods: We evaluated 237 patients who were diagnosed with NSTEMI and underwent p-PCI. CSS was calculated by multiplying the anatomically derived SYNTAX score (Sx) by the modified age, creatinine, and ejection fraction score. Patients were divided into tertiles according to the CSS: CSS_{Low} ≤ 14 (n=136), 14 < CSS_{MID} ≤ 28 CSS_{High} and (n=54), > 28 (n=47). The primary endpoints were defined as all-cause mortality, myocardial infarction, and cerebrovascular events over one year follow-up.

Results: Primary endpoints were achieved in 7.3% of patients with CSS ≤ 14, 21.2% of those with 14 < CSS ≤ 28, and CSS with those of 25.9% > 28 (P=0.009). Kaplan-Meier analysis showed that the CSS > 28 group had a significantly lower incidence of primary endpoints [P (log-rank)=0.009]. CSS > 28 was identified as an independent predictor for all-cause mortality, myocardial infarction, and cerebrovascular events (hazard ratio 4.5, 95% confidence interval 2.3-5.4, P=0.01)

Conclusion: CSS may be better than the Sx score for predicting long-term prognosis in patients with NSTEMI undergoing p-PCI.

Acute heart failure

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Acute myocardial infarction and heart failure in Gypsy patients; 10-year experience

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Patients who have clinical evidence of congestive heart failure after acute myocardial infarction (AMI) have a poor prognosis. There is a lack of data which analyzed prognosis of Gypsy patients (pts) with AMI. Gypsy (or Roma), an ethnic minority of northern Indian origin, live in many countries throughout the world and are well known for preserved tradition and resistance to assimilation. The aim of this study was to analyze prognosis in Gypsy patients with heart failure (HF) and AMI.

Methods: From January 2006 to January 2016, we analyzed 250 pts with HF and AMI. There were 108 (43.2%) Gypsy pts with HF and AMI (Group 1) and 142 (56.8%) non-Gypsy pts with HF and AMI (Group 2).

Results: Patients in Group 1 were significantly younger than in Group 2 of pts, and more pts in Group 1 were diabetic or smoker but with lower body mass index. Lipid status was better in Group 2, especially total cholesterol level ($p=0.0314$). There were more pts in Group 1 with angina pectoris ($p=0.0220$). Although statistically significant, pts in Group 1 had more previous infarction ($p=0.0401$). All enzymatic and ECG indexes of infarct size were higher in Group 1. Anterior acute myocardial infarction was more common in Group 1, too. Non-STEMI wave infarction was more often in Group 2. Patients in Group 1 had higher in-hospital mortality ($p=0.0310$).

Conclusions: This study suggests that Gypsy pts with HF and AMI had worse prognosis compared with non-Gypsy pts with HF and AMI, specially in in-hospital prognosis. The predictors of that prognosis were previous angina pectoris and previous myocardial infarction.

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Additive prognostic value of copeptin and NT-proBNP in patients with acute heart failure

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Background: Patients suffering from acute heart failure (AHF) requiring admission to an intensive care unit (ICU) have a poor prognosis. The C-terminal portion of pro-vasopressin (Copeptin) represents a surrogate parameter for vasopressin, has been described as a marker for endogenous stress. Besides its use as a rule-out marker in patients with NSTEMI-ACS it has been described as a prognostic biomarker in patients with acute illness.

Purpose: The aim of this study was to analyze whether admission levels of copeptin are associated with 30-day survival in patients with AHF admitted to a cardiac ICU.

Methods: We included 90 consecutive patients with AHF admitted to our cardiovascular ICU (33% with cardiogenic shock, 21% with acutely decompensated HF and 46% of patients suffered from AHF after cardiac arrest). Blood was taken at admission, mtDNA levels were measured by real-time PCR while copeptin was measured by an automated sandwich immunofluorescent assay.

Results: Mean age was 62.1 ± 16.0 , 76.7% of patients were male and median NT-proBNP levels were 4986 (1525 – 23842) pg/mL. 30-day survival was 64.4%. Non-survivors had significantly higher values of both copeptin (139.8 (44.7-311.2) pmol/L vs. 31.4 (17-77.1) pmol/L, $p < 0.001$) and NT-proBNP (23718 (2981 – >35000) pg/mL vs. 3262 (1000.3 – 8212.3) pg/mL). Interestingly, copeptin and NT-proBNP showed additive prognostic value. When patients were stratified according to the median of NT-proBNP and copeptin, those with both copeptin and NT-proBNP levels above the median had the highest risk of dying (HR 4.6, $p = 0.003$).

Conclusion: In a cohort of patients with AHF requiring ICU admission, copeptin levels measured at admission added prognostic value to NT-proBNP levels.

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Compliance with heart failure medications following an episode of acute decompensation

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Introduction: Patients with chronic heart failure (HF) have a high risk of recurrent acute decompensation. Pharmacotherapeutic non-compliance is one of the main risk factors of increased rehospitalisation rate, as well as HF progression and mortality. According to current HF guidelines, the most important treatment of HF is angiotensin-converting enzyme (ACE) inhibitors, beta-blockers (BB), mineralocorticoid receptor antagonists (MRA) and diuretics.

Aim: To evaluate compliance with prescribed HF medications 1 month and 3 months after hospitalization due to acute decompensated HF.

Objectives: 1. To evaluate prescribed HF medications at hospital discharge.

2. To determine compliance with prescribed HF medications 1 month after hospital discharge.

3. To determine compliance with prescribed HF medications 3 months after hospital discharge.

Methods: Approval of the Lithuanian Bioethics Committee was obtained to include 57 patients with acute decompensated HF who presented with acute dyspnoea to the emergency department of Lithuanian University of Health Sciences Hospital from May 2015 to January 2016. Patients with acute coronary syndromes were excluded from the study. Information regarding HF treatment at discharge was registered in a standardised study form. Treatment compliance was evaluated via phone call after 1 and 3 months. P value of 0,05 was considered statistically significant.

Results: A total of 57 patients were included in the study, 40 (70,2%) of them were male. The mean age was $71,3 \pm 1,4$ years. At discharge oral diuretics were prescribed to 47 (83,9%), ACE inhibitors to 40 (71,4%), BB – 39 (69,9%) and MRA – 33 (58,9%) patients. 1 month after discharge 52,4% of patients were taking diuretics, 47,6% ACE inhibitors, 52,4% BB and just 14,3% – MRA. There was no statistically significant difference in compliance with ACE inhibitors (71,4% vs. 47,6%, $p > 0,05$) and diuretics (83,9% vs. 52,4%, $p > 0,05$). The intake of BB (69,6% vs. 52,4%, $p < 0,05$) and MRA (58,9% vs. 14,3%, $p < 0,05$) significantly decreased. 3 months after discharge intake of prescribed ACE inhibitors was significantly lower: 47,6% vs. 42,9%, while BB – significantly increased: 52,4% vs. 54,8%, $p < 0,05$. No difference was determined in the use of MRA (14,3% vs. 16,7%, $p > 0,05$). Diuretics compliance remained the same – 52,4%.

Conclusions: 1. Majority of the patients were prescribed with main heart failure medications at discharge after an episode of acute decompensation.

2. 1 month after discharge compliance with beta-adrenergic blockers and mineralocorticoid receptor antagonists was significantly lower. Consumption of angiotensin-converting enzyme inhibitors and diuretics remained unchanged.

3. 3 months after hospital discharge consumption of angiotensin-converting enzyme inhibitors significantly decreased, while compliance with beta-adrenergic blockers significantly increased. The consumption of mineralocorticoid receptor antagonists and diuretics remained unchanged.

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Effect of comorbidities and beta-blockers in clinical outcomes in patients with cardiogenic shock

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Background: Despite advances in intensive care medicine, development of new pharmacological agents and early revascularization of ischemic cardiomyopathies, treatment of cardiogenic shock (CS) remains imperfect with a high residual mortality high of 40 to 50% regardless of etiology. Early detection of high-risk patients is a major challenge in order to intensify the management and improve the outcomes.

Purpose: The aim of our study was to assess 30-days and 1-year outcomes of patients admitted for CS in order to describe early prognostic factors.

Methods: Two hundred and seventy-five patients admitted for CS in our tertiary center (CHU Toulouse Rangueil, France) between January 2013 and December 2014, were retrospectively reviewed. Thirty-days and 1-year all-cause mortality was recorded by phone call in December 2015. Logistic regression was performed in order to examine prognostic factors of 30-days and 1-year mortality. This protocol has been approved by our ethical and institutional research committee.

Results: Most of the patients were male (n=200; 75.7%) with a median age of 64 yo (± 15.5) and an history of cardiomyopathy (n=173; 62.9%) mainly ischemic (n=115; 41.8%) and valvular (n=48; 17.5%). Most of them had cardiovascular risk factors without significant difference between survivors and non survivors.

Main causes of CS were ischemic (n=104; 37.8%), post-cardiac arrest (n=55; 20%), ventricular arrhythmia (n=52; 18.9%), iatrogenic (n=46; 16.7%) and infectious (n=30; 10.9%). Thirty-days and 1-year mortalities were of 48.7% and 59.3%, respectively.

After multivariate analysis, prior use of beta-blockers was prognosticator for 30-days mortality [adjusted OR 0.33; 95% CI: 0.11-0.99; p=0.048] as protective factor. Conversely, epinephrine administration [adjusted OR 5.69; 95% CI: 1.38-23.46; p=0.016], aortic stenosis [adjusted OR 9.36; 95% CI: 1.51-58.07; p=0.016] and intermittent hemodialysis [adjusted OR 14.77; 95% CI: 1.01-217.69; p=0.05] were aggravating factors.

For 1-year mortality, prior use of beta-blockers [adjusted OR 0.33; 95% CI: 0.11-0.93; p=0.03] and coronarography exploration during the initial phase of CS [adjusted OR 0.08; 95% CI: 0.02-0.34; p=0.01] were protective factor. Conversely,

age [adjusted OR 1.06 per year; 95% IC: 1.02-1.11; p=0.003] and epinephrine use [adjusted OR 4.45; 95% IC: 1.12-17.62; p=0.03] were associated with increased mortality.

Conclusion: One-year mortality of CS remains high with more than one half of patients. Prior use of beta-blockers seems play a protective effect, while renal insufficiency, severe aortic stenosis and epinephrine use worsen the prognosis.

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Error of renal function estimating-formulas in patients with acute heart failure: the cardiologist in the mist

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Introduction: Half of the patients admitted for AHF have moderate or severe renal impairment, affecting morbidity and mortality. Therefore, knowing renal function (RF) precisely in AHF is mandatory. There are more than 50 estimating-formulas to evaluate RF. However, in different populations (DM, CKD, renal transplantation) these formulas have an unacceptable error. There is a lack of evidence on the accuracy and precision of the formulas for RF estimation in AHF.

Methods: A preliminary study of 27 consecutive patients (11 women) with AHF admitted in the ICCU was performed. RF was measured with a gold standard: iohexol plasma clearance. Clinical variables and treatments received were recorded. 52 estimating-formulas based on creatinine or cystatin-c were calculated. Error of estimating-formulas compared with iohexol was analyzed by the Total Deviation Index (TDI) and Concordance Correlation Coefficient (CCC).

Results: Age 63 \pm 12, 55.6% diabetes, hypertension 74.1%; dyslipidemia 77.8%; previous CAD 44.4%; CKD 10 patients (70%stages I-II, 30%stage III-IV); New AHF59.3% (40.7% ADCHF); Creatinine 1.36 \pm 0.69mg/dl; NT-proBNP 6048 \pm 4915pg/ml; Troponin I 0.05ng/ml (median). 57.7% received high doses of furosemide (>125mg) in the first 24 hours and 15.4% the second day. 44.4% had LVEF<35%. Ischemic disease was the most prevalent etiology (40.7%). TDI shows that 90% of estimating-formulas had an error between 50-70% compared with iohexol. None of the formulas had a 'coverage probability' greater than 90% (70-80% showed a an error \pm 10% over the iohexol).

Discussion: RF estimating-formulas do not accurately reflect the real RF in patients with AHF. The clinical consequences of this error must be studied in depth.

Table 1. Error of RF estimating-formulas

| | CCC | TDI | CP |
|---|---------------|---------------|---------------|
| Creatinine-based estimating-formulas | | | |
| aMDRD | 0.707 (0.514) | 69.42 (94.29) | 22.56 (17.74) |
| CKD_EPI | 0.726 (0.550) | 69.98 (94.73) | 22.36 (17.52) |
| RuleMC | 0.616 (0.433) | 106.81 (145) | 15.44 (11.50) |
| <i>(Continued)</i> | | | |
| Cystatin-c-based estimating-formulas | | | |
| Hoek | 0.732 (0.539) | 49.63 (67.05) | 29.01 (22.32) |
| CKD_EPI_cisc | 0.749 (0.570) | 54.27 (74.29) | 27.04 (20.97) |
| Creatinine and cystatin-c-based estimating-formulas | | | |
| Stevens | 0.726 (0.531) | 54.99 (75.19) | 26.87 (20.80) |
| Ma | 0.633 (0.427) | 72.22 (97.70) | 20.80 (15.37) |

TDI: Total Deviation Index; CCC: Concordance Correlation Coefficient; CP: Coverage Probability

P491

In-hospital heart failure in a contemporary cohort of patients admitted for acute coronary syndrome: incidence and clinical determinants

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Background: The development of newer antithrombotic therapies and invasive strategies has improved the prognosis of patients suffering from acute coronary syndromes (ACS). However, heart failure (HF) complicating ACS is still associated with high in-hospital mortality and poor long-term survival. Early recognition of ACS patients at high risk of HF could help clinicians optimize effective therapeutic decision-making to avoid this complication.

Purpose: The aims of this study were to describe the incidence of HF complicating ACS and to identify clinical predictors associated with this complication in the setting of current ACS management.

Methods: Between January 2011 and December 2015, 1909 consecutive ACS patients (68 ± 13 years, 74% male) were included. HF complicating ACS was defined as Killip class > 1 during hospitalization. Predictors of in-hospital HF were assessed using a multivariate logistic regression analysis

Table 1. (Continued)

Results: A total of 473 patients (25%) presented HF during hospitalization. Patients with HF were older and more frequently women. They had more comorbidities such as atrial fibrillation, anemia, chronic heart failure and renal dysfunction. Factors associated with HF were age, atrial fibrillation, hypertension, diabetes mellitus, tobacco use, higher heart rate at admission, lower hemoglobin concentration, lower glomerular filtration rate, cardiac troponin elevation, anterior STEMI and evolving myocardial infarction at presentation (Table 1).

Conclusion: Despite improvement in the management of ACS patients, incidence of in-hospital HF remains high and several factors are associated with increased risk for this complication. More intensive care of patients with high risk clinical profile may be warranted to improve its prognosis.

Table 1. Multivariate regression analysis

| | HR (CI 95%) | p |
|-----------------------------------|------------------|--------|
| Age (× year) | 1,03 (1,02-1,04) | <0,001 |
| Diabetes mellitus | 1,48 (1,14-1,92) | 0,003 |
| Hypertension | 1,39 (1,01-1,91) | 0,046 |
| Current smoking | 1,49 (1,08-2,06) | 0,015 |
| Atrial fibrillation | 1,49 (1,07-2,07) | 0,018 |
| Admission heart rate (× l bpm) | 1,03 (1,02-1,04) | <0,001 |
| GFR (×mL/min/1.73m ²) | 0,99 (0,98-0,99) | <0,001 |
| Cardiac troponina elevation | 4,03 (2,28-7,12) | <0,001 |
| Anterior STEMI | 2,99 (2,14-4,19) | <0,001 |
| Evolving myocardial infarction | 2,30 (1,46-3,64) | <0,001 |

P492

Left Ventricular-arterial coupling to detect hemodynamic instability following cardiac surgery

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Background/Introduction: Hemodynamic optimisation following cardiac surgery is crucial. Ventriculo-arterial coupling (VAC) is defined as the optimal transfer of mechanical energy from the heart to arterial bed and recently has been shown as valid parameter in hemodynamically altered states [1].

Purposes: We assessed VAC in cardiac surgical patients showing hemodynamic alteration during the weaning from cardio pulmonary bypass (CPB).

Methods: In thirty patients electively undergoing cardio pulmonary bypass for cardiac surgery VAC was measured non invasively [2] using transesophageal echocardiography (TEE), invasive BP and CI by aortic flow Doppler sampling [3] or thermodilution by pulmonary artery catheterisation. Measurements were taken following induction of anaesthesia (T0) and after weaning from CPB (T1). Hemodynamic derangement was defined as decrement of CI or BP by 20% at T1 compared to T0, normal VAC value as 1 ± 0.36 [4]

Results: Twenty patients showed hemodynamic instability following CPB: mean arterial pressure (MAP) HI 56 (51-59) mmHg - HS 72(66-74) mmHg, CI HI 2.1(1.7-2.3) L/min/m² - HS 2.8 (2.6-3.3) L/min/m² and VAC HI 2.15 (1.46-2.32), HS 1.06 (0.87-1.21) resulted significantly altered ($p < 0.0001$) as well as ejection fraction (EF) HI 45(33-55)% - HS 52(47-56)% ($p < 0.009$). Only in nine out of twenty BP and CI were coherently reduced at T1 when ventricular-arterial uncoupling was diagnosed in all 20.

Conclusion: From this study VAC results in a more accurate estimation of cardiovascular system efficiency and offers a pathophysiological understanding of hemodynamic instability. Vetriculo-arterial uncoupling better detects hemodynamic impairment if compared to CI and BP.

P493

Predictors of early and late deaths in patients with no-ACS severe acute heart failure treated by heart failure team in the hybrid intensive cardiology care / intensive care unit (NYHA IV+ registry)

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There is a small amount of data on clinical outcomes of patients with severe acute heart failure (SAHF) not associated with current acute coronary syndrome (ACS). These patients usually require a comprehensive approach to treatment (heart failure team) and hospitalization in the hybrid, intensive cardiology care/intensive care (HICC/IC) unit, is one of the options.

Aim: To assess treatment strategies and 12-month mortality of no-ACS SAHF patients treated by heart failure team and hospitalized in the HICC/IC unit and to determine predictors of poor outcome.

Methods: A total of 112 consecutive patients with no-ACS SAHF hospitalized in HICC/IC (single-center, observational NYHA IV+ registry) were analyzed. Inclusion criteria for NYHA IV+ registry were NYHA IV class on admission and at least one of: pulmonary congestion on chest x-ray scan,

cardiogenic shock, need for catecholamine or IABP support, ultrafiltration, mechanical ventilation, prolonged (≥ 7 days) diuretic infusion, or multi-organ failure. Patients with acute coronary syndromes were excluded. Follow-up mortality at 12-month was obtained from the government databases and was available for all patients except for 3 foreigners.

Results: The mean age was 58 ± 13 years and 75% were male. Ischemic etiology occurred in 54%. Median APACHE-HF score was 4 with interquartile range 3 to 5, median LV ejection fraction 24% (15-33), and median LVEDD 66mm (58-73). 17 (15%) of patients were admitted with cardiogenic shock, 7 (6%) after cardiac arrest, 13 (11%) already with IABP support. 53 (47%) had severe mitral insufficiency. More than one catecholamine was required for 46% of patients. Finally, IABP support was used in 26% of patients, ultrafiltration in 20%, mechanical ventilation in 30%, PCI in 29%. Mechanical circulatory support was implanted in 5 patients and 2 patients had heart transplantation. There were 26 deaths (23%) during hospitalization. Among 83 discharged patients with available follow-up 26 (31%) died during 12 months. In multivariate analysis (baseline characteristics and clinical data on admission included) the strongest predictor of in-hospital mortality was NT-proBNP level on admission (OR=1.09 per 1000 pg/mL more, 95%CI=1.01-1.19, $p=0.028$). It was also for 12-month mortality after discharge (OR=1.07, 95%CI=1.03-1.11, $p < 0.001$) together with renal insufficiency (OR=3.2, 95%CI=1.36-7.45, $p=0.008$) and chronic obstructive pulmonary disease (OR=4.5, 95%CI=1.25-16.4, $p=0.021$) including baseline and in-hospital clinical data together with treatment modalities.

Conclusions: Heart failure team approach to patients with severe acute heart failure not associated with ACS in the hybrid intensive cardiology care / intensive care unit is beneficial in terms of early mortality, however 1 year survival after discharge is poor. Thus long-term integrated care for these patients is strongly recommended with cooperation of cardiologists, other specialists and primary health care system.

P494

Reduction hospitalizations for decompensated heart failure with cardiac resynchronization therapy

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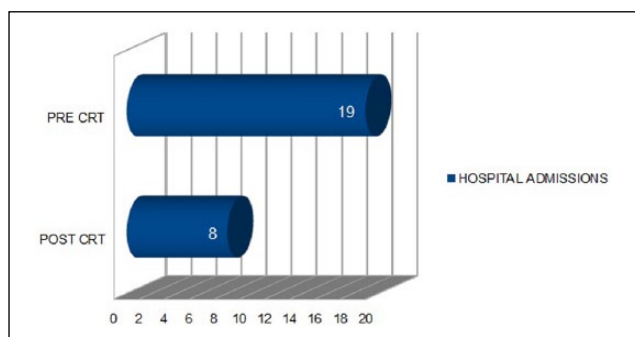
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Introduction: Cardiac resynchronization therapy (CRT) is beneficial to improve morbidity and mortality in patients with chronic heart failure (HF). The COMPANION in 2004 and CARE-HF in 2005, established the beneficial effect of CRT in terms of hospitalizations and improved survival of patients who applied this treatment; Therefore this study was designed to demonstrate this benefit in our patients after implantation of CRT.

Materials and methods: Prospective observational study. 31 patients undergoing CRT implantation June 2010 to December 2012, with LVEF <35%, QRS> 120ms and functional class II-IV heart failure patients were included. Post-implant clinical, demographic variables, comorbidity and associated hospitalizations during the 2 years prior to the TRC and 2 years were evaluated. Statistical analysis with SPSS 20. Categorical variables were expressed as percentages. Quantitative variables were expressed as means \pm standard deviation. The ratio of the number of hospitalizations per unit time is expressed by rates. Statistical significance for a value of $p < 0.05$.

Results: 31 patients were analyzed. At the time of implantation the average age was 68 ± 9 ; 80.6% male, mean LVEF of $28.23 \pm 6.9\%$, 64.6% in functional class III-IV, 64.5% hypertension, 35.5% diabetics, 61.3% ischemic heart disease. The number of admissions for heart failure in the first period was 19 with a rate in the same period of 0.31 hospitalizations/patient-year (95% CI, 0.18-0.48) and the number of admissions in the second period was 8 with a rate of 0.13 hospitalizations/patient-year (95% CI, 0.06-0.25), with a statistically significant difference. ($p=0.036$).

Conclusions: In our study, cardiac resynchronization therapy is associated with a significant reduction in the number of hospitalizations for decompensated heart failure.



P495

The serelaxin infusion in patients with acute decompensated heart failure with reduced systolic function

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Objective: we assessed the effect of serelaxin infusion on the clinical symptoms and the dynamics of laboratory markers in patients with acute decompensated heart failure with reduced systolic function (serelaxin is approved for clinical use in Russia since 2014)

Materials and methods: we studied 20 patients with acute decompensated heart failure and average functional class (FC) by NYHA 3,4 ($\pm 0,50$). All patients had reduced LV systolic function (EF<40%). The average age was $61,5 (\pm 13,9)$ years, systolic BP prior infusion - $132.5 (\pm 11,348)$. In addition to standard heart failure therapy we performed serelaxin infusion within 48 hours (30 mg/kg/day). Assessment of clinical status carried out before and immediately after serelaxin infusion

Results: all patients after serelaxin infusion showed improvement of the clinical implications: respiratory rate $17(\pm 0,72)$ per minute vs $22.5(\pm 2,35)$, dyspnea Borg scale $2,5(\pm 0,797)$ vs $6(\pm 1,22)$. After infusion of serelaxin we also observed a decrease of the NTproBNP to $2608,5 (\pm 4521,64)$ pg/ml vs baseline $6141,5 (\pm 6046,55)$ pg/ml ($p < 0.05$). Changes of CRP ($6,455 [\pm 32,72]$ vs $8,715 [\pm 37,83]$) and hsTroponin ($25,0 [\pm 30,73]$ vs $26,28[\pm 49,0]$) were non-significant

Conclusion: the serelaxin infusion leads to decreasing the symptoms of heart failure, and significantly reduces the levels of NTproBNP level

P496

Were there any changes in the treatment of cardiogenic shock in patients with acute coronary syndromes in the last decade?

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Introduction: Cardiogenic shock is a relatively rare complication of acute coronary syndromes (ACS) with an unfavorable outcome.

Objectives: To evaluate the trends in prevalence and treatment of cardiogenic shock in patients admitted with acute coronary syndrome over a decade.

Methods: Retrospective analysis of a single-centre registry on ACS. Patients were divided in 3 time-groups: 2005-2008 ($n=1405$), 2009-2012 ($n=1229$) and 2013-2015 ($n=801$). We compared the proportion of patients with cardiogenic shock, as well as treatment and short-term outcome of these patients in the three groups.

Results: From the 3435 patients admitted with ACS (64 ± 13 years, 71% males, 62% with ST elevation myocardial

infarction), 212 (6.2%) had cardiogenic shock, with a stable prevalence over the years (7.0% vs. 5.2% vs. 6.2%, $p=0.170$). Age declined in patients with shock (70 ± 10 vs. 66 ± 14 vs. 67 ± 14 years, $p=0.053$) but there were no other differences in terms of gender, cardiovascular risk factors, renal function or previous cardiovascular history, except for a slight trend for an increase in the proportion of patients with a previous revascularization (6.1% vs. 15.1% vs. 18.0%, $p=0.069$). The association with ST elevation myocardial infarction remained high (76% vs. 86% vs. 88%, $p=0.143$) with a trend for lower association with mechanical complications (7.1% vs. 4.7% vs. 2.0%, $p=0.401$). Pharmacological treatment was similar, as well as the use of intra-aortic balloon pump (IABP) (17.2%-28.6%) but there was an increase in coronary angioplasty (78.6% vs. 76.6% vs. 90.0%, $p=0.153$). A reduction in major bleeding (7.1% vs. 6.3% vs. 2.0%, $p=0.428$) and hospital all-cause mortality (55.1% vs. 46.9% vs. 42.0%, $p=0.282$) was observed, although non-significant, with similar all-cause 30-day mortality (54.1% vs. 42.2% vs. 48.0%, $p=0.329$).

Conclusions: The incidence of cardiogenic shock in patients with ACS remained stable, with a trend for younger patients and with higher use of coronary angioplasty. The use of IABP did not change significantly over the years. There was a slight improvement in major bleeding and hospital mortality that still remains high.

Antithrombotic therapy

P497

Protocol-based management of warfarin pharmacotherapy by pharmacists in perioperative cardiac surgery patients

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Introduction: In the past, warfarin pharmacotherapy in perioperative cardiac surgery patients at our hospital has been managed by individual physicians. Managing these prescriptions and instructions can be difficult for cardiac surgery physicians because of the time and effort that they require. In order to decrease the burden on physicians and improve patient safety, we developed a protocol for warfarin management in perioperative cardiac surgery patients that can be carried out by pharmacists rather than physicians. We have been using this protocol at our hospital since May of 2015. The protocol was developed by a team including cardiovascular surgery, intensive care medicine, and pharmacy personnel. It

is based on the international normalized ratio of prothrombin time (PT-INR), and takes into consideration factors such as renal function, age, and body weight.

Purpose: Our aim is to evaluate a protocol for warfarin pharmacotherapy in perioperative cardiac surgery patients that is based on time in therapeutic range (TTR).

Methods: This was a single center, retrospective study. The study period was from November 2014 to October 2015 (excluding May 2015). We included patients who underwent cardiac surgery at our hospital. The target operative procedures were valve replacement, valvuloplasty, coronary artery bypass grafting, and tumor excision. Exclusion criteria were changing to another clinical department and long-term hospitalization after cardiac surgery due to comorbidity. We used electronic medical records to investigate the TTR, rate of >3 PT-INR, and prescription of vitamin K for all patients. We compared the patients who underwent cardiac surgery at our hospital from November 2014 through April 2015 (pre-group patients) with the patients who received cardiac surgery at our hospital from June 2015 through November 2015 (post-group patients). The statistics were analyzed using the Mann-Whitney U test or the Pearson's chi-squared test with Yates's continuity correction.

Results: Ninety-nine patients underwent cardiac surgery during the study period. We excluded 27 patients and enrolled 72 patients in the study. The pre-group patients ($n = 32$) received warfarin pharmacotherapy managed by physicians. The post-group patients ($n = 40$) received warfarin pharmacotherapy managed by pharmacists using the protocol that we developed. There were no significant differences in the background of the pre-group patients compared to the post-group patients. There was no significant difference in TTR between the pre-group and the post-group ($p = 0.472$). The post-group had a lower rate of PT-INR >3 than the pre-group ($p = 0.022$). However, one patient in the post-group had received vitamin K.

Conclusion: Protocol-based management of warfarin pharmacotherapy in our hospital may reduce the burden on physicians without sacrificing the quality of patient care.

P498

High on-treatment after aspirin loading dose platelet reactivity as a modifiable risk factor to tailor antiplatelet therapy in acute coronary syndrome

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The aim of the study was to assess short- and long-term prognostic abilities of platelet reactivity after aspirin loading dose in acute coronary syndrome (ACS), and to investigate whether treatment intensification in patients with platelet hyperreactivity, considered as a modifiable risk factor, can improve clinical outcomes during first month and 4 years after hospital discharge.

Methods: 574 patients with ACS were involved in the study. The first phase of the study was dedicated to assessment of short- and long-term prognostic abilities of on-treatment platelet reactivity in ACS. At the second phase we investigate possibilities of improvement in clinical outcomes in ACS due to antiplatelet treatment intensification in patients with high on-treatment platelet reactivity (HPR). Patients with HPR were randomized 1:1 to one of two treatment groups: 1) dual antiplatelet therapy (DAPT), and 2) switching to potent P2Y₁₂ antagonist (clopidogrel to ticagrelor). Patients of second group with HPR were randomized 1:1 to: 1) continuation of DAPT (after switching); 2) adding a third antiplatelet agent on top of DAPT (in progress). Primary efficacy outcome is the occurrence of cardiovascular death and nonfatal cardiovascular thrombotic event through 4 years of follow-up. Primary safety outcome is major and minor bleeding events.

Results: During 4 years of follow-up cardiovascular death was in 14.3%, nonfatal cardiovascular events – 32.8% and major + minor bleeding events – 2.8%. There were no significant dynamics in on-treatment platelet reactivity (0 – 7 – 30 days) in subgroups with adverse outcomes (cardiovascular death, nonfatal cardiovascular events and combination of death and nonfatal cardiovascular events) (Friedman ANOVA $p > 0.05$). A max (impedance, ADP-induced) more than 5 Ohm was associated with increased risk of adverse cardiovascular events: death: HR 3.3, CI 1.2; 11.0, $p < 0.05$; death + nonfatal cardiovascular events: HR 1.8 CI 1.1; 2.3, $p < 0.05$. Comparison of the survival pattern in subgroups of patients divided according A max (ADP-induced, impedance) at baseline point revealed significant divergence since first month up till 4 years of follow-up (Gehan Wilcoxon $p = 0.026$). Switching from clopidogrel to ticagrelor in patients with HPR after loading aspirin dose in 79.1% led to decrease of platelet reactivity below chosen cut off level, and was associated with significantly lower risk of adverse cardiovascular events (HR 2.4; CI 1.6; 3.5, $p < 0.05$). Patients treated with triple antiplatelet therapy present non-significant differences in platelet reactivity after adding a third agent ($p > 0.05$), but significant increase in frequency of bleeding event during first month (still under follow-up).

Conclusion: On-treatment high platelet reactivity can be considered as an independent modifiable risk factor of adverse cardiovascular events in patients with acute coronary syndrome, which can be used as a marker to tailor antiplatelet therapy.

P499

Prognostic impact of single antiplatelet therapy as a primary prevention strategy in the acute coronary syndromes setting

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Purposes: Acute coronary syndromes (ACS) remain a main cause of death and disability in the world. Antiplatelet therapy is an established treatment both in the acute phase and in secondary prevention of ACS. Despite its worldwide use, the evidence of single antiplatelet therapy (SAPT) efficacy in primary prevention of ACS remains questionable. The aim of the present study was to assess the prognostic impact of SAPT as primary prevention in the ACS setting.

Methods: From 2007 to 2011 consecutive patients included in the ACS prospective registry in one university centre, with primary PCI, were analyzed. Prognostic endpoints were defined as in-hospital, 30-days and 12-months all cause mortality. Statistical correlations were determined using Spearman test and $\alpha < 0.05$ were established for statistical significance.

Results: From 1870 patients included in the registry (70.1% male, 63.4 ± 13.2 years old) there was 1124 (60.1%) ST-elevation myocardial infarction (STEMI) and 34.7% presented an anterior location. 450 (24%) patients were previously medicated with SAPT as a primary prevention strategy. Patients on SAPT in primary prevention presented more classic cardiovascular risk factors, as they were significantly older ($r=0.15$, $p < 0.001$), had more diabetes mellitus ($r=0.14$, $p < 0.001$) and arterial hypertension ($r=0.17$, $p < 0.001$). Moreover, this group presented less frequently a STEMI type of ACS ($r=-0.24$, $p < 0.001$) and had less ACS with anterior location ($r=0.71$, $p < 0.002$). Minor or major hemorrhages rates during hospitalization were not significantly higher in the SAPT primary prevention group. In-hospital, 30-days and 12-months all cause mortality rates were not significantly reduced by SAPT as primary prevention, in our cohort.

Conclusion: SAPT as a primary prevention strategy was reported in 24% of patients presenting an ACS in our registry. Despite a significant reduction in the STEMI and anterior myocardial infarction rates, this strategy did not confer a significant benefit in in-hospital, short-term and long-term mortality.

P500

Acute coronary syndrome and atrial fibrillation: benefit versus risk of triple antithrombotic therapy

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Background: Patients with acute coronary syndrome (ACS) and atrial fibrillation (AF) are a challenging in clinical practice because is difficult to manage the risk of bleeding and the risk of thrombotic events.

Purpose: To evaluate the bleeding and thrombotic risk in patients with AF and ACS undergoing percutaneous coronary intervention (PCI), according to antithrombotic strategy.

Methods: Single-centre retrospective study including 71 consecutive patients with ACS and AF who were admitted between January 2012 and June 2015 (mean age 73 ± 11 years; 82% men). Patients who were not undergoing PCI and those who died before discharge were excluded. Patients were categorized into 4 groups according to the antithrombotic strategy: 1) Triple therapeutic (oral anticoagulant and dual antiplatelet therapy) for 1 month; 2) Triple therapeutic for 3 months or more; 3) Dual therapeutic with oral anticoagulant plus 1 antiplatelet and 4) Dual antiplatelet therapy. The average score CHA2DS2-VASc in the groups was 4.3, 4.8, 4.2 and 3.0, and the average of the HAS-BLED score was 2.4, 2.3, 2.4 and 2.5, respectively. Therefore, the comparison analysis was not considered for the group 4 because the baseline thrombotic risk in these patients was significantly lower.

The following endpoints were analysed: major and minor bleeding; death from any cause and the combination of myocardial infarction (MI), coronary revascularization or stroke.

Results: During a median follow up of 18.4 months, the all-cause mortality occurred in 20 patients (28.2%), bleeding in 14 (14.7%) (7 major and 7 minor) and the composite endpoint of MI, coronary revascularization or stroke occurred in 10 patients (14.1%).

The mortality between the groups was significantly higher in patients who received triple therapeutic for ≥ 3 months compared to the others (group 1: 15.8%; Group 2: 45% and group 3: 17.6%, $p = 0.036$) - Figure 1. There were no differences between the groups regarding the composite endpoint and bleeding.

Using a Cox regression model, the use of triple therapeutic ≥ 3 months was an independent predictor of mortality (HR 6.1, 95% CI 1.8 to 20.3, $p = 0.003$) after adjusting for baseline characteristics of study population. However this therapy was not an independent predictor of bleeding (HR 1.1, 95% CI 0.54 to 2.2, $p = 0.8$) or the composite endpoint (HR 1.3, 95% CI 0.55 to 3.3, $p = 0.5$).

Conclusion: In patients with atrial fibrillation and acute coronary syndrome undergoing percutaneous coronary intervention, extended duration of triple antithrombotic therapy was associated with a higher mortality.

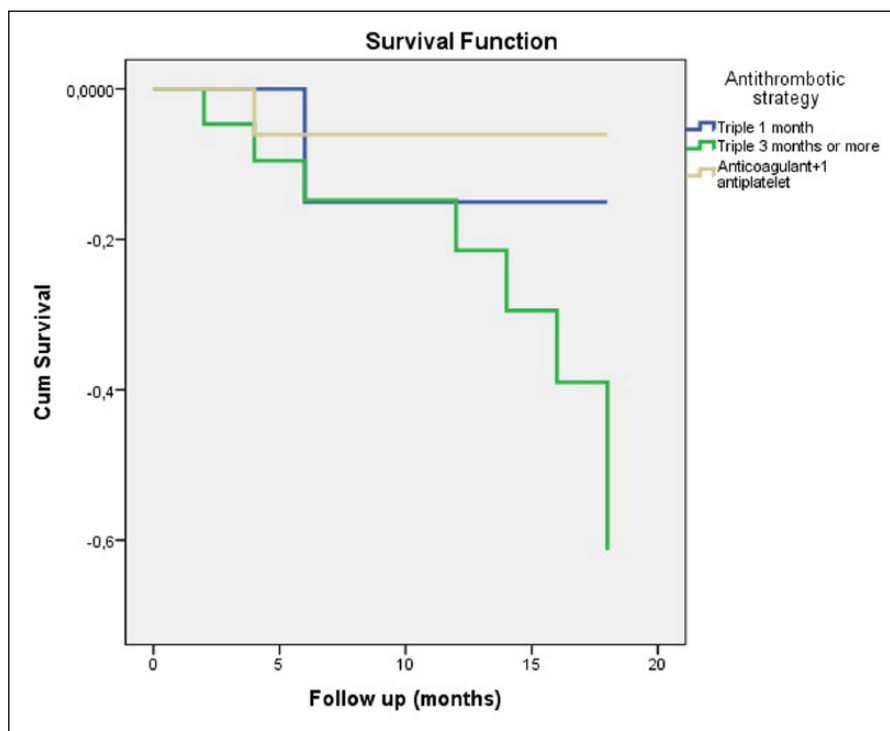


Figure 1

P501

Safety and efficacy of new antiplatelet drugs in elderly patients with acute coronary syndrome (SCENARIO I study)

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Background: Dual antiplatelet therapy is recommended in all age categories to prevent major cardiovascular events. Our aim is to evaluate the efficacy and safety of new antiplatelet drugs ticagrelor and prasugrel (NA) during ICU and hospital stay in elderly patients hospitalized for acute coronary syndrome (ACS).

Methods: We analyzed the hospital evolution of patients ≥ 70 years admitted because of ACS between 2013 and 2015 in 4 hospitals participating in the ARIAM Registry, and compared those receiving NA with those receiving clopidogrel.

Results: Of the total of elderly patients ($n = 930$), 19 (2%) were excluded for not receiving a second antiplatelet. After multivariate logistic regression, a propensity analysis was performed comparing two matching groups of 224 patients nearly identical, one receiving NA and the other receiving clopidogrel: ST segment elevation: 71.8 vs 73.2%; age: 75.6 vs 75.5 years ; female: 33.9 vs 32.6%; diabetes: 43.8 vs 42.0%; hypertension: 70.5 vs 70.1%; previous myocardial infarction: 20.1 vs 21.0%; congestive heart failure: 4.0 vs 3.5%; stroke: 6 vs 8.4%; peripheral vascular ischemia: 5.3 vs 5.3%; chronic renal disease: 4.4 vs 2.2%; time to ICU admission: 460 vs 455 minutes). The ICU and in-hospital mortality in patients receiving NA was 2.23% and 2.68% versus 12.05% and 14.29% in the clopidogrel group (both $p \leq 0.001$). There were no significant differences in the presence of bradycardia, bleeding, atrial fibrillation, ventricular fibrillation or stroke. The presence of multivessel disease or left main coronary artery lesions did not condition the use of NA.

Conclusions: After adjusting for multiple factors, the use of NA is related to a very significant reduction of in hospital mortality. Data from the ARIAM Registry confirm the benefits of NA in the 'real-world'.

P502

Dual antiplatelet therapy in acute coronary syndrome, how long should we maintain it?

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Introduction and purpose: Dual antiplatelet therapy (DAPT) is currently recommended for 12 months after acute coronary syndrome (ACS). Whereas some studies suggest to reduce this time others advice to extend it. Our aim was to analyze the outcome of patients admitted with ACS according to duration of DAPT.

Methods: We analyzed 984 patients who were discharged from our hospital with diagnostic of ACS. We studied the mayor cardiovascular events, MCE (death, myocardial infarction, cerebrovascular accidents, stent thrombosis or new coronary revascularization) at long-term follow-up (≥ 12 months in patients without events during the first year since discharge). We studied the events in patients with DAPT in function of the length of treatment (less than one year, conventional DAPT, or more than one year, extended DAPT).

Results: 608 patients (61.8%) were discharge with NSTEMI diagnosis and 376 patients (32.8%) with STEMI. Among these patients, 67% maintained DAPT more than 12 months. A total of 605 patients free of events during the first year after discharge were followed (median of 22 months). Rate of death from any cause was 6.9% in the total sample, and was lower between patients with extended DAPT (5% vs. 17%; $p < 0.001$). As well as rate of MCE (12.5% vs. 25.0%; $p = 0.002$). GRACE risk model was used at admission. In-hospital GRACE score was associated with rates of events beyond the first year of follow-up (GRACE low: 4.5%; GRACE intermediate: 10.4%; GRACE high: 23.0%; $p < 0.001$). The rates of bleeding were similar between the two groups of treatment. GRACE score at admission (HR: 1.02; IC95%: 1.01 a 1.02; $p < 0.001$) and the duration of DAPT were independently associated with rates of MCE during the follow-up beyond the first 12 months from discharge.

Conclusions: Extended DAPT seems to be associated with lower rate of MCE beyond the first year since discharge in patients with ACS with no increase in bleeding events. GRACE score at admission could be useful to select those patients who can obtain benefit of extended DAPT.

P503

New antiplatelet agents in acute coronary syndrome

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Introduction: Antiplatelet therapy plays an essential role in the treatment of acute coronary syndromes (ACS). In the last decade therapy was based on dual antiplatelet therapy with clopidogrel + acetylsalicylic acid which have important limitations that affect their current success. With the emergence of ticagrelor, the first oral reversible antagonist of the receptor of P2Y₁₂, was possible to inhibit the adenosine diphosphate receptor faster, more powerful and more predictable than with clopidogrel.

Methods: Retrospective study of a population of ACS from a national registration from November 1, 2013 (date of

comparticipation of Ticagrelor in Portugal) to 30 October 2014. We evaluated 1594 patients (P) diagnosed with ACS that were subdivided in two groups: those who have and those who haven't done ticagrelor. Baseline characteristics of the population and the antiplatelet regimen used during hospitalization were evaluated.

Purpose: Evaluate the profile of use of ticagrelor in a population of P with ACS.

Results: The P were mostly male (72.8%) with a mean age of 66 ± 13 years. The diagnosis of admission was ST segment elevation myocardial infarction (STEMI) in 38.1% of P and

Table 1. Events during follow-up beyond 1 year.

| | All (N=605) | DAPT <12 m (N=88) | DAPT \geq 12 m (N=481) | P |
|--------------------------------|----------------|----------------------|-----------------------------|--------|
| Death | 39 (6.4%) | 15 (17.0%) | 24 (5.0%) | <0.001 |
| Myocardial infarction | 19 (3.1%) | 5 (5.7%) | 14 (2.9%) | 0.183 |
| Stent thrombosis | 3 (0.5%) | 0 | 3 (0.5%) | 1.000 |
| Ischemic stroke | 12 (2.0%) | 3 (3.4%) | 9 (1.9%) | 0.356 |
| New coronary revascularization | 22 (3.6%) | 4 (4.5%) | 18 (3.7%) | 0.719 |
| MCE | 82 (13.6%) | 22 (25.0%) | 60 (12.5%) | 0.002 |
| Hemorrhagic stroke | 2 (0.3%) | 1 (1.1%) | 1 (0.2%) | 0.176 |

non-ST segment elevation myocardial infarction (NSTEMI) in 50.6% of P. From 1594 patients 44 (2.8%) were treated with ticagrelor. The P who were treated with ticagrelor were younger (59 ± 13 years) compared to those who did not do ticagrelor (66 ± 13 years) ($p < 0.001$). The admission diagnosis in patients who underwent ticagrelor was STEMI in 77.3% of patients and NSTEMI in 22.7%. Of P who underwent ticagrelor 70.7% were admitted through the emergency department, 12.2% were directly admitted in a coronary unit and 12.2% were admitted by the catheterization laboratory. In patients who underwent ticagrelor, 32.6% had previously done clopidogrel. In this series no patient of ticagrelor group was treated with a loading dose. The Ticagrelor was administered in equal proportion before and after coronary angiography. There were 2 reinfarction in the ticagrelor group (4.5%), one with the diagnosis of STEMI and the other with NSTEMI. One of these P was previously treated with clopidogrel.

Conclusion: From the analysis of this population we found that the use of ticagrelor is still scarce. Although a loading dose should be used, none of these patients did the recommended dose. The size of the population did not allow prediction analysis of the use of ticagrelor. The data from this analysis show that adherence to the latest ACS guidelines are not being effective, which should lead to a review of everyday clinical practice.

P504

Triple antithrombotic therapy after acute coronary syndrome

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Introduction: A significant proportion of patients with indication for double antiplatelet therapy (DAPT) after acute coronary syndromes (ACS) will need concomitant anticoagulation. The so called triple antithrombotic therapy (TAT) poses the dilemma of the hemorrhagic risk, which when serious is associated with high mortality. Evidence is scarce, particularly regarding specific population as the elderly.

Methods: We retrospectively analyzed patients admitted to our center during a 9 month period, followed up during 6 to 18 months. We identified patients with formal indication to TAT, hemorrhagic risk factors as well as hemorrhagic and ischemic endpoints. In all but 2 patients, vitamin K antagonists were the anticoagulant of choice. Were DAPT was used, aspirin 100mg+Clopidogrel 75mg was chosen.

Results: From a total of 272 patients followed in our center after discharge due to ACS not managed by CABG, 55 (20%) had indication to TAT and constitute our sample. Age was 71.1 ± 14.7 years and 30 % had > 80 years. Atrial fibrillation was the most prevalent indication for anticoagulation (72.7%) and it was previously known only in 55 % of cases, and in those only 40.9 % of these were previously receiving anticoagulation. All patients with AF had a CHADSVASC > 2 and a HASBLED > 3 . 47.2 % of patients underwent coronary angioplasty with stent placement, new generation drug eluting being the most common (46.2%). 9 patients (16.4%) patients experienced bleeding during initial hospitalization that was

serious in 5 cases and life-threatening in 1. Only 17 (30.9%) of total patients were discharged with triple therapy, a value that increased to 68% considering patients undergoing PCI with stent. Of these 17 patients discharged with TAT, 6 (35%) suffered a bleeding during the follow-up that was life-threatening in four patients, although no patient has died.

Conclusion: Around a fifth of patients admitted with ACS have indication for TAT. The majority are elderly patients with increased hemorrhagic risk. Bleeding is common, either in the acute setting or during follow-up, and is associated with a significant mortality risk.

P505

Impact assessment of an educational program in myocardial infarction guidelines adherence

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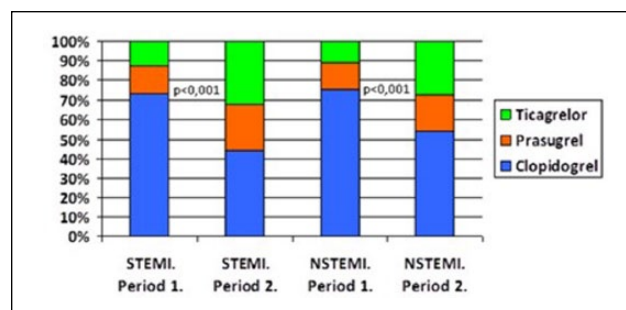
Purpose: Current guidelines recommend the use of prasugrel or ticagrelor as first choice treatment combined with aspirin in patients with ST-elevation myocardial infarction (STEMI) and no ST-segment elevation myocardial infarction (NSTEMI). However, real-life multicenter registries have shown a low utilization rate of these new antiplatelet agents compared to clopidogrel. Our aim was to analyze the rates of prescription of antiplatelet agents and the impact of a structured educational program on the adherence to guidelines, especially on the utilization of antiplatelet therapies.

Methods: From January-2013 to June-2015, 959 consecutive patients were admitted in an Acute Cardiac Care Unit of a tertiary hospital. During June-2014, we developed a structured educational program and a protocol emphasizing the importance of using new antiplatelet therapies for the treatment of STEMI and NSTEMI. For the purpose of the study, patients were classified into two groups: Group 1: patients admitted from January-2013 to June-2014 (prior to the program); and group 2: those admitted between July-2014 and June-2015. Patients were followed up to 12 months after hospital discharge. We excluded 61 patients with indication for permanent oral anticoagulation, and cerebrovascular disease.

Results: Our total population consisted of 898 patients; 592 (65.9%) were admitted for STEMI and 342 (34.1%) for NSTEMI. Patients of both groups were comparable in terms of their basal characteristics. It is necessary to emphasize the great differences found in the prescription of new antiplatelet therapies between the two periods, with a significant increase in the use of prasugrel (13.4% vs. 18.8%) and ticagrelor (11.4% vs. 30.2%) at the expense of an important decrease in the rate of clopidogrel's prescription (72.5% vs. 49.7%) ($p < 0.001$). We

also found differences in 'switching' strategies, more frequent during the second period ($p = 0.034$). In NSTEMI population, there were no differences in GRACE ($p = 0.264$) or CRUSADE scores ($p = 0.416$) between the two periods, finding a significant prescription increase of the new antiplatelet agents after the educational program, without any differences in the rates of bleeding within 12 months of follow-up ($p = 0.361$). These results were consistent in the cohort of patients diagnosed of STEMI; furthermore, in this cohort we found a reduction of the incidence of non fatal in-hospital myocardial reinfarction in group 2 as compared with group 1 ($p = 0.002$).

Conclusion: Our study shows the effectiveness of implementing educational programmes and protocols in order to improve guidelines adherence. These measures are related with better clinical outcomes for our population with acute coronary syndromes achieving a reduction in major adverse cardiovascular events and without an increasing of bleeding events.



Prescription of antiplatelet therapies

P506

ATTAIN-Registry: Use of P2Y12-inhibitors in patients presenting with acute coronary syndrome in Austria

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Background: Both, Prasugrel and Ticagrelor, have been shown to be superior compared to Clopidogrel for the treatment of acute coronary syndrome (ACS). Recent data from different national registries in Europe, studying the use of the novel P2Y12-inhibitors, showed a reluctant prescription policy, with rates of Clopidogrel at discharge ranging from approximately 25 to 65%.

Purpose: In this study, we sought to assess the prescription rates of all P2Y12-inhibitors at discharge in patients presenting

with ACS and the predictive parameters for the explanation of the use of Clopidogrel in four Austrian tertiary PCI centres.

Methods: In this prospective, multi-centre registry patients presenting with ACS at the emergency departments of four Austrian hospitals, consequently undergoing percutaneous coronary intervention were included. Furthermore, antiplatelet treatment at discharge was assessed in order to evaluate its guideline conformity.

Results: For this study 835 patients were included between January and June 2015, of which 265 (31.7%) were female and mean age was 66.9 ± 12.6 years. 427 patients (51.1%) were diagnosed with ST-elevation myocardial infarction and 408 (48.9%) with non-ST-elevation-ACS (NSTEMI-ACS).

Of all patients, 130 (15.6%) had either an absolute contraindication against a new P2Y12-inhibitor or atrial fibrillation with an indication for oral anticoagulation.

At discharge, 224 patients (26.8%) received Clopidogrel, 262 (31.4%) Prasugrel, 300 (35.9%) Ticagrelor, 19 (2.3%) had no P2Y12-inhibitor and 29 (3.5%) had died. Of those who received Clopidogrel, 122 (14.6% of all patients) had neither an absolute contraindication against a new P2Y12-inhibitor nor atrial fibrillation.

In multivariate binary logistic regression analysis predictive factors for the use of Clopidogrel were the diagnosis of NSTEMI-ACS (OR= 4.27 [95%CI 2.48-7.36]; $p < 0.001$), family history of coronary heart disease (OR= 2.48 [95%CI 1.08-4.62]; $p = 0.029$), chronic obstructive pulmonary disease (OR= 3.76 [95%CI 1.74-8.09] $p = 0.001$) and planned operation (OR=2.05 [95%CI 1.02-4.12] $p = 0.043$) next to factors contributing to absolute contraindication and atrial fibrillation.

Conclusion: Despite very clear data on the superiority of the novel P2Y12 inhibitors, prescription of Clopidogrel remains high. Parameters associated with a presumably higher risk of bleeding were the most prominent factors for the prescription of Clopidogrel. Still, of all patients approximately 15% received Clopidogrel despite the lack of contraindications for the more effective alternatives.

P507

Safety of switching to new antiplatelets in acute coronary syndrome with ST segment elevation, a monocentric experience

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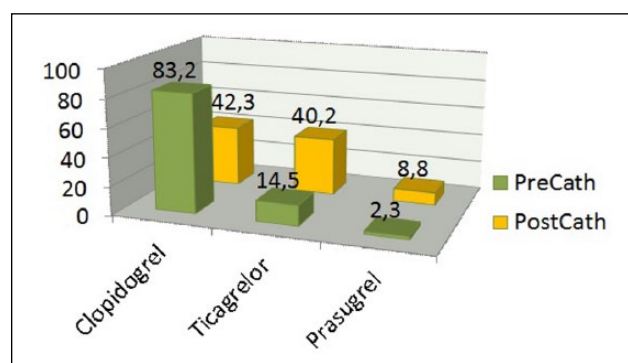
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Purpose: The double antiplatelet treatment with acetylsalicylic acid and P2Y12 inhibitor is the contemporary cornerstone for the management of patients with acute coronary syndrome. In the last years two new antiplatelet agents were developed, more potent than Clopidogrel, Ticagrelor and Prasugrel, with class I indication in the ESC Clinical practice guidelines for ST elevation Myocardial Infarction (STEMI). However, a high percentage of patients get a loading dose of Clopidogrel at admission making the switch to Ticagrelor or Prasugrel during the hospitalization. We aimed to investigate the safety of this strategy.

Methods: Retrospective and observational study of patients with STEMI diagnosis. For this analysis we included patients with this diagnosis from June 2014 to December 2015 in our cardiology department. The clinical data was collected at the admission, and the follow-up was made by electronic records of our regional health system. The bleeding was classified by Bleeding Academic Research Consortium (BARC) categories

Results: 249 STEMI patients were included, 77% male sex, 23% with diabetes, and 15.7% with previous ischemic heart disease. The reperfusion treatment was primary Percutaneous Coronary intervention in 83.5% of the cases, 5.2% thrombolysis, and no reperfusion treatment in 11.3% of the patients. Before the catheterization, 95% of patients were pretreated with P2Y12 inhibitor. In the figure we show the treatment before and after the catheterization. During the hospitalization the switching was made in 47.8% of the patients, the most frequent was Clopidogrel to Ticagrelor (76%), from Clopidogrel to Prasugrel (13.5%) and from Ticagrelor to Clopidogrel in 7.3%. The univariate analysis did not show any higher percentage of hemorrhagic events, not for Ticagrelor (Bleeding with switch-1.4% versus not switch-4.3%, $p = 0.38$) neither for Prasugrel (Bleeding with switch-6.3% versus not switch-0%, $p = 0.56$)

Conclusions: The switching to Ticagrelor or to Prasugrel is safe without a higher percentage of hemorrhagic events during the hospitalization



Treatment before and after cath

Cardiac shock

P508

Anticoagulation in patients with intra-aortic balloon pump. Is it always necessary?

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Introduction: The implantation of an intra-aortic balloon pump (IABP) is related to the occurrence of ischemic events in the lower limbs, in the context of catheter-associated thrombosis. There are few relevant articles that address the benefit of heparinization in this scenario. In the acute cardiac care units, concomitant use of other antithrombotic agents is really common, which can increase the risk of bleeding.

Purpose: The objective of this study is to determine the risk-benefit of heparin in this context, in relation to ischemic events and/or bleeding.

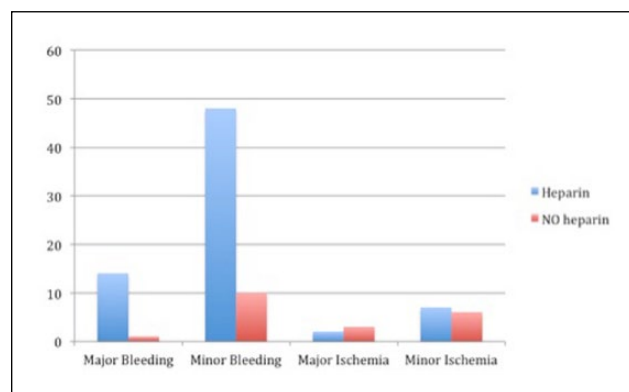
Methods: A meta-analysis from three previously published studies (1 clinical trial and 2 observational studies) was performed. Animal studies, as well as groups with selective heparinization were excluded. A sample of our own center, which included 55 consecutive patients recruited retrospectively, was added. A total of 513 patients, 228 treated with heparin and 285 without heparin, were included.

Results: There were no significant differences between the groups (with or without heparin) with respect to average age (62.33 ± 14 versus 64.36 ± 12 , $p = 0.08$), gender (women: 27.19% vs. 34.74%, $p = 0.06$), and LVEF ($33.57\% \pm 12$ vs. $31.8\% \pm 11$, $p = 0.08$). Aspirin use was higher in the group of patients treated with heparin (86.64% vs. 66.81%, $p < 0.001$), while GP IIb/IIIa inhibitors administration (17.83% vs. 29.12% $p = 0.001$) and the prevalence of diabetes (38.6% vs. 47.7%, $p = 0.04$) were lower. Heparin therapy was associated with a higher incidence of bleeding, both major and minor, while no significant differences were noted respect to ischemic events. Overall, patients receiving heparin had a higher incidence of major complications (see table and graph).

Conclusions: Anticoagulation in patients with IABP appears to be associated with an increased incidence of bleeding and major complications. However, it is necessary to corroborate these data from randomized clinical trials with a large sample size to homogenize the groups, as well as studying other factors possibly involved (implantation time, importance of aorta-balloon size), before a definitive attitude.

Table 1.

| | Heparin | NO heparin | P value | p1-p2 (CI 95%) |
|---------------------|---------|------------|---------|---------------------|
| Major bleeding | 14 | 1 | <0,001 | 0,06 (0,03-0,09) |
| Minor bleeding | 48 | 10 | <0,001 | 0,17 (0,12-0,23) |
| Major ischemia | 2 | 3 | 0,84 | -0,001 (-0,02-0,01) |
| Minor ischemia | 7 | 6 | 0,49 | 0,009 (-0,02-0,04) |
| Major complications | 16 | 3 | <0,001 | 0,06 (0,02-0,09) |



Bleeding/ischemia associated with IABP

P509

In-hospital mortality and long term outcome of ST-segment elevation acute myocardial infarction complicated with cardiogenic shock in the era of primary angioplasty

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Background: Cardiogenic shock (CS) is a severe complication of ST-segment elevation acute myocardial infarction (STEMI) whose incidence and evolution is poorly known in the primary angioplasty era.

Purpose: The aim of this study is to analyse the incidence, in-hospital mortality and long-term prognosis of CS in a current cohort of STEMI patients in a reperfusion network by primary angioplasty (pPCI).

Methods: We performed a prospective single-center observational study enrolling 1,158 STEMI patients

consecutively admitted between February 2011 and October 2014. Patients were classified in two groups according to the presence of CS: CS (N=55) and non-CS (N=1,103). Clinical features and in-hospital mortality were compared between groups. Long-term mortality and readmissions due to cardiovascular causes were evaluated after a mean follow-up of 27 months.

Results: The incidence of CS was 4.7% in our STEMI series. Patients with CS were older (69.7 vs 62.2 years; $p<0.001$) and had a higher prevalence of diabetes mellitus (36.4% vs 24.2%; $p=0.034$), anterior wall STEMI (63.6% vs 41.0%; $p=0.001$) and 3-vessel (34.0% vs 19.1%; $p<0.001$) and Left Main disease (20.0% vs 3.5%; $p<0.001$). No differences were found in the rate of reperfusion (92.7% vs 90.2%, all by pPCI) or the total ischemia time (median of 197 vs 193 minutes). CS STEMI were larger (Troponin I peak 189.8 vs 44.9 ng/ml; $p<0.001$) and left a lower ejection fraction (37.3% vs 51.9%; $p<0.001$). The 30-day mortality rate was higher in the CS group (56.4% vs 2.9%; $p<0.001$) and these patients further died early (mean survival 3.7 vs 11.2 days; $p<0.001$). Among acute-phase survivors, mortality was also higher in the follow-up in the CS group (20.8% vs 7.1; $p<0.033$), although no differences in the cause of death were observed, with cardiovascular causes only in half of both groups. A trend to more readmissions owing to cardiovascular cause was observed in the CS group (33.3% vs 18.3%; $p=0.061$), mainly due to heart failure admissions (16.7% vs 5.0%; $p=0.034$).

Conclusions: The incidence of cardiogenic shock in STEMI patients in the primary angioplasty era is low but its mortality remains very high despite a reperfusion network of pPCI. Among survivors, long-term prognosis is also worse in CS patients, with three fold higher mortality and heart failure readmissions than non-CS STEMI patients.

P510

The impact of admission blood glucose level on clinical picture and prognosis in cardiogenic shock

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Introduction: Critically ill patients often present with hyperglycaemia, regardless of history of diabetes mellitus (DM). Hyperglycaemia has been associated with increased mortality in acute myocardial infarction and acute heart failure, but data regarding cardiogenic shock (CS) are sparse.

Purpose: To investigate the impact of admission plasma glucose level on clinical picture and short-term mortality in CS.

Methods: Admission blood glucose level was recorded in 211 CS patients, that were divided into five categories: patients with hypoglycaemia (glucose <4 mmol/L), normoglycaemia (4-7.9mmol/L) and mild (8-11.9mmol/L), moderate (12-15.9mmol/L) or severe (≥ 16 mmol/L) hyperglycaemia).

Results: Glucose levels were distributed equally between normoglycaemia (26% of patients), mild (27%), moderate (19%) and severe (25%) hyperglycaemia, while hypoglycaemia (2%) was rare. Severe hyperglycaemia was associated with higher blood leukocyte count (17.3 E9/L), higher lactate level (4.4mmol/L) and lower arterial pH (7.23) compared with normoglycaemia or mild to moderate hyperglycaemia ($p<0.001$ for all).

Short-term mortality was highest among hypoglycaemic and severely hyperglycaemic patients (60% for both) compared with 26% in normoglycaemic group (Figure 1.). Severe hyperglycaemia was an independent predictor of in-hospital mortality (OR 3.7, 95% CI 1.2-11.7, $p=0.025$, normoglycaemia as reference), when adjusted for age, gender, LVEF, lactate and history of DM. Mean glucose level of survivors and non-survivors differed significantly among non-diabetic patients (10.1 vs. 12.9 mmol/L, $p=0.009$), but not among patients with prior DM (16.3 vs. 17.4 mmol/L, $p=0.59$).

Conclusions: Glucose level significantly affects the outcomes in CS. Severe hyperglycaemia is an independent predictor of in-hospital mortality in CS and is associated with signs of hypoperfusion and stress response. Prior DM-status modifies the prognostic value of admission glucose level.

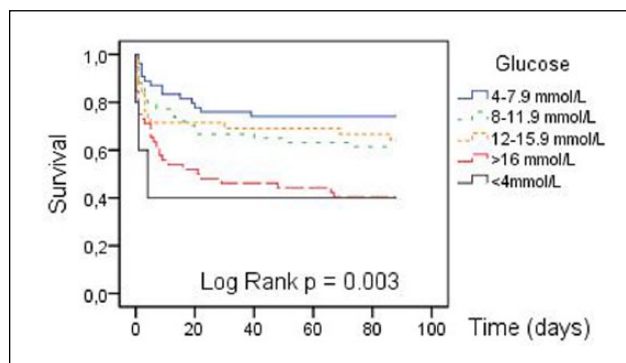


Figure 1. Kaplan-Meier survival curves.

P511

Admission glycaemia in patients with acute coronary syndrome complicated by cardiogenic shock: differences by myocardial infarction classification

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Abstract: Increased blood glucose (BG) levels at admission is associated with adverse outcome in patients with acute coronary syndrome (ACS). However, limited data are available relating admission BG to mortality in patients with ACS complicated by cardiogenic shock (CS).

Purpose: To determine if glycaemia on admission can be a predictor of in-hospital death in patients with ACS complicated by CS.

Methods: A prospective study was performed in one tertiary cardiology centre including consecutive patients diagnosed with ACS from 2005 until 2015. Due to a possible linear relationship between blood glucose and mortality, glucose level on admission was treated as a continuous variable. A sub-analysis of ST elevation (STE) and non ST elevation (NSTEMI) ACS was performed.

Results: Out of 3395 consecutive patients with ACS, 189 (5.6%) had cardiogenic shock. CS occurred in 7.9% of patients with STE ACS and 2.0% of patients with NSTEMI ACS. BG at admission was significantly higher in patients with CS (12.82 mmol/L \pm 7.10 vs. 8.58 mmol/L \pm 4.17, $p < 0.001$) comparing to patients without shock. After adjusting for possible confounders, glycaemia at admission remained a predictor of cardiogenic shock (HR 1.006, CI 1.004-1.008, $p < 0.001$). There was no statistically significant association between the level of glucose on admission and in-hospital mortality in patients with ACS complicated by CS. However, in the group of patients with STE ACS, glycaemia at admission was associated with increased in-hospital mortality ($p = 0.009$). This association was not observed in NSTEMI ACS.

Conclusion: Glycaemia at admission is an independent predictor of cardiogenic shock in patients with ACS. Blood glucose levels are associated with increased in-hospital mortality in shock patients with STE ACS, but not in patients with NSTEMI ACS.

P512

IABP Shock II Trial and its impact on clinical practice: Has it changed our management for cardiogenic shock complicating acute myocardial infarction?

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Background: On October 4 2012, the publication of 'IABP - Shock II' Trial results, shocked specialists in acute cardiac care who, before that, routinely employed Intra-Aortic Balloon Pump (IABP) for cardiogenic shock due to acute myocardial infarction (AMI-CS). After that, the

use of IABP in this situation is controversial. Our goal is to determine whether the publication of this study has changed clinical practice in our hospital.

Methods: Retrospective comparison of clinical data of patients with AMI-CS admitted to our Coronary Care Unit before and after the publication of the study.

Results: Between 2010 and 2015, 208 IABP were implanted at our centre. The reasons for implantation were: cardiogenic shock after extracorporeal circulation (85), AMI-CS (56), mechanical complications of AMI (5), support for complex angioplasty (13), bridge to transplant therapy (18), cardiogenic shock from other causes (23) and post - cardiac arrest syndrome (21).

Before the publication of the study 34 patients with AMI - CS received IABP. After that 22 IABP were implanted. No significant differences in baseline characteristics of patients in both groups were found (Table 1). Mortality between the two groups showed no significant difference (29.4% vs. 50%, $p = 0.16$).

Conclusion: Despite published data, IABP remains the first choice therapy for patients with AMI - CS at our centre.

Table 1. Differences between two groups

| | BEFORE SHOCK II TRIAL | AFTER SHOCK II TRIAL | P |
|--------------------------|---|---|------|
| Sex | 24 males (70.6%) | 15 males (68.2%) | 0.42 |
| Age | 68 years (sd: 12.5) | 62.6 years (sd: 15.1) | 0.15 |
| Arterial hypertension | 20 (58.8%) | 10 (45.5%) | 0.41 |
| Diabetes | 11 (32.3%) | 5 (22.7%) | 0.55 |
| Dislipidemia | 15 (44.1%) | 13 (59.09%) | 0.41 |
| Smoking | 18 (52.9%) | 9 (40.9%) | 0.42 |
| AMI location | - Anterior 19 (55.9%) - Inferior 6 (17.6%) - Lateral I (2.9%) - Inferoposterolateral 8 (23.5%) | - Anterior 12 (54.5%) - Inferior 8 (36.3%) - Lateral I (5%). - Inferoposterolateral 1 (5%) | 0.05 |
| Primary PCI | 28 (87.5%) | 20 (90.9%) | 0.77 |
| Mitral regurgitation | 9 (26.5%) | 6 (27.3%) | 0.62 |
| Ventricular tachycardia | 8 (23.5%) | 7 (31.8%) | 0.55 |
| Ventricular fibrillation | 9 (26.5%) | 8 (36.4%) | 0.55 |
| Acute renal failure | 13 (38.2%) | 13 (59.1%) | 0.17 |
| Ischemic hepatitis | 12 (35.3%) | 10 (45.5%) | 0.57 |
| Pulmonary congestion | 13 (38.2%) | 14 (63.6%) | 0.06 |
| LVEF | 36.9% (ds: 16.8) | 35.6 (ds: 13.9) | 0.75 |

P513

Right ventricular dysfunction is an independent predictor of cardiogenic shock development following acute myocardial infarction

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Introduction: Right ventricular dysfunction (RVD) has been described as an important prognosis marker following acute myocardial infarction (AMI) with ST-elevation. However, data regarding evaluation, recognition and prognostic impact of RVD following AMI is still scarce.

Purpose: Evaluation of prognostic impact of RVD on the development of cardiogenic shock following AMI.

Methods: We retrospectively analyzed 2524 patients who were admitted to our coronary care unit with AMI. Two groups were defined based on the presence or absence of RVD, defined as TAPSE \leq 16mm. Clinical and laboratory features, treatment and adverse events were compared in each group of patients. The primary endpoint was cardiogenic shock development.

Results: Patients with RVD were older (68.2 ± 1.2 vs 63.4 ± 0.3 years, $p<0.001$) and had increased prevalence of atrial fibrillation (14.5 vs 5.1% , $p<0.001$) and lower BMI (25.7 ± 0.4 vs 27.3 ± 0.1 , <0.001). On admission, patients with RVD presented more frequently with ST-elevation AMI (58.4 vs 46.9% , $p=0.009$), significant right coronary artery stenosis (79.8 vs 51.3% , $p<0.001$), lower systolic (117.9 ± 2.1 vs 131.2 ± 0.5 mmHg, $p<0.001$) and diastolic blood pressure (72.2 ± 1.3 vs 78.3 ± 0.3 mmHg, $p<0.001$), worse renal function (eGFR 69.7 ± 2.9 vs 85.5 ± 0.7 mL/min/1.73m², $p<0.001$) and Killip class > 1 (38.4 vs 18.4% , $p<0.001$). Regarding analytical data, patients with RVD presented with lower hemoglobin (13.1 ± 0.2 vs 13.9 ± 0.0 g/dL $p<0.001$) and higher NT-proBNP levels (7201.3 ± 1093.9 vs 2637.1 ± 121.0 pg/mL). The

RVD group complicated more frequently with: worsening left ventricular function (EF: 40.4 ± 0.9 vs $45.7 \pm 0.2\%$, $p<0.001$), signs and symptoms of heart failure (63.0 vs 26.9% , $p<0.001$), mechanical complications (6.3 vs 1.4% , $p<0.001$), malignant arrhythmias (17.5 vs 6.5% , $p<0.001$) and need for aminergic support (24.8 vs 4.6% , $p<0.001$). The in-hospital cardiovascular mortality rate was higher in the RVD group (OR 3.36; 95% CI 1.28 - 8.86 $p=0.01$). After exclusion of patients admitted with cardiogenic shock, RVD was identified as a significant predictor of cardiogenic shock development after AMI (OR 4.94; 95% CI 2.42-10.11, $p<0.001$). In multivariate analysis, after adjusting for significant predictors of CV mortality (age, gender, EF $<40\%$, NT-proBNP, troponin I, eGFR, ST-elevation AMI), RVD remained as an independent predictor of cardiogenic shock development after AMI (OR 2.94; 95% CI 1.22 - 7.05, $p=0.016$).

Conclusion: RVD is an independent predictor of cardiogenic shock development after AMI.

P514

Early prediction of IABP failure in cardiogenic shock complicating acute myocardial infarction: the role of SOFA score

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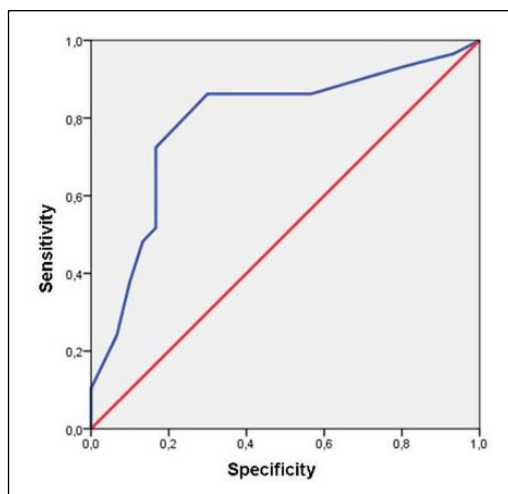
Background: cardiogenic shock (CS) still remains the leading cause of death in patients with acute myocardial infarction (AMI). Although intra-aortic balloon pump (IABP) has been the most used mechanical circulatory support device for years, its efficacy has been recently criticized. Patients not responding to IABP have extremely high mortality and their early identification may allow to promptly consider more advanced strategies of mechanical support.

Purpose: Aim of this study was to identify early predictors of IABP failure.

Table 1. SOFA score

| | 0 | 1 | 2 | 3 | 4 |
|--|----------------|------------|-------------------------------|--|----------------------------------|
| PaO ₂ /FiO ₂ | >400 | \leq 400 | \leq 300 | \leq 200 | \leq 100 |
| Platelets*10 ³ / μ l | >150 | \leq 150 | \leq 100 | \leq 50 | \leq 20 |
| Bilirubin(mg/dl) | <1.2 | 1.2-1.9 | 2.0-5.9 | 6-11.9 | >12 |
| Cardiovascular | no hypotension | MAP <70 | DOP \leq 5* or DOB any dose | DOP >5*, EPI \leq 0.1* or NOREPI \leq 0.1* | DOP >5*, EPI >0.1*, NOREPI >0.1* |
| GCS | 15 | 13-14 | 10-12 | 6-9 | <6 |
| Creatinine (mg/dl) or Urine Output (ml/dl) | <1.2 | 1.2-1.9 | 2.0-3.4 | 3.4-4.9 or <500 | >5 or <200 |

*mcg/kg/min



ROC curve

Methods: We prospectively enrolled consecutive patients admitted for AMI complicated by CS. We included patients treated with early coronary reperfusion and IABP. During the first 24h from admission clinical, EKG, echo, angiographic and laboratory parameters were collected and the SOFA score, widely used in critical care setting to assess multiorgan dysfunction, was calculated. IABP failure was defined as: death occurring within 48h, relapse of heart failure, persistence of high lactates 48h after admission. Continuous variables were assessed using t-Student test and categorical variables using Chi-squared. Multivariable analysis was assessed using a binary logistic regression.

Results: from January 2013 to January 2015 we enrolled 64 patients; among them, 32 (50%) fulfilled the criteria for IABP failure. Overall 30-day mortality was 39%, but it reached 69% in the subgroup of IABP non responders. Univariate predictors of IABP failure included age, systolic blood pressure, lactate levels at presentation and SOFA score. Multivariable analysis including these variables and left ventricular ejection fraction, found SOFA score to be the sole significant predictor of IABP failure ($p=0.002$). SOFA score predictive accuracy was assessed by ROC curve (AUC 0.8; CI 0.667-0.912). It showed that a cut off of SOFA score 7 predicts IABP failure with a sensitivity of 79% and specificity of 77%.

Conclusion: Among patients with AMI complicated by CS, early evaluation of SOFA score may allow the identification of IABP non responders who may be promptly addressed to more advanced strategies of support.

Clinical pharmacology and pharmacotherapy

P515

Evaluation of the clinical significance of antibiotics for fever after acute myocardial infarction

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Background: After primary percutaneous coronary intervention (pPCI), fever is frequently observed in patients with acute myocardial infarction (AMI) in the acute phase. However, it is difficult to decide whether the fever is due to infection or a physiologic response. As a consequence, we often unquestioningly administer preventive antibiotics to AMI patients after pPCI. Thus, the objective of this study was to determine the validity of preventive antibiotic administration in AMI patients.

Methods: We retrospectively evaluated the clinical indices and outcomes of 365 consecutive AMI patients who underwent pPCI in our hospital between January 2008 and December 2013. Fever was defined as a body temperature above 37°C. The use of an antibiotic was left to each doctor's discretion. We excluded the AMI patients who were diagnosed as having an infectious disease (e.g., pneumonia, sepsis, and urinary tract infection), those with cardiogenic shock requiring an intraaortic balloon pump and an extracorporeal membrane oxygenator for hemodynamic support, and patients with insufficient data.

Results: Antibiotics were administered to 300 patients for more than 2 days (7.0 ± 3.1 days; Long-AB group), and 65 patients for less than 1 day (0.8 ± 0.4 days; Short-AB group). The duration of fever was significantly longer in the Long-AB group than the Short-AB group (4.3 days vs. 2.8 days; $p<0.001$). Moreover, peak C-reactive protein levels and white blood cell counts in the Long-AB group were significantly higher than in the Short-AB group (11.5 ± 5.2 IU/L vs. 7.9 ± 5.0 IU/L; $p<0.001$, $11411.4\pm 3314.8/\mu\text{L}$ vs. $10129.2\pm 3005.3/\mu\text{L}$; $p<0.001$, respectively). However, the mortality rate in both groups was 0% and the duration of hospitalization was similar (19.6 ± 24.3 days vs. 15.3 ± 9.4 days; $p=0.16$). Despite a significant correlation between the duration of fever and the duration of antibiotic administration in the Long-AB group ($r=0.48$, $p<0.001$), there was no correlation in the Short-AB group ($r=0.06$, $p=0.65$).

Conclusions: In AMI patients without shock, the administration of antibiotics may not be necessary in the acute phase after pPCI, because fever is due to a physiologic response.

P516

Ticagrelor in ST elevation myocardial infarction: the impact in a real world population

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Background and Purpose: Ticagrelor is a recent potent antiplatelet agent and, in accordance with latest clinical guidelines, its use is increasing in patients with ST elevation myocardial infarction (STEMI).

Our aim was to evaluate the safety and efficacy of ticagrelor in a real world population.

Methods and Results: We retrospectively studied 228 patients with STEMI that were treated with primary angioplasty in our Center between January 2014 and November 2015.

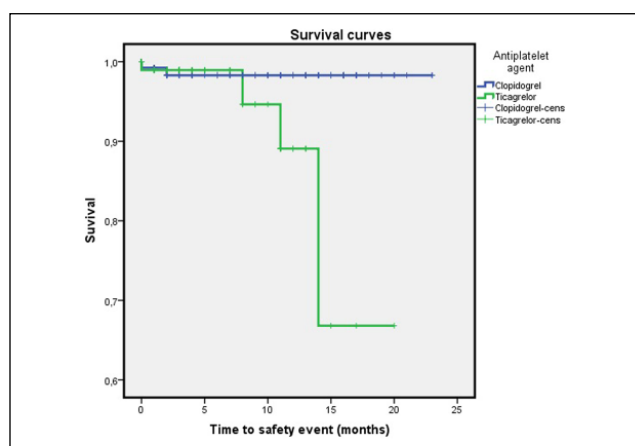
We analyzed their clinical characteristics and the occurrence of major adverse events (target lesion revascularization, ischemic stroke, MI, death) and safety profile (hemorrhage, drug intolerance) after hospital discharge with Cox regression and Kaplan-Meier curves.

The mean age of our population was 61 ± 13 years, with male predominance (73%) and 41.7% were on ticagrelor after discharge vs. 58.3% on clopidogrel. Despite a trend of higher prescription of ticagrelor in the younger and diabetic patients, it was not statistically significant.

After a median time of follow-up of 4 months (IQR 1-12), there were no significant differences in MACE between ticagrelor and clopidogrel groups (seven events, $p=0.77$). However, it was observed a statistically significant difference in the survival curves regarding safety profile ($p=0.04$), there were more adverse events with ticagrelor (none was lethal).

Conclusion: In our study, there were no differences between ticagrelor and clopidogrel in MACE and the first was associated with more adverse side effects.

These results may reflect a low global rate of adverse events and a small follow-up time. Larger studies are necessary to confirm this data.



P517

Real-life experience and safety evaluation test with levosimendan in cardiogenic shock due to acute coronary syndrome

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Background: Levosimendan has anti-stunning and anti-ischemic properties; therefore, it appears as an alternative inotropic agent with proved evidence on the setting of cardiogenic shock (CS) that could have protective effects in patients with myocardial ischemia. However, there is little evidence regarding its use in acute coronary syndrome (ACS).

Purpose: Our goal was to study the tolerance and the main adverse effects of this drug in this clinical scenario.

Methods: We performed a retrospective study by conducting a search of patients with a diagnosis of CS and ACS that received levosimendan in our hospital since January 2013 to May 2015. The study parameters were the safety profile during the drug infusion as well as the clinical context before the drug administration.

Results: Fourteen patients were collected (10 men) with an average age of 60 ± 9 years old. The initial RVEF was $32 \pm 12\%$, with significant mitral regurgitation in half instances. Primary coronary intervention was performed in 9 patients (64%), of which a complete revascularization was possible in 5 cases. The median time since symptoms onset to revascularization was 8 hours (range 22), and 8 days (range 44) to drug administration. Ninety-three per cent of cases were on dobutamine and 21% on intra-aortic balloon pump assistance. Levosimendan was always administered without a bolus dose. The optimal perfusion dose (0,2 micrograms/kg) was unattainable in 3 patients (21%), due to persistent hypotension. Of those, the drug was stopped in two cases and in 1 case a patient received the maximum tolerated dose. Out of patients who tolerated the optimal dose; 2 (18%) presented hypotension resolved with vasopressors, 4 (36%) suffered transient auricular arrhythmias without hemodynamic compromise and 2 (18%) had mild hypokalaemia (see table). Neither episodes of ventricular tachycardia nor fatal events were observed during the drug infusion phase.

Conclusion: Levosimendan in ACS is employed in patients with CS refractory or dependent to inotropes, showing an admissible safety profile in this complex scenario.

Table 1. Tolerance and adverse events

| | |
|---|---------|
| Optimal dose tolerance (2 µg/kg) | 79% |
| Adverse events in patients who tolerated optimal dose | |
| Hypotension | 2 (18%) |
| Supraventricular arrhythmias | 4 (36%) |
| Hypokalemia | 2 (18%) |

P518

Real-world comparison of evidence-based cardiovascular drugs in patients with history of ischemic heart disease and hypertension before the onset of acute coronary syndrome

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Background: Under-treatment with evidence-based cardiovascular drugs in ischemic heart disease and hypertension is a common problem and may influence short and long-term prognosis.

Purpose: To evaluate the role of chronic use of evidence-based cardiovascular drugs in patients with history of ischemic heart disease (IHD) and/or hypertension (HBP) who developed a first episode of acute coronary syndrome (ACS).

Methods: This was a retrospective study of consecutive patients with a first ACS who underwent myocardial reperfusion or conservatory treatment in Emergency County Hospital - Romania, between 2013 – 2015. Patients were stratified into three groups, according to history of IHD and/or HBP and further in two other groups, taking into consideration if they had or had not been receiving chronic evidence-based cardiovascular drugs at least one month before ACS onset: group A – optimal treatment according to international guidelines and group B – no treatment. Rates of in-hospital cardiovascular mortality were compared for the two groups.

Results: The analysis included 775 patients. The mean age was 64.3 years. There was no difference regarding age, sex or the treatment performed for ACS (conservatory or myocardial reperfusion) in the three groups. However we note significantly greater chronic use of angiotensin-converting enzyme inhibitors/ angiotensin II-receptor blockers and calcium channel blockers in HBP group ($p = 0.08$) and significantly greater chronic use of aspirin therapy and beta blockers in IHD group ($p = 0.002$). Use of statins was similar between the groups. The global mortality rate was 10.3%. HBP patients were 445 (229 A-51.4%, 216 B- 48.6%), IHD 300 (161 A- 53.6%, 139 B- 46.4%), HBP and IHD 200 (122 A-61%, 78 B -39%) and 35 were miscellaneous. Mortality rates were higher in group B vs A for HBP patients (8.8% vs 4.4%, $p = 0.03$; OR 2.1, 95% CI 0.95 - 4.65), IHD patients (13.7% vs 8.7%, $p = 0.05$; OR 1.6, 95% CI 0.80 - 3.45), HBP and IHD patients (10.3% vs 4.1%, $p = 0.01$; OR 2.6, 95% CI 0.84 - 8.49).

Conclusions: This study suggests that patients suffering an ACS while under evidence-based cardiovascular drugs have a better short term prognosis, which could be linked

to complete treatment with any of these drug classes. Our study revealed that at least 40% of patients are not optimal treated according to international guidelines. Treatment should be initiated in patients who are not already treated and continued in patients with cardiovascular diseases. Cost-effective strategies for improvement of prescription of the receipt evidence-based cardiovascular drugs among general practitioners and cardiologists, as well as improvement of adherence to treatment among patients should be developed.

P519

LDL cholesterol after acute coronary syndrome: is lower better?

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Introduction and objectives: European and American Guidelines recommend an intensive treatment with statins in patients after an acute coronary syndrome (ACS) in order to reduce LDL cholesterol (LDLc) below 70 mg/dl. New therapies have aroused to achieve this target in combination to statins. Our aim was to evaluate if lowering LDLc under 70 mg/dl has any prognostic implication.

Material and methods: We analyzed 889 patients consecutively admitted to our center with the diagnosis of ACS with a median follow-up of 27.9 months and an analytical examination after discharged (median: 11.2 months from admission). Baseline characteristics and events during the follow-up were analyzed according to LDLc with optimized statin treatment. The combined event was a composed of the major ischemic events (MIE): death, myocardial infarction (MI), ischemic stroke, stent thrombosis and new percutaneous coronary intervention.

Results: Baseline epidemiological characteristics, clinical variables at admission and events during follow-up are shown in the table. Only 435 patients (48.9%) achieve an optimal LDLc<70 mg/dl. Not optimal LDLc in the follow-up was not related with a higher incidence of death, MI, stroke, stent thrombosis or MIE. Achievement of target LDLc<70 mg/dl was not associated with a reduction in MIE (OR 0.93, $p=0.696$) in multivariate analysis. Similar results were obtained if a goal of LDLc<100 mg/dl was used.

Conclusions: Our results show that achievement of target LDLc<70 mg/dl according to guidelines does not imply any beneficial effect in clinical endpoints. The most trials of LDLc reduction in ACS are carried out with statins. Maybe

the beneficial clinical effect of statins after an ACS is not only related to LDLc reduction, but to other pleiotropic properties.

Table 1. Baseline characteristics and events:

| | LDLc \leq 70 mg/dl N= 454 | LDLc >70mg/dl N= 435 | P |
|---------------------------|--------------------------------|-------------------------|--------|
| Age (years) | 64.70 \pm 0.6 | 62.85 \pm 0.6 | 0.026 |
| LDLc at admission (mg/dL) | 93.4 \pm 1.8 | 105.0 \pm 1.5 | <0.001 |
| Diabetes | 150 (34.5%) | 121 (36.6%) | 0.011 |
| STEMI | 164 (37.7%) | 162 (35.7%) | 0.533 |
| Grace | 145.2 \pm 1.8 | 141.3 \pm 1.6 | 0.098 |
| Crusade | 23.9 \pm 0.7 | 23.0 \pm 0.7 | 0.345 |
| High intensity statins | 313 (74.7%) | 288 (65.6%) | 0.004 |
| Death | 43 (9.9%) | 24 (5.3%) | 0.009 |
| MI | 23 (5.3%) | 24 (5.3%) | 0.999 |
| MIE | 83 (19.1%) | 85 (18.7%) | 0.892 |

General intensive care

P520

1 year follow-up of comatose patients undergoing therapeutic hypothermia after ventricular fibrillation recovery

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Introduction: Therapeutic hypothermia (TH) usefulness in comatose patients after cardiac arrest (CA) continues to be in discussion, being its benefits after hospital discharge a matter of debate.

Objectives: To analyze in-hospital survival and neurological outcome in patients admitted to a coronary care unit after CA. To assess the evolution after hospital discharge of this group.

Methods: A retrospective analysis of comatose patients after CA, admitted to the coronary care unit of a tertiary hospital between 2007 and 2015 was performed. Patients with an initial shockable rhythm (VF/VT) were analyzed, comparing the neurological outcome and in-hospital survival between groups without TH (N group) and TH (TH group). TH was introduced in December 2011. Favorable neurological outcome was considered as having a Cerebral Performance Category scale score of 1 or 2. Telematics follow-up was conducted until 1 year after CA, comparing

mortality and new hospital admissions by cardiovascular cause among groups.

Results: 113 patients were admitted after CA, 98 (86.7%) were in a coma during admission time. Within this group, 65 (66.3%) had VF / VT as initial rhythm. Mean age of this group was 62.4 years (Confidence interval CI 59 - 65.8), 84.6% male. TH was applied in 23 (35.3%). The methods used were: cold fluids in 3 patients, endovascular catheter in 19 patients, cooling pads in 1. In the N group, a favorable in-hospital neurological outcome was observed in 15 patients (35.7% CI 50.8 - 22.9) vs 17 patients (73.9% CI 53.5 - 87.4) of the TH group, p 0.004. In-hospital survival was 50% (CI 35.5 - 64.4) in the N group vs 78.2% (CI 58.1 - 90.3) in the TH group, p 0.03. 1 year follow-up was performed in 20 N group patients and 17 patients of the TH group. 1 patient in the N group and 1 patient in the TH group were missing for follow-up. Mortality during follow-up was 3 patients in the N group and 1 patient in the TH group, p 0.60. New admissions by cardiovascular cause were 2 patients in the N group and 3 patients in the TH group, p 0.64.

Conclusions: Our experience suggests that the inpatient benefit of therapeutic hypothermia in comatose patients after CA with initial shockable rhythm persist after hospital discharge.

P521

Anemia rather than the parameters of iron homeostasis is a better indicator of long-term prognosis in critically ill cardiac patients

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Background: Patients admitted to Intensive Cardiac Care Unit (ICCU) are heterogeneous population with a high mortality rate reaching 3-9%. Although anemia and iron deficiency (ID) are common findings in critically ill cardiac patients, parameters of iron status rather than anemia per se seem to be better risk factors of in-hospital mortality. Still, the relationship between the abnormalities of iron metabolism and long-term adverse outcomes in a general population of patients admitted to ICCU is unknown.

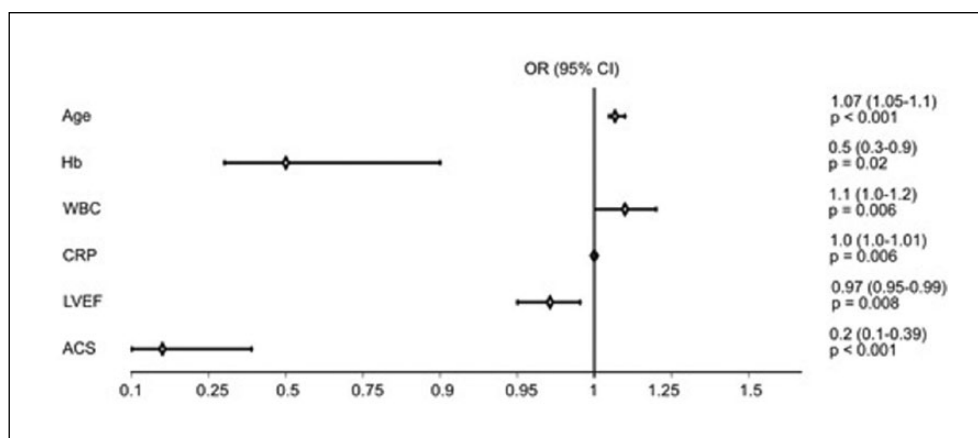
Aim: We investigated a long-term predictive value of anemia, serum iron concentrations (SIC) and total iron binding capacity (TIBC) as an indirect measure of transferrin in critically ill cardiac patients and compared to the clinical risk factors, routine laboratory findings and echocardiographic parameters.

Results: 392 critically ill cardiac patients (mean age 70 \pm 13.8 years, 43% women) were prospectively assessed with the following admission diagnosis: 168

with acute coronary syndromes (ACS), 122 with acute decompensated heart failure, and 102 with other acute cardiac disorders (including aortic dissection, pulmonary embolism and cardiac tamponade). Patients were treated according to the current ESC guidelines. During 29.3 (± 18.9) months of observation 152 (38.8%) patients died. Anemia, according to the WHO definition, was present in 64% patients and ID in 63%. Mean hemoglobin (Hb) level was 11.8 g/dL (± 2.2), SIC – 44.0 $\mu\text{g/dL}$ (± 38.9), and TIBC – 268 $\mu\text{g/dL}$ (± 75.1). Patients who died were significantly older, had lower Hb, SIC and TIBC levels

and lower left ventricle ejection fraction (LVEF) as well as eGFR values, higher white blood cells (WBC) count and C-reactive protein (CRP) levels ($p < 0.05$). In the multivariate regression analysis, age, Hb, LVEF, WBC, CRP as well as hospitalization for non-ACS were related to long-term mortality (Figure).

Conclusions: In patients with life-threatening cardiac illnesses, anemia, inflammation and decreased LVEF rather than ID are useful in the prediction of long-term mortality. Among ICCU patients, ACS seems to be an indicator of better long-term survival.



Figure

P522

Bedside assessment of preload in acute circulatory failure through tricuspid excursion

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Purpose: Tricuspid assessment using tissue Doppler technique could offer an alternative to invasive right heart catheterization in determining fluid response

Methods: Thirty patients with severe sepsis and hypotension (Mean arterial pressure i.e. MAP < 65mmHg), were enrolled in our study. Fluid resuscitation (30ml/kg) was administered. Fluid response was defined as MAP \geq 65mmHg and lactate < 4 mmol/L. Preload assessment was done through CVP, IVC collapsibility and tricuspid E/Ea by tissue Doppler imaging (TDI).

Results: The study included 13 males (43.3%) with age 47.8 \pm 19.7. Paired comparison showed significant change in MAP readings (P value <0.001). Right ventricular filling pressures (CVP) were correlated to tricuspid E/Ea (R 0.608, P value <0.001), and to IVC collapsibility index (R -0.495, P value 0.005).

Conclusion: Tricuspid excursion using TDI offers non-invasive evaluation of right sided heart pressures to predict fluid response in critically ill patients

Table I. Comparison between fluid responders and

| | | Responders | Non-responders | P value |
|----------------------|--------------|------------------|------------------|---------|
| Initial parameters | CVP | 8.7 \pm 3.2 | 8.0 \pm 3.1 | 0.539 |
| | IVC collapse | 46.3 \pm 14.0% | 57.6 \pm 11.2% | 0.023 |
| | T. E/Ea | 3.8 \pm 0.9 | 3.7 \pm 0.8 | 0.726 |
| Follow-up parameters | CVP | 10.9 \pm 3.3 | 11.0 \pm 2.4 | 0.925 |
| | IVC collapse | 48.6 \pm 10.8% | 48.3 \pm 7.6% | 0.919 |
| | T. E/Ea | 4.4 \pm 0.8 | >4.2 \pm 0.7 | 0.342 |

P523

Hypocalcemia at admission: a new prognostic marker in patients with acute coronary syndromes?

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Purpose: Hypocalcemia is prevalent among critically ill patients, linked with disease severity and mortality. Impact of hypocalcemia in acute coronary syndrome remains unknown. Our aim was to analyze the value of total calcium as a prognostic marker in ST-segment elevation myocardial infarction (STEMI), and non ST-segment elevation myocardial infarction (NSTEMI)

Methods: From January-2013 to June-2015, 854 consecutive patients were admitted in the Acute Cardiac Care Unit of a tertiary hospital with diagnosis of STEMI and NSTEMI. We defined three tertiles according to the distribution of total calcium serum levels: under 8.5 mg/dl, between 8.5-9 mg/dl and over 9 mg/dl.

Results: Our population consisted of 854 patients. 649 were men (76%) and mean age was 68 (13.5) years old. 549 (64.3%) were STEMI, and 35.7% were NSTEMI patients. Mean total calcium level was 8.7 mg/dl (5.1-10.7). There were no differences in age ($p=0.907$) and cardiovascular risk factors. Patients in the lower tertile showed higher GRACE and CRUSADE scores ($p=0.039$, $p<0.001$, respectively) and developed a worse prognosis, defined as higher killip class ($p<0.001$), degree of mitral regurgitation, ($p=0.015$), incidence of non fatal myocardial infarction ($p=0.001$), contrast induced nephropathy, ($p<0.001$), sustained ventricular arrhythmias ($p=0.003$) and in-hospital mortality ($p<0.001$). The results were consistent in both cohorts of patients (STEMI and NSTEMI). Multivariate regression analysis, adjusted by age, vessels with severe disease, left main coronary artery disease, GRACE, CRUSADE scores, CK peak, killip class, ejection fraction, and cardiac arrest showed that total calcium level under 8.5mg/dl is an independent predictor of mortality [OR 5.53 (CI 95% 1.47-20.9), $p=0.012$].

Conclusion: In our population the presence of hypocalcemia at admission, specially a total calcium level under 8.5 mg/dl is an in-hospital mortality predictor. The measure of total serum calcium is an easy and cheap strategy in order to early-identify patients with high risk myocardial infarction.

P524

Long-term prognostic value of DELIRIUM in elderly patients with acute Cardiac diseases admitted to two cardiac intensive care unit: a prospective study

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Background: Delirium is a frequent in-hospital complication in elderly patients, and is associated with poor clinical outcome. Its clinical impact, however, has not yet been fully addressed in the setting of cardiac intensive care unit (CICU).

Objectives: This is a prospective, two-center registry aimed to assess incidence, prevalence and significance of delirium in elderly patients with acute cardiac diseases.

Methods: Between January 2014 and March 2015, all consecutive patients aged ≥ 65 years admitted to the CICU of our institutions were enrolled and followed for 6 months. Delirium was defined according to Confusion Assessment Method (CAM).

Results: During the study period, 726 patients were screened for delirium. The mean age was 79.1 ± 7.8 years. A total of 111 individuals (15.3%) were diagnosed with delirium; of them, 46 (41.4%) showed prevalent delirium (PD), while 65 (58.6%) developed incident delirium (ID). Patients with ≥ 85 years showed a delirium rate of 52.3%. Hospital stay was longer in delirious vs. non-delirious patients. Patients with delirium showed higher in-hospital, 30-day and 6-month mortality compared to non-delirious patients, irrespectively of the onset time (overall, ID or PD). Six-month re-hospitalization was significantly higher in overall delirium and PD group,

Table 1. Analysis between tertiles.

| Variable | Calcium < 8.5mg/dl N=118 | Calcium 8.5-9mg/dl N=463 | Calcium >9.5mg/dl N=263 | P |
|---------------------------------|--------------------------|--------------------------|-------------------------|---------|
| Cardiogenic shock | 58 (49.2%) | 43 (9.3%) | 8 (3%) | < 0.001 |
| Successful revascularization | 91 (81.1%) | 392 (92%) | 249 (93.9%) | < 0.001 |
| Need of mechanical ventilation | 62 (52.4%) | 43 (9.2%) | 5 (2%) | < 0.001 |
| Non fatal myocardial infarction | 16 (13.4%) | 25 (5.6%) | 9 (3.7%) | 0.001 |
| Contrast induced nephopathy | 37 (31.1%) | 55 (11.8%) | 21 (8.1%) | < 0.001 |
| Cardiac arrest at admission | 41 (34.9%) | 38 (8.2%) | 5 (2%) | < 0.001 |
| In-hospital mortality | 32 (27.1%) | 19 (4.1%) | 5 (2%) | < 0.001 |

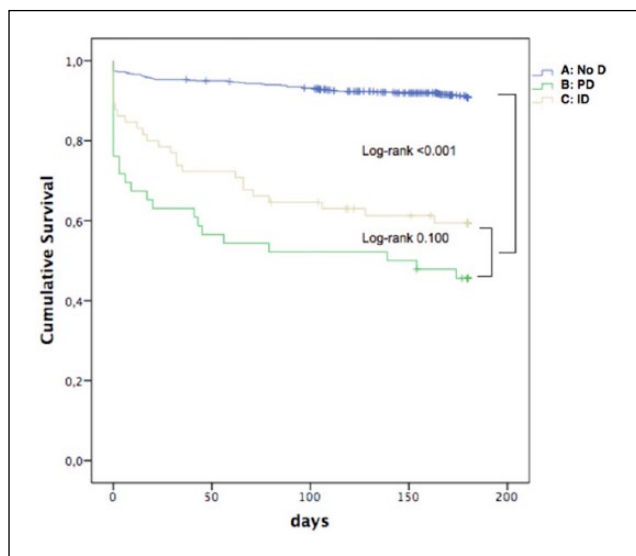
as compared to non-delirious patients. Kaplan-Meier analysis showed a significant reduction of 6-month survival in patients with delirium compared to those without, irrespectively of delirium onset time. Positive CAM was an independent predictor of short- and long-term mortality.

Conclusions: Delirium is a common complication in elderly CICU patients, and is associated with longer and more complicated hospital stay and increased short- and long-term mortality. Our findings suggest the usefulness of a protocol for early identification of delirium in CICU.

Table 1. Clinical Outcome of CICU patients

| | No Delirium (n=615) | PD+ID (n=111) | PD (n=46) | ID (n=65) | P value |
|---|------------------------|------------------|--------------|--------------|--|
| Hospital stay (days: m±SD) | 5.6±4.8 | 7.3±5.8 | 6.0±4.9 | 8.2±6.3 | <0.0001*; 0.478†; <0.0001‡; 0.007 § |
| CICU stay (days: m±SD) | 3.0±1.68 | 2.8±1.7 | 2.46±1.79 | 3.41±1.90 | 0.250*; 0.037†; 0.065‡; 0.009 § |
| In-hospital acute adverse events (n, %) | 13 (2.1) | 9 (8.1) | 3 (6.7) | 6 (9.2) | 0.002*; 0.143†; 0.013‡; 0.959 § |
| In-hospital mortality (n, %) | 16 (2.6) | 19 (17.1) | 11 (23.9) | 8 (12.3) | <0.0001*; <0.0001‡; <0.0001†; 0.187 § |
| 30-day mortality (n, %) | 29 (4.7) | 33 (29.7) | 17 (37.9) | 16 (25.6) | <0.0001*; <0.0001‡; <0.0001†; 0.237 § |
| 6-month mortality (n, %) | 55 (8.9) | 51 (54.9) | 25 (54.3) | 26 (40.0) | <0.0001*; <0.0001‡; <0.0001†; 0.2305 § |
| 6-month re-hospitalization (n, %) | 153 (24.8) | 48 (43.2) | 20 (43.5) | 28 (43.1) | <0.0001*; 0.001‡; 0.056†; 0.979 § |

PD=prevalent delirium; ID=incident delirium.* No-Delirium vs overall Delirium† No-Delirium vs PD ‡ No-Delirium vs ID§ PD vs ID



Kaplan Meier analysis for survival

P525

Predictors of mortality in patients undergoing invasive mechanical ventilation in the cardiac intensive care unit

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Background: Invasive mechanical ventilation (IMV) is a key support technique in critically ill patients. It is used in cardiac intensive care usual in situations of greater clinical severity. Our goal was to identify the main predictors of mortality in patients undergoing IMV over 5 years in a cardiac intensive care unit (CICU).

Methods: retrospective analysis of consecutive patients (n = 171) undergoing IMV in the period between 01/2010 and 11/2015. An analysis of multivariate logistic regression was used to evaluate the demographic and clinical effects on mortality associated with using IMV.

Results: We included 171 patients undergoing IMV, 67.6% male, mean age 64.9 ± 12.8 years. Over half of the patients were referred from other hospital units (54.4%). The most common reason for admission was acute myocardial infarction (75.4%), half of these in refractory cardiogenic shock, since the admission. Indications for IMV were refractory cardiogenic shock (44.4%), cardiac arrest (35.7%), refractory acute pulmonary edema (9.9%) and others causes (9.9%). Left ventricular assist devices

were used in 85 patients (intra-aortic balloon pump in 71 patients and extracorporeal circulatory membrane oxygenator in n= 14). The most frequent complication associated with IMV, was pneumonia (42.1%). The median intubation time was 3 days (IQR 1-6). The median time of hospitalization was 5 days (IQR 2-10). The hospital mortality rate was 40.4%. After adjustment for sex, cardiovascular risk factors and admission reason, the independent predictors of mortality were in-hospital origin of the patient (odds ratio 18.7, 95% confidence interval 4.1 - 86.5, $p = 0.0001$), severe left ventricular dysfunction (OR 5.7, 95% CI 1.7 - 18.3, $p = 0.004$), temporary pacemaker (OR 15.6; 95% CI 2.7 - 89.1, $p = 0.002$), refractory cardiogenic shock as an indication for IMV (OR 12.9; 95% CI 2.7 - 61.8, $p = 0.009$), acute renal failure (OR 3.8, 95% CI 1.0 - 14.0, $p = 0.044$) and stroke (OR 146.5; 95% CI 2.6 - 8220.5, $p = 0.015$).

Conclusions: In our CICU multivariate analysis, independent predictors of mortality in patients undergoing IMV were: in-hospital origin, severe left ventricular dysfunction, need for temporary pacemaker refractory cardiogenic shock as an indication for IMV, acute kidney injury and stroke.

Interventional cardiology, Coronary

P526

Acute kidney injury after percutaneous coronary intervention to unprotected left main coronary artery in patients with acute coronary syndrome

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Introduction: There is little information about complications during percutaneous coronary intervention (PCI) to unprotected left main coronary artery (LMCA) during an acute coronary syndrome (ACS), particularly in relation to the incidence of acute kidney injury. The aim of this study was to analyze the rate of acute kidney injury post-PCI, its predictors and prognostic impact in a contemporary cohort of patients with ACS undergoing PCI to unprotected LMCA.

Methodology: There were retrospectively analyzed all the patients who consecutively underwent PCI to LMCA in context of an ACS from 2010 to 2015 at Vigo University Hospital, excluding those patients who had previously underwent coronary artery bypass surgery or PCI to LMCA, as well as those patients without information about the amount of contrast or post-procedure renal function (a total of 53 patients were included). Predictors of acute kidney injury were analyzed by logistic regression. The prognostic impact of acute kidney injury was analyzed by Cox regression.

| Variables | AKI | No AKI | P value |
|----------------------------------|---------------|---------------|---------|
| Age, years | 75,6 ± 9,3 | 67,2 ± 13,6 | 0,010 |
| Arterial Hypertensión, % | 81,0 | 46,9 | 0,013 |
| Diabetes, % | 52,4 | 21,9 | 0,022 |
| Artery disease, % | 42,9 | 15,6 | 0,028 |
| Previous AMI, % | 19,0 | 25,0 | 0,613 |
| STEMI, % | 19,0 | 40,6 | 0,088 |
| Killip ≥ II, % | 61,9 | 28,1 | 0,015 |
| LVEF ≤ 40%, % | 57,9 | 30,0 | 0,053 |
| Basal hemoglobin, g/dL | 12,8 ± 2,6 | 13,9 ± 1,9 | 0,070 |
| Baseline serum Creatinine, mg/dL | 1,5 ± 1,0 | 0,9 ± 0,3 | 0,006 |
| IABP, % | 15,0 | 10,3 | 0,625 |
| Contrast Volume, % | 303,0 ± 163,1 | 271,7 ± 109,9 | 0,407 |

Baseline characteristics of the patients

Results: 21 patients (39,6%) presented acute kidney injury after PCI: 5,7% in AKIN 3 stage, 5,7% in AKIN 2 stage and 28,3% AKIN 1 stage. In the data table 1 you can see clinical features depending on whether they developed or not acute kidney injury. After a multivariate analysis (adjusted for variables associated with $p < 0.05$ on the univariate analysis with acute kidney injury), only peripheral artery disease (OR 7,95, CI 95% 1,56-40,87; $p=0,013$), Killip class \geq II (OR 6,03, CI 95% 1,31-7,67; $p=0,021$) and baseline serum creatinine (OR 9,96, CI 95% 1,56-63,57; $p=0,015$) were independent predictors of acute kidney injury. After an adjustment by age, ejection fraction, diabetes, peripheral artery disease and complete revascularization, the presence of acute kidney injury was an independent predictor of dead and combined MACE (dead, reinfarction, stroke and heart failure: HR 6,45, CI 95% 2,59-16,01; $p < 0,001$; see the figure).

Conclusions: acute kidney injury post-PCI to unprotected LMCA during an ACS is a common complication (39.6%) with prognostic impact in terms of mortality and cardiovascular events. Peripheral artery disease, baseline creatinine and Killip \geq II class were independently associated with its development.

P527

Clinical results at long-term follow-up of percutaneous coronary intervention in left main coronary artery disease

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Introduction: Left main coronary artery (LMCA) disease treatment is traditionally surgical in most of cases. Continuous improvement in the devices and the emergence of drug-eluting stents (DES) has increased indications of percutaneous treatment in this high-risk lesions.

Purpose: The main objective of this study was to evaluate the efficacy and safety of percutaneous coronary intervention (PCI) with DES on LMCA at 10 years follow-up.

Materials and methods: We prospectively included 324 patients (69.53 ± 12.60 years, 73.4% male) with severe LMCA disease undergoing PCI from June 2006 to April 2015. We evaluated major cardiovascular events: cardiac death, nonfatal myocardial infarction, target lesion revascularization (RLT) and stent thrombosis after long-term clinical follow-up (median 41.5 months).

Results: 53% of patients had stable coronary disease and 47% had acute coronary syndrome (13.5% with STEMI and 33.5% with NSTEMI). 40.2% of patients were diabetics,

40.1% had moderate-severe left ventricular systolic dysfunction and 16% had Killip class 3-4.

Logistic EuroSCORE mean was 5.51% and SYNTAX score was ≥ 23 in 70.7% of the patients. An intra-aortic balloon pump was used in 6.5% of patients. The most frequently bifurcation technique employed was 'provisional stenting' (68.3%) and zotarolimus-eluting stent was implanted in 71.5%, achieving success of the procedure in the 99.1%. Complication rate was 3% with one intra-operative death. During follow-up, MACE rate at 10 years was 13.19%. We reported a cardiovascular mortality of 6.79% (68.18% in-hospital mortality in patients with cardiogenic shock at presentation), 4.8% of RLT, 1.3% of nonfatal myocardial infarction and 0.3% of stent thrombosis. MACE rate was significantly higher in patients with ventricular dysfunction, Killip class 3-4, SYNTAX score ≥ 23 , use of first generation DES, when the stent did not cover the ostium of LMCA and when final 'kissing balloon' was not performed.

Conclusions: The percutaneous treatment of LMCA disease with DES has high effectiveness and safety with low rate of complications and major cardiovascular events at very long-term follow-up.

P528

Impact of second-generation coated stents use in long-term prognosis of non-surgical unprotected left main coronary artery (LMCA) disease

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Objective: The development of second generation drug-eluting stents (DES) displace to first generation DES because of their greater safety and efficiency. We analyze the differences between these both devices in the treatment of patients with high-risk LMCA disease and high probability of events in short and long term.

Methods: we performed a retrospective study of 93 consecutive patients with unprotected LMCA disease treated with DES implant between 2005 and 2013.

There were two groups for analysis, group A treated with first generation stents (42 cases) and group B treated with second generation stents (51 cases); baseline characteristics, procedural, mortality and death, nonfatal infarction and new revascularization along three years follow-up were compared.

Results: Average age was 72.9 ± 11.5 and EUROSCORE log. was 14 ± 10.5 . Group A was treated with 30 tacrolimus stent and 12 sirolimus stent; Group B was treated with 39 everolimus stent and zotarolimus stent in 12 cases. Clinical,

anatomical and technical variables between the two groups did not differ significantly; globally, there were 75% male, 48.1% diabetics, 62.4% cases as ischemic coronary disease debut and 15% patients with LVEF <35%. The presentation was as stable angina in 9.7%; the rest were acute coronary syndromes (ACS) or complication of another procedure. The 34% of cases were performed urgent and 14% in shocked patients. Right dominance was found in 90.8% of cases and involved bifurcation in 66.7% patients. The technique was 55.6% by radial access and use of a single stent was 90.3%. The only significant difference variable founded was the use of IVUS 21.4% (A) vs 56.9% (B) (p 0.001).

Mortality (A vs B) before discharge was 9.5% vs 3.9% (NS), at 1 year 17.1% vs 7.7% (NS) and at 3 years 43.2% vs 15.4% (p 0.028). The combined endpoint death-stroke-LMCA revascularization along three years was 43.9% vs 17.6% (p 0.024). In multivariate analysis the only significant association with the combined variable to three years was the type of stent used OR 0.274 (95% CI 0.093 to 0.803; p 0.018).

Conclusion: Use of second-generation DES in treatment of nonsurgical patients with unprotected LMCA disease is associated with long-term benefit (three years) predominantly in ACS.

P529

Impella CP in the high-risk percutaneous coronary intervention: Initial experience of a single center

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Background: The use of percutaneous coronary intervention (PCI) in patients with complex coronary anatomy has increased in recent years, especially in patients at high or/ prohibitive surgical risk, either by age or comorbidities.

The Impella CP ventricular assist device is an axial pump, which allows a partial hemodynamic support up to a maximum flow rate of 4 L/min. It was already demonstrated in a randomized trial a decrease in mortality when used as a support in patients undergoing high risk PCI.

Purpose: the objective of this study is to show the initial experience of our center with the use of this device in patients undergoing scheduled high risk PCI.

Results: They were intervened 3 patients, respectively with 61, 70 and 80 years old, all male. They all were transferred from regional hospitals with the diagnosis of non ST elevation myocardial infarction (NSTEMI).

The first patient had a 3 vessel disease and a moderately depressed left ventricle (LV) systolic function (EF), and refused cardiac surgery. The lesions of the left descending coronary (LDA) and circumflex artery (Cx), were treated under Impella CP support (right coronary artery – RCA – with a total occlusion). The 2nd patient had a history of CABG in 1997 (saphenous graft for LAD, Marginal branch and RCA) and treatment with Impella 2,5 in 2010 of a saphenous graft to the marginal branch – last single remaining vessel, and severe depression of LVEF. The same graft was treated again, this time under Impella CP and using ‘Embolished NAV’ for embolic protection. The 3rd patient had a significant Left Main stenosis and right coronary (RC) occlusion with moderately depressed LV function. He was refused for cardiac surgery due to distal diffuse coronary artery disease so underwent PCI under Impella. All three procedures were performed with only mild sedation and progressed uneventfully; an average of 166.67 mL of contrast (Ultravist) was used. A Proglide and Angio-seal were used for femoral artery closure. In all cases the Impella was withdrawn before admission on Cardiac Intensive Care Unit. The mean time of hospitalization was 4 days. All patients were discharged without complications and are alive after a medium follow up of three and a half months.

Conclusion: Impella CP is a therapeutic option for percutaneous treatment of high risk PCI and can improve the procedure safety. Our Initial experience confirms the safety and feasibility of its use. The use of this device may allow the use of PCI in a wider range of patients with complex anatomy, especially if they are poor surgical candidates.

P530

Restenosis in the first year following bifurcation lesions angioplasty

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Introduction: Intracoronary stents have been shown to reduce the restenosis rate as compared with balloon angioplasty, but in-stent restenosis continues to be an important clinical problem. The purpose of this work is to evaluate the factors in predicting the risk of angiographic restenosis after bifurcation stenting.

Patients and Methods: It's a retrospective study including 138 patients undergoing an angioplasty of bifurcation lesion between 2006 and 2012. An angiographic control was accomplished in 30 patients during the first year following the procedure. (A group= restenosis ; B group= no restenosis). We used chi square test to compare both groups.

Results: We concludes at a restenosis in 19 patients (63,33%) after angiographic control. In 11 patients, the restenosis concerned both main and collateral branch at the same time. It concerned only the main branch in 4 patients and only the collateral branch in 6 patients. There is no significant difference between the two groups concerning age and sex. Patients of group A had more diabetes (A=47,3%; B=45,4%,p=0,32), history of tabagism but without significant difference, however they were significantly more hypertensive(A=63%; B=36%;p=0,02). Patients of A group had more coronary acute syndrome than B group (A=73%, B=63%, p=0,12). The multitruncular vessel lesion was more frequent in A group (A=78%, B=45%, p=0,05). Concerning the technique we find that, restenosis is significantly less frequent when we practice a Kissing Balloon (A=47%; B=90%;p=0,01), and more frequent when we stent the collateral branch (36%,18%; p=0,02). The site of bifurcation lesion was however non predictor of restenosis. Lesions of the main branch in group A were more lengthy and narrow than in group B but without significant differences. (mean length: A= 22 ; B=19mm , p=0,54); (mean diameter: A=3mm; B=3,5mm ; p=0,25). Patients of A group received Plavix for a shorter period than patients of B group (A=2,5month, B=3,3months, p=0,47).

Conclusion: Even if stent implantation has shown to be superior to conventional balloon angioplasty in most coronary lesions, bifurcation treatment with stent implantation especially the use of 2 stents still raises controversy. Absence of restenosis has recently been reported in some studies in which coated stents were used; these findings represent one of the most promising issues for the next future.

P531

STEMI due to unprotected left main coronary artery culprit lesion: What do we know?

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Introduction: Available data of primary percutaneous coronary intervention (PCI) on unprotected left main coronary artery (ULMCA) culprit lesion is very limited. We aimed to evaluate demographic, clinical, procedure and prognosis data of patients with ST-segment elevation myocardial infarction (STEMI) due to ULMCA culprit lesion who underwent primary PCI.

Methods: 1.577 patients with STEMI treated with primary PCI were admitted between March 2006 and April 2016 at our University Hospital; of these, we analyzed 26 patients (1.6%) with an ULMCA culprit lesion.

Results: Demographic and clinical characteristics are presented in Table 1. All patients received 300 mg and 600 mg oral dose of Aspirin and Clopidogrel respectively prior to PCI. Glycoprotein IIb/IIIa inhibitors were administered in 50% of the cases. Unfractionated heparin was administered as a weight-adjusted intra-arterial bolus at the time of PCI in most of the cases (96.1%). Rescue PCI was performed in 2 patients (7.7%). Significant coexistent 1, 2 or 3-vessel disease was presented in 10 (38.5%), 8 (30.8%) and 5 (19.2%) patients, respectively. STEMI was secondary to a de novo significant thrombotic lesion in the majority; only 1 case was due to stent thrombosis. Angiographic procedural success was achieved in 24 (92.3%) of the 26 patients, with a mean of 1.8 stents per procedure implanted (7.7% BMS, 15.4% old-DES and 76.9% new-DES). An intraaortic balloon support was required in 30.8% of cases and a pacemaker in 3.8%. 6 patients died during the hospitalization, all of them presented cardiogenic shock on admission.

Conclusions: STEMI due to ULMCA culprit lesion is an uncommon entity. In spite of being high-risk patients, primary PCI on ULMCA lesions is a feasible therapeutic option with high rate of procedure success and acceptable in-hospital mortality rate.

Table 1.

| | |
|---|------------------------------------|
| Age, yrs | 65.8 ± 16 |
| Male | 18 (69.2%) |
| Hypertension / Diabetes mellitus / Dyslipideameia | 14 (53.8%) / 7 (26.9%) / 6 (23.1%) |
| Smoking | 7 (26.9%) |
| Prior coronary artery disease event | 2 (7.6%) |
| Killip class III-IV | 19 (73%) |
| Femoral / Radial Access | 23 (88.5%) / 3 (11.5%) |
| 6F / 7F introducer | 19 (73%) / 7 (26.9%) |
| Thrombus aspiration performed | 6 (23.1%) |
| Left ventricle ejection fraction (mean) | 37% |

P532

First experience of total acs register maintenance for the krasnodar territory: intermediate results of 3 months: obstructive and non-obstructive coronary artery disease

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Background: During the year of combating cardiovascular mortality the idea of creating a total register of acute coronary syndrome for the Krasnodar Territory, which is home to more than 5.7 million people, was realized.

Purposes: organization of free and fair ACS register; definition of the demographic characteristics and medical history data of patients with ACS indicators; organization of programs to improve interaction between regional and district hospitals; assessing the continuity of the recommendations' implementation in clinical practice; an access to monitoring and managing patients system by every doctor of the region.

Materials and methods: The basis of the register protocol, registration schemes and registration cards were taken at the ongoing federal registry of ACS. Each center established Parus registration program. Patient's participation in the register does not affect his maintenance in the hospital and approaches to his treatment. After being discharged from the hospital patients, included in the register, are scheduled for a long observation, conducted through telephone interviews.

Results: From 11/20/15 to 20/02/16 register included 2275 patients with suspected ACS 63.8% male and 36.2% female. The mean age of included patients was $69,3 \pm 3,03$ years. A I-data of patients indicate that more than half of the patients had signs of heart failure, more than 1/3 – previous myocardial infarction. 64.7% were identified with obesity, 87.5% with high blood pressure, 25% with diabetes. Based on the data obtained in the register, we identified patients with non-obstructive coronary artery disease (MINOCA). 74 patients (3.2%) out of 2275. Among whom 54.2% had ACS with ST-segment elevation and 45,8% with NSTEMI-ACS. The mean age was $56,3 \pm 6,06$ years. During the stay in the hospital 2 patients with MINOCA (1,52%) died, both with ST-segment elevation.

Conclusion: Maintaining total ACS register for the Krasnodar Territory is the first experience of total register in Russia. However, the results revealed key problems of managing of patients with ACS in the areas of Krasnodar region: big time period from the onset of symptoms to the patient's admission to hospital; failure of previous therapy; low frequency of ticagrelor prescribing and anticoagulant medication under conservative management of MI, low loading dose of clopidogrel during the stationary phase of case management. There are no specific standards for treating patients with MINOCA so far. Patients with MINOCA appeared to be younger than patients without. Group of patients with MINOCA is dominated by those with ACS with ST-segment elevation. By identifying patients with

this pathology in the total ACS register of the Krasnodar Territory, we consider it necessary to continue the study. It would be efficient to conduct patients' monitoring at regular intervals. These facts allow us to more clearly identify the main areas of work to improve care management of patients with ACS.

Non invasive imaging / Echocardiography

P533

Tissue doppler of tricuspid annular motion for diagnosis of significant proximal right coronary artery lesion in acute inferior wall myocardial infarction

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Aim: Tissue Doppler (TDI) systolic annular velocity (S') and myocardial performance index may be useful predictors of proximal right coronary artery (RCA) stenosis as a culprit lesion in Inferior wall myocardial infarction.

Methods: In a prospective study patients with first episode of acute IWMI underwent early conventional and tissue Doppler echocardiographic assessment (within 24 h) of symptom onset and RV indices ; Tricuspid annular systolic plane excursion (TAPSE), myocardial performance index (MPI) and tissue Doppler velocities from RV free wall were measured. Patients underwent coronary angiogram within one month. Our Patients were divided into two groups (A,B) according to angiographic findings based on the presence or absence of a significant proximal RCA stenosis.

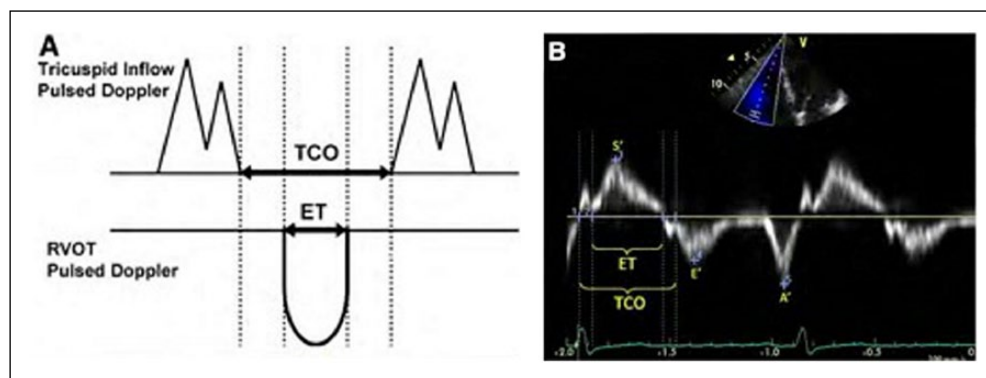
Results: There were 35 patients with first episode of IWMI, group A (n 14 patients) and group B (n 21 patients), There was significant difference between groups in TAPSE (1.28cm vs 1.98 p < 0.001), MPI-TDI (0.69±0.12 vs 0.38±0.05 p < 0.001), and in S' velocity from RV free wall (0.09m/s±0.02 vs 0.12m/s ±0.02 p < 0.001). It was found that S' < 10cm/s is a predictor of proximal RCA lesion with sensitivity of 92.86% and specificity of 85.71% ppv 81.25, npv 94.74, MPI-TDI > 0.55 with a sensitivity of 92.86% and specificity of 100%, 100% PPV and 95.45% NPv, and TAPSE < 16mm (sensitivity 93%, specificity 100%).

Conclusion: RV indices (S' velocity, MPI-TDI and TAPSE) are useful in predicting proximal RCA as infarct related artery in IWMI.

Table 1.

| ECHO | Group (A) With proximal RCAstenosis | | Group (B) Without proximal RCA stenosis | | t-test | |
|-------------------------------------|-------------------------------------|-------|---|-------|--------|---------|
| | Mean | ±SD | Mean | ±SD | t | p-value |
| TAPSE M-mode (abnormal if < 1.6 cm) | 1.28 | 0.24 | 1.98 | 0.41 | -5.703 | <0.001 |
| ET by PW | 244.36 | 18.55 | 264.14 | 21.78 | -2.788 | 0.009 |
| TCO | 371.0 | 28.88 | 353.05 | 26.97 | 2.032 | 0.041 |
| MPI by PW (abnormal if > 0.4) | 0.51 | 0.23 | 0.34 | 0.05 | 3.295 | 0.003 |
| IRT by TDI | 86.91 | 11.71 | 52.57 | 9.24 | 9.680 | <0.001 |
| ICT by TDI | 82.06 | 18.70 | 47.00 | 6.60 | 7.930 | <0.001 |
| ET by TDI | 242.50 | 13.25 | 258.05 | 24.15 | -2.192 | 0.036 |
| MPI BY TDI (abnormal if > 0.55) | 0.69 | 0.12 | 0.38 | 0.05 | 10.610 | <0.001 |
| S' m/s (abnormal if S'< 10 cm/s) | 0.09 | 0.02 | 0.12 | 0.02 | -5.010 | <0.001 |
| E' m/s | 0.06 | 0.02 | 0.08 | 0.03 | -1.652 | 0.109 |
| A' m/s | 0.11 | 0.02 | 0.13 | 0.03 | -2.204 | 0.035 |
| LVEF (%) | 47.86 | 5.75 | 49.86 | 5.39 | -1.048 | 0.302 |

Comparison between the 2 groups as regard to echocardiographic assessment.



MPI, S' measurement

P534

Study of the diagnostic value of the handheld echocardiography (HHE) in patients with syncope

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Purpose: to study the value added by the rapid examination of the patients with syncope referred for urgent cardiac consultation using a HHE device compared to classic echocardiographic evaluation.

Methods: we enrolled 61 patients (27 males, mean age 42±22 years) presenting in a general hospital for syncope into a prospective study: after clinical evaluation ECG and HHE were performed at bedside. Subsequent

examination with a standard echocardiograph was done according to the current pathway of care and the degree of correlation was assessed by the kappa coefficient of agreement.

Results: we found a very good correlation (k=0,9) when morphologic abnormalities of the atria and / or ventricles like dilatation or hypertrophy were found and a good correlation (k=0,7) in the case of severe valvular abnormalities and pericardial effusion (k=0,8). The examination by HHE was faster than by standard echocardiography machine: 12±5 minutes vs. 25±18 minutes (p<0,001). After the urgent cardiological evaluation the etiology of syncope was considered reflex in 56% of cases, arrhythmic in 24%, due to structural heart disease in 12% and unknown in 8% of the cases.

Conclusion: in patients with an acute condition like syncope, HHE was able to provide diagnostic information on the underlying heart condition in a very short time with

acceptable level of accuracy, facilitating an early decision for the further management of the patient.

P535

Ventricular-arterial coupling in acute myocardial infarction

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Introduction: Assessment of infarct size and resting left ventricular (LV) function, usually by echocardiography, is undertaken in the acute phase and before discharge. The interaction between LV and arterial system, termed usually ventricular-arterial coupling (VAC), is recognized nowadays as a key determinant of global cardiovascular performance and can be defined by the ratio of arterial elastance (Ea) to left ventricular elastance (Ees).

Purpose: We aimed to analyze VAC in a cohort of consecutive STEMI and NSTEMI patients admitted to ICCU

Methods: We compared routine hemodynamic assessment based on standard transthoracic echocardiogram, arterial blood lactate and ultrasound pulmonary B-Lines (pulmonary congestion) to VAC in 60 (42 male, age 64 ± 14) consecutive STEMI (40 pts) and NSTEMI (20 pts) pts upon ICCU admission and after 24 hours after mechanical revascularization. VAC was noninvasively measured by a specifically implemented calculator (iElastance®) designed for calculate single beat end-systolic elastance (Ees), arterial elastance, (Ea) and VAC (Ea/Ees ratio) based on systolic and diastolic blood pressure (mmHg) and echocardiographic stroke volume (ml), ejection Fraction (0-1) total systolic time (msec), pre-ejection time (msec) (Chen et al, JACC 2011). VAC was considered normal for values < 1.36 .

Results: NSTEMI population show a normal VAC in 19 pts while 6 STEMI patients had a VAC > 1.36 (1.504 ± 0.43). After 24 hours the improving of VAC (1.378 ± 0.62) appears to be due to the reduction of Ea. No correlation was found between VAC and lactate concentration, left ventricular ejection fraction and B lines.

Conclusions: The measurement of VAC is relatively fast, requiring the evaluation of few non invasive parameters and is based on a standard echocardiography plus blood pressure measurements. Ventricular-arterial coupling measurement results in a single index that summarizes the mechanical efficiency of the myocardium in pumping a stroke volume into the peripheral arterial system. On admission to ICCU patients with STEMI display more frequent ventriculo-arterial uncoupling than NSTEMI that can be associated with impaired left ventricular performance and worse outcome.

No correlation was found with lactate concentration, EF or B-lines. Because Ea/Ees decoupling alters cardiovascular efficiency and cardiac energetic requirements independent of Ea or Ees, we speculate that uncoupled patients may benefit from therapy aimed at normalizing Ea/Ees. However this remains to be tested in large studies.

P536

ECG changes and their correlation with echocardiography findings in non-ST elevation myocardial infarction patients

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Background/Introduction: ST-segment depression (STD) and T-wave inversion (TWI) are typical electrocardiographic (ECG) changes in non-ST elevation myocardial infarction (NSTEMI). In ST-elevation myocardial infarction, ST-segment elevation represents transmural myocardial ischemia in the region of the occluded coronary artery, but in NSTEMI patients the underlying processes behind the ECG changes are not well characterized.

Purpose: We studied the association between ECG (STD and TWI) and echocardiographic findings in three anatomic regions in NSTEMI patients.

Methods: Twenty patients with NSTEMI were recruited during their hospital stay after coronary angiography. A comprehensive echocardiography study included speckle tracking (STE) and integrated back scatter analysis. The findings were compared with the ECG analyses, which were performed manually and blinded to the clinical and echocardiographic data. Both echocardiography and ECG results were divided into three anatomic regions – anterior, inferior and lateral - corresponding to the coronary artery distribution. TWI included flat (< 1 mm) and biphasic T waves.

Results: Nine (45%) patients had STD and 16 (85%) patients had TWI at the time of echocardiography. Compared with patients without STD, those with STD had longer isovolumetric relaxation time (147 ± 25 ms vs. 115 ± 23 ms, $p=0.007$), lower global e' in the STE analysis ($0.83/s$ [$0.76, 1.01$] vs. $1.08/s$ [$0.98, 1.21$]), and lower posterior cyclic variation of the integrated backscatter (9.8 dB [$7.4, 10.9$] vs. 11.9 dB [$8.6, 13.6$]), respectively. Patients with TWI had higher circumferential strain (-29.5 ± 4.0 %) than patients without TWI (-3.5 ± 3.1 %) ($p=0.013$). In multivariable analysis concerning regional changes, STD was associated with e' in STE analysis ($p=0.028$, $\text{ExpB}=0.007$; $\text{CI}=0.000 - 0.589$). Correspondingly, TWI was associated with circumferential systolic strain on STE analysis ($p=0.041$,

ExpB=0.872; CI=0.765 - 0.994) and wall motion score index (p=0.051, ExpB=0.000; CI=0.000 - 1.154).

Conclusions: In NSTEMI patients without overt systolic functional decline, subtle changes in myocardial imaging could be found. The changes in regional e' in STE analysis seems to be most sensitive to detect areas with STD while TWI was found in areas with lower wall motion score index and increased circumferential strain.

P537

Global longitudinal strain as an independent predictor of ventricular arrhythmias in ICD patients

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Purpose: risk stratification models currently available for predicting ventricular arrhythmias (VAs) in patients with structural heart disease are based on ejection fraction (EF) as the primary parameter, which has, unfortunately, a low sensitivity in detecting arrhythmic risk. The aim of the present study was to test the usefulness of speckle-tracking-derived parameters as predictors of VAs in implantable cardioverter-defibrillator (ICD) recipients with underlying structural heart disease.

Methods: All consecutive patients with structural heart disease admitted to the Arrhythmologic Clinic for an ICD implant were enrolled in the present observational study. Patients with channelopathies or idiopathic VAs were excluded, as were patients without an home-monitoring system available and properly activated at hospital discharge. A complete, echocardiography was performed within 7 days from ICD implant. 2D speckle-tracking analysis was used to derive global longitudinal strain (GLS), mechanical dispersion (MD) and delta contraction duration (DCD) of all patients. Home monitorings of all patients were checked weekly during the follow-up in order to detect all episodes of VAs (even asymptomatic ones) and appropriate and inappropriate ICD therapies.

Results: Seventy-nine ICD patients (58 males, 67±10 years old) were consecutively enrolled. During the follow-up (median time 335 days), 11 patients had one or more VA episodes detected by the remote monitoring and treated appropriately by the ICD. GLS was significantly associated with an increased risk of VAs during follow-up (OR 1.30; 95% CI 1.02-1.65; p=0.031), while EF was not. Multivariate logistic regression model showed that GLS (OR 3.20; 95% CI 1.26-8.14; p=0.015), secondary prevention (OR 17.37; 95% CI 3.28-42.58; p=0.014), and β-blocker therapy (OR

0.21; 95% CI 0.05-0.83; p=0.044) were all independent predictors of VAs during follow-up, whereas age, gender, EF, left ventricular volumes and type of cardiac disease were not associated with an increased risk of arrhythmias. MD and DTD were significantly associated with VAs at univariate analysis but did not reach statistical significance when GLS was added to the model.

According to the ROC curve, a GLS higher than -6.8% at ICD implant was able to predict subsequent VAs with a sensitivity of 82% and a specificity of 62% (AUC=0.728). There was no significant association between GLS, MD, and DTD and inappropriate ICD therapies during follow-up.

Conclusions: GLS is an independent and reliable predictor of VAs and appropriate ICD therapies. Bidimensional speckle-tracking could be used in clinical practice to stratify the arrhythmic risk in potential candidates to ICD, especially when the indication to implant is weak.

P538

Inconclusive exercise echocardiography in patients with chest pain and suspected coronary origin: prevalence and clinical determinants

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Background: exercise echocardiography (EE) is a technique of great diagnostic value in patients (pts) with chest pain. However, obtaining inconclusive results is one of its main limitations.

Purpose: the aim of this study was to assess the prevalence and clinical factors associated with inconclusive results on EE in pts admitted with chest pain of suspected coronary origin.

Methods: retrospective analysis of a prospective registry including 349 consecutive pts with chest pain admitted to the cardiology department. The mean age was 62±2 years, (65% male). Symptom-limited treadmill EE was performed in all of them. The test was considered inconclusive when the result was negative and 85% of the theoretical maximum heart rate predicted for age was not reached.

Results: a total of 93 (27%) EE were inconclusive. Pts with inconclusive result presented longer hospital stay (2 [1-3] vs. 1 [0-3] days, p=0.013) and a higher rate of additional complementary tests (14% vs. 6.6%; p=0.045) compared to pts with conclusive negative result. On multivariate analysis, obesity (BMI>30) (OR: 2.10; p=0.005), previous use of beta-

blockers when the stress test was performed in the first 24 hours from hospital admission (OR: 1.76; $p=0.04$), depression and/or anxiety (OR: 1.81; $p=0.03$), baseline heart rate <70 bpm (2.09; $p=0.006$), systolic blood pressure <130 mmHg (OR: 2.01; $p=0.005$) and serum creatinine (OR $>mg/dL$: 2.11; $p=0.04$) were independent predictors of inconclusive results.

Conclusion: pts with chest pain who underwent EE often get inconclusive results. Our results may be useful to identify pts who would get inconclusive results on EE and it would help clinicians to select a better cost-effective test to assess chest pain of suspected coronary origin

Table 1. Predictors of inconclusive results

| | OR (CI 95%) | P |
|--|------------------|-------|
| Obesity (BMI >30) | 2.10 (1.25-3.52) | 0.005 |
| Use of beta-blockers and test performed < 24 h from hospital admission | 1.76 (1.02-3.06) | 0.040 |
| Anxiety or depression | 1.81 (1.06-3.11) | 0.030 |
| Baseline heart rate < 70 bpm | 2.09 (1.23-3.56) | 0.006 |
| Baseline systolic blood pressure < 130 mmHg | 2.01 (1.26-3.51) | 0.005 |
| Creatinine concentration (mg/dl) | 2.11 (1.03-4.33) | 0.040 |

P539

Myocardial edema and initial ECG abnormalities in takotsubo cardiomyopathy

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Background: Admission ECG findings and abnormalities in Takotsubo cardiomyopathy (TC) patients are variable and the underlying physiopathology is not completely well understood. Initial presenting ECG may show abnormalities in different group of leads that classically have been correlated to different anatomical regions of the myocardium: anterior and apical (ANT: V1-V4), lateral (LAT: DI-aVL, V5-V6) and inferior (INF: DII, DIII and aVF). Several studies have shown that myocardial edema (ME) is well recognized by cardiac magnetic resonance imaging (CMRI) in TC patients during the acute phase.

Purpose: To describe ME in CMRI and its correlation with initial presenting ECG abnormalities in TC patients.

Methods: This study evaluated initial presenting ECG and CMRI during the acute phase in TC patients admitted to our center.

Results: We identify 61 patients who met the Mayo Clinic criteria 23 of whom had CMRI and ECG at admission. Age 76 ± 8 years, 87% female gender, LVEF $39\pm 9\%$. CMRI was performed at 4 ± 2 day from admission. No patient showed late gadolinium enhancement in CMRI, CMRI-LVEF was $57\pm 13\%$. ECG at admission was classified as ST elevation in 56,5% and 43,5% as Non-ST elevation of the patients (including 17% without significant abnormalities). The localization of ECG abnormalities: 52% ANT, 34% LAT and 4% INF. CMRI showed ME in 83% of the patients. ME localization was: 100% ANT (anterior and/or apical), 74% LAT and 21% INF. No agreement between CMRI imaging of ME and ECG abnormalities localization was seen (Table: Cohen's Kappa coefficient).

Conclusions: Initial presenting ECG abnormalities in TC patients are variables including ECG without abnormalities. CMRI-ME detection during the acute phase is very frequent, mainly in antero-apical region, in the absence of necrosis data. ME detection and location assessed by CMRI does not show any concordance with initial presenting ECG abnormalities.

Table 1. ME and ECG abnormalities concordance

| | ANT-CMRI | LAT-CMRI | INF-CMRI |
|---------|-------------------|-------------------|--------------------|
| ANT-ECG | 0,19 ($p=0,23$) | | |
| LAT-ECG | | 0,18 ($p=0,31$) | |
| INF-ECG | | | -0,07 ($p=0,69$) |

Risk Stratification

P540

Application of DAPT score in a population of patients submitted to coronary angioplasty

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Introduction: Dual antiplatelet therapy (DA) is recommended after coronary stenting to prevent thrombotic complications, yet the benefits and risks of treatment beyond 1 year are uncertain.

Some studies demonstrated benefit of prolonged DA for more than 12 months with reduction of stent thrombosis (ST) and major cardiovascular (CV) and cerebrovascular events.

The DAPT score divide patients into two groups (high risk and low risk) according to the pontuation. This score is calculated based on patient characteristics like age, diabetes mellitus, cigarette smoking, prior myocardial infarction (MI) or percutaneous coronary intervention (PCI), left ventricular ejection fraction $<30\%$ and index procedure characteristics like myocardial infarction at presentation, stenting of vein of graft and stent diameter $< 3mm$.

Methods: Retrospective study based on medical records of a catheterization lab between January 2013 and May 2013.

We evaluated 203 patients (P) that underwent PCI with stent in this period. We calculated the DAPT score for each patient and were evaluated adverse events after suspension of DA (ST, MI, Death or stroke)

Results: Our sample included 203 P, aged 65 +/- 11 years and mostly men (68,5%). We verified a prevalence of high blood pressure in 79%, dyslipidemia in 57,6%, Diabetes Mellitus in 34% and smoking in 27,6%. Nearly a quarter of patients (23.7 %) had previous PCI and 20.7 % had prior MI .

Mean DAPT score was 1,7 +/- 1,2 and 100 P (49,3%) were in low risk group and 103 P (50,7%) in high risk group. The average duration of DA was 19 months, although 49 patients (24.4%) did not suspend the DA until the end of the study.

We observed death in 16P (7,9%), MI in 10P (4,9%), ST in 7P (3,4%) and stroke in 5P (2,5%). Hemorrhage occurred in 6 patients (2,9%) and only 1 had major bleeding.

MI and ST were more common in patients with high risk score (7,8% vs 2% (p=0,05) and 5,8% vs 1% (p=0,064) while death and stroke were more prevalent in patients with low risk score (p>0,05) mainly because of the presence of elderly patients in this group with a majority of non-CV deaths . Combined endpoint MI/ST were more frequent in patients with high risk score occurring in 11P (78,6%) vs 3P (21,4%) in low risk group (p=0,028). Prevalence of hemorrhage was higher in low risk patients (4 (4%) vs 2 (1,9%); p=NS)

The mean follow-up of patients was 29 months.

Conclusion: We concluded that MI and ST were more frequent in patients with high risk score while mortality and stroke were more common in patients with low risk score and elderly. The cause of death was mainly noncardiovascular.

Prolonged dual antiplatelet therapy for more than 12 months could be beneficial for some selected patients.

P541

Diagnostic test of platelet lymphocyte ratio for screening of complex coronary lesion in different age group of acute coronary syndrome

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Background: A Complex coronary lesion is related to poor prognosis in ACS patient. The importance of early revascularization is to decrease mortality and complications related to ACS. Increasing number of patients due to health insurance policy in this country does not equal to the facilities available. Therefore, a specific tool is needed to stratify patients undergoing revascularization. Inflammatory

marker such as PLR changes during ACS, has been known to be related to complex coronary lesions. The application of PLR in daily practice is not widely used. The different reference values of PLR from previous studies is caused by various demographics of each country. The diagnostic accuracy of this tool in Indonesia region needs evaluation. PLR is expected to be a tool that can assist physicians and cardiologists to stratify patients who have high probability for having a complex coronary lesion. Furthermore it may also help classify patients who need to be prioritized to get revascularization and reduce incidences of MACE.

Purpose: Evaluate the diagnostic accuracy of PLR in identifying a complex coronary lesion in ACS patient compared to Gensini score. The other aim was to identify the proportion of complex coronary lesion and cut-off point of PLR between ≤45 years old group and >45 years old group subjects.

Method: This is a cross sectional study which was conducted retrospectively in ACS patients from January 2012 until July 2015. The inclusion criterias are adult ACS patients (age ≥18 years old) diagnosed with ACS and who underwent coronary angiography during hospitalization. The diagnostic accuracy was determined by calculating the sensitivity, specificity, Positive Likelihood Ratio (LR+), and Negative Likelihood Ratio (LR-). The cut-off point was determined using ROC curve.

Results: The proportion of complex coronary lesion in this study was 47,2%. The optimal cut-off point in ≤45 years old group was 111,06 with sensitivity, specificity, LR+, and LR- respectively 91,3%, 91,9%, 11,27 and 0,09. The optimal cut-off points in >45 years old groups was 104,78 with sensitivity, specificity, LR+, and LR- respectively 91,7%, 58,6%, 2,21 and 0,14.

Conclusion(s): The optimal cut-off point of ≤45 years old groups is 111,06 and for >45 years old group is 104,78. The diagnostic accuracy of PLR in ≤45 years old groups was very good (AUC 93,9%, p value <0,001), while in >45 years old group was moderate (AUC 77,3%, p value <0,001).

P542

Gender differences in clinical outcomes in young patients with acute coronary syndromes

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Background: Differences between women and men with acute coronary syndromes (ACS) in terms of cardiovascular risk factors, diagnostic work-up, treatment, and clinical outcomes have been reported. However, there is limited

data on the influence of gender on risk factors and clinical outcomes in young patients with ACS.

Purpose: We aimed to assess the influence of gender on risk factors, ACS management and in-hospital clinical outcomes, in younger patients.

Methods: Prospective data of 401 patients consecutively admitted in a single coronary unit, between October 2009 and September 2015, diagnosed with ACS. Only patients under 55 years-old were analyzed. They were divided in two groups: group A- female patients (n=64); group B- male patients (n=337). We compared them regarding an in-hospital primary composite endpoint (PCE)-cardiovascular death, non-fatal myocardial infarction or stroke- and mortality.

Results: Cardiovascular risk factors like high blood pressure (A: 56.2% vs B: 42.4%, p=0.029) and diabetes mellitus (A: 21.9% vs B:12.2%, p=0.035) were significantly more common in group A. There were no other significant differences regarding baseline characteristics. Almost 52% of patients presented with non-ST elevation ACS (A: 51.6% vs B: 51.3%, p=0.541). At admission, there were higher levels of glycaemia (A:166.5±103.5mg/dL vs B: 142.5±69.2mg/dL, p=0.021) and BNP (A: 310.6±347.9pg/mL vs B: 199.7±353.18pg/mL, p=0.036) and lower levels of hemoglobin (A: 13.4±1.3g/dL vs B: 15.3±1.3g/dL, p<0.001) in group A. There were no differences between groups regarding coronary revascularization or medical therapy. Angiographic findings were similar in both groups. During hospitalization, there was identical mortality (A: 1.6% vs B: 1.2%, p=0.583) and PCE (A: 4.7% vs B: 1.5%, p=0.120) rates.

Conclusion: There were significant gender differences in the risk factors for coronary artery disease. However, in our population, we did not observe any gender imbalance regarding ACS management or in-hospital prognosis.

P543

Heart rate variability in an unselected population with heart failure

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Aim: To assess the heart rate variability (HRV) as a prognostic factor in patients (pts) with heart failure (HeF) and sinus rhythm in relation to various concomitant clinical conditions.

Method: We performed 24 hours Holter ECG monitoring for palpitations in 148 pts classified in 2 groups in sinus rhythm, with (G1) and without (G2) HeF. We noted history of arterial hypertension (HP), ischemic heart disease (IHD), old myocardial infarction (OMI), type 2 diabetes mellitus (DM), NYHA class and medication of HeF, ventricular premature beats (VPB) Lown class 3, 4A and 4B. We

evaluated HRV using time domain methods determined in ms (standard deviation of normal-to-normal interval over 24 hours (SDNN-24h), standard deviation of the average NN interval index (SDANN); standard deviation of normal-to-normal interval index (SDNNi)) and frequency domain methods determined in Hz (very low frequency (VLF), low frequency (LF), high frequency (HF) and LF/HF ratio). Reduced HRV was defined for a SDNN-24h under 100 ms and LF/HF <2. We compared the results between the 2 groups using EpiInfo 3.5.3 statistical program.

Results: There were 61 pts in G1, 75.4% NYHA II, 19.6% NYHA III and 3.2% NYHA IV; 49.2% men. G1 were older comparing to G2 (69.8±10.2 years vs 57.9±15.8 years, p<0.0001), with an increased prevalence of IHD (52.5% vs 23%, p=0.0002), OMI (16.4% vs 3.4%, p=0.006) and DM (26.7% vs 11.5%, p=0.01). VPB Lown 3 were equal distributed in G1 and G2 (11.5% vs 12.6%, p=0.83) but Lown 4A and 4B were more frequent in G1 than in G2 (37.7% vs 18.4%, p=0.008). 85% pts of both groups took beta blockers. The time domain values of HRV were lower in G1 vs G2. SDNN-24h was 103.7±35.7 ms for G1 vs 124.5±36.2 ms for G2, (p=0.0007) and SDANN was 92.7±35.3 ms for G1 vs 113.5±34.5 ms for G2 (p=0.0005). 45.9% pts in G1 vs 26.4% pts in G2 had reduced HRV (p=0.01). In G1 the time domain values of HRV didn't differ significantly between NYHA classes (p=0.72). In both groups the values of HRV did not differ statistically according to the occurrence of VPB (p=0.12) or between Lown classes (p=0.36). In the frequency domain, LF values were 396.4±520.3 Hz in G1 and 462.8±334.3 Hz in G2 (p=0.008). LF/HF ratio was 2.64±1.69 in G1 and 3.53±2.49 in G2 (p=0.01). DM was associated with reduced HRV in G2 (odds ratio=5.29 95%CI[1.33;20.93], p=0.01).

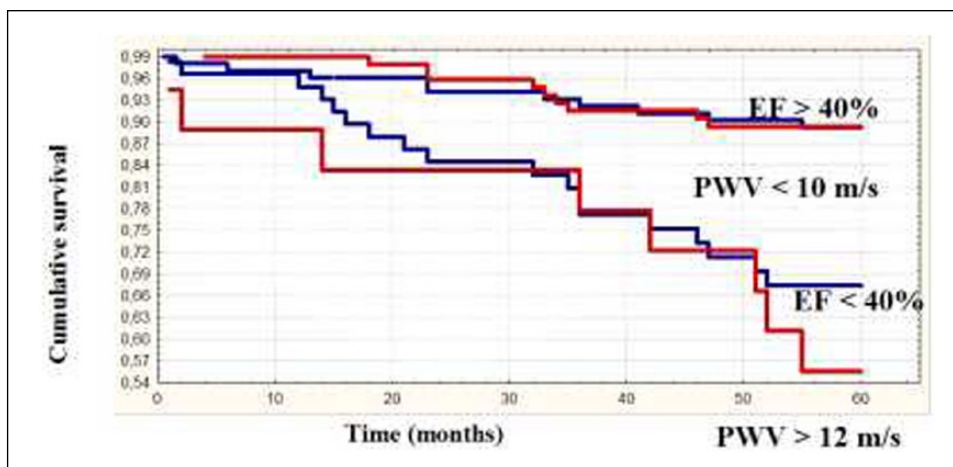
Conclusions: HRV was significantly more reduced in pts with HeF comparing with pts without HeF, irrespective of the occurrence or severity of the VPB. There was no correlation between HRV and the cardiac history of the pts. Pts with DM without HeF had reduced HRV evaluated in the frequency domain.

P544

Influence of various risk factors on cumulative survival in post myocardial infarction patients

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Objective: to evaluate the role of pulse wave velocity (PWV) in comparison with traditional risk factors as a predictor of high mortality in post myocardial infarction (post-MI) patients (pts).

Material and Methods: the study included 184 post-MI pts (mean age 58.8 ± 1.3 years). Carotid-femoral PWV was evaluated on an automated system of computer Colson. Follow-up was from 1 to 60 months. Cumulative survival was analyzed using the Kaplan-Meier method.

Results: five-year survival of post-MI pts was 89% in pts with $< PWV 10$ m/s (8.3 ± 0.13 m/s, $n=94$), 84% in pts with $PWV 10-12$ m/s (11.1 ± 0.32 m/s, $n=47$) and 54% in pts with $PWV > 12$ m/s (13.3 ± 0.21 m/s, $n=19$). The differences between the group were significant ($p < 0.01$). The relative risk (RR) in pts with high values of PWV was to 3.1; 95% CI 1.81-6.93 ($p < 0.05$). Survival of pts aged less than 60 years was 90.7%, and more than 60 years – 78% (RR was 2.44; 95% CI 1.18-4.04, $p < 0.05$). The five-year survival in the group post-MI pts and left ventricular ejection fraction (LV EF) $> 40\%$ was 89.2%, in pts with LV EF $< 40\%$ – 68.9% only, the differences were significant, RR 2.88; 95% CI 1.4-5.6 ($p < 0.05$). In post-MI pts with diabetes ($n=24$) 5 year survival was 69.6%, but in post-MI pts without diabetes – 89.2% (RR 2.82; 95% CI 1.22-6.49, $p < 0.05$).

Conclusion: PWV, as well as, age, LV EF and diabetes can be considered as a powerful predictor of total mortality in post-MI pts.

P545

Prognostic value to 6 months of the OESIL risk score in a Colombian cohort of Emergency Department patients with syncope

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Objectives: To establish the prognostic value with sensitivity, specificity, positive predictive value, negative predictive value for the OESIL syncope risk score to predict the presentation of severe outcomes (death, invasive interventions and readmission) within 6 months of observation in adults who consult to the emergency department

Methods: Observational, prospective and multicenter study with enrolment of subjects 18 years old and above who came to the emergency department because of syncope. Demographic and clinical information was asked, OESIL risk score was calculated and telephone contacts were done for 6 months follow up for registration of severe outcomes.

Results: 161 patients met the inclusion criteria and were followed for 6 months. A score above or equal to 2 points in the risk score was classified as high risk and was present in 72% of patients. With a score of 2 or more, the characteristics of the risk score to predict the combined outcome of mortality, invasive interventions and readmission were 75.7%, 30.5%, 43.1%, and 64.4% for sensitivity, specificity, positive predictive value and negative predictive value respectively.

Conclusions: A score of 2 or more in the OESIL risk score applied in Colombian people from Bogotá has a limited utility for the prediction of severe outcomes (mortality, re-admissions and invasive cardiovascular procedures combined) which would not allow to discriminate patients benefited of early admission and additional studies.

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Screening of cardiovascular risk in bodyguard security team of state government. the obese and overweight group assessment

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Background: The bodyguard security staff is a high-risk and stress professional activities.

Objective: This study aims to investigate the obese/overweigh population in bodyguards from security staff of State Government and to identify cardiovascular risk factors and Framingham risk score.

Methods: Between january/2013 and july/2013 a total of 265 bodyguards of security staff from the State Government were assessed as a standard practice, through the Physician and Odontological Aptitude Test. It was identified 45 (16,98%) obese or overweight (OO group) individuals based on body index mass measurement according to World Health Organization. The group was submitted to cardiovascular risk assessment followed by calculation of Framingham cardiovascular risk score. The entire group was referred to a multidisciplinary health team.

Results: It was identified in the OO group: 67% males; average age 39,4 years old; 39,0% with overweight; 35,0% with obese class I; B 22,0% with obese class II and 4% obese class III after BMI calculation; physical inactivity 48%; tobacco use 7%; alcohol use 63,0%; hypertension 46,0%; diabetes 11,0%; 17,0% with fasting glycaemia >99 mg/dl, lack of information in 20%; dyslipidemia 22,0%, total cholesterol >200 mg/dl was measured in 35% (mean 203 mg/dl) and the lack of information in 20%; LDL cholesterol >100 in 50% (mean 81mg/dl) and the lack 24%; HDL <40 in 13% (mean 51 mg/dl) and lack 17%; triglycerides >150 in 17% (mean 128 mg/dl) and the lack 22%; waist circumference >88 cm in 85,71% in female and >102 cm in 83,87% in male. The cardiovascular risk assessment of OO group, through the Framingham risk score, were: 67% of the group demonstrated <10% (low) risk of developing major cardiovascular event (myocardial infarction or cardiac death) in 10 years; 11% demonstrated intermediate risk (>10% and <20%) in 10 years; no high risk in 10 years (>20%) was identified but there were 22% with incomplete data.

| FRAMINGHAM RISK SCORE OF OO GROUP (17% TOTAL GROUP) | |
|--|----|
| RISK LEVEL OF MAJOR CV EVENTS IN 10 YEARS | % |
| LOW RISK (<10%) | 67 |
| INTERMEDIATE RISK (>10% AND < 20%) | 11 |
| HIGH RISK (> 20%) | 22 |

Conclusion: It was observed that 17% of the bodyguard staff were obese or overweigh. However, according to the Framingham risk score 67% of the group was classified as low risk of cardiovascular event in 10 years. They must be referred to and monitored by a multidisciplinary health team in order to prevent and treat cardiovascular disease

P547

Value of HDL and prognosis in acute coronary syndromes

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Introduction: The HDL to molecular level features a protective role in the genesis and progression of atherosclerotic plaque, removing particles of cholesterol from tissues and circulation and returning them to the hepatocytes, where are depurated. Although the elevation of HDL levels presents an antiatherogenic benefit from the theoretical point of view, the studies that used drugs to increase HDL did not demonstrate consistent benefits in preventing coronary heart disease.

Purpose: Characterize the patients admitted for acute coronary syndrome (ACS) in a cardiology department about their HDL levels in fasting during hospitalization. Check the differences between groups of patients (with HDL equal or lower than 40 mg/dL (HDL40), HDL between 41 and 60 mg/dL (HDL 41-60) and HDL above 60 mg/dL (HDL > 60)) respecting to basal characteristics, mortality rates and hospital readmission on 1 year follow-up.

Methods: We performed a prospective, descriptive and correlational study, encompassing all patients admitted in a Cardiology service with ACS, in the period between 1st October 2010 and 31st August 2014. Patients were divided into 3 groups (HDL40, HDL41-60, HDL > 60). The follow-up was one year, through medical consultation or telephone contact made by Cardiologist. Then, an univariate and multivariate analysis with factors possibly associated with higher levels of HDL was done. For statistical analysis we used the SPSS 20.0.

Results: 2218 patients were admitted by ACS and were assessed for HDL level during hospital stay. Their distribution among defined groups was 58.6% (1282) with HDL < 40, 38.0% (848) with HDL41-60 and 3.4% (88) with HDL > 60.

Higher levels of HDL associated with greater percentage of normal coronariographies (3.7% versus 6.6% versus 12.5%, $p < 0.01$), lower percentage of cases of disease of the circumflex artery (48.7% versus 45.0% versus 30.2%, $p = 0.018$) and the highest mortality in the follow-up (7.1% versus 7.4% versus 19.0%, $p = 0.017$).

HDL levels were not independent predictors of mortality or hospital readmission in the follow-up.

Conclusions: Higher levels of HDL associated with the greater percentage of normal coronariographies, lower percentage of cases with circumflex artery disease but also the largest mortality in the follow-up of 1 year. HDL levels were not independent predictors of mortality or hospital readmission in the follow-up.

Special population: diabetes, elderly and renal failure

P548

Dementia and acute myocardial infarction: population characteristics, impact on therapeutic management and in-hospital prognosis

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Introduction: With aging, the number of patients (pts) that suffers an acute myocardial infarction (AMI) and have dementia (DMT) is rising and its presence could influence therapeutics and prognosis.

Purpose: Evaluate the impact of DMT in the therapeutic management of pts with MI and in-hospital morbi-mortality.

Methods: Studied 12323 pts with AMI enrolled in a Multicentric National Registry. Defined two groups: 1) Pts with DMT; 2) Pts without DMT. Recorded demographic data, previous medical history, inpatient therapy, LV function, coronary angiography and revascularization strategy. Defined the following adverse events: mortality, re-infarction, stroke, heart failure (HF), cardiogenic shock (CS), high-grade atrioventricular block (AVB) and major bleeding (MB). Multivariate analysis was performed to evaluate if the presence of DMT was a predictor of non performing invasive strategy or adverse events.

Results: DMT was documented in 2.0% (243 pts). Those pts were older (80±9 vs 66±13y, p<0.001), more likely female (57.6 vs 27.1%, p<0.001), with history of hypertension (75.8 vs 69.2%, p=0.028), stroke (26.6 vs 7.7%, p<0.001), HF (14.5 vs 6.1%, p<0.001), chronic kidney disease (15.5 vs 6.0%, p<0.001) and previous bleeding (4.2 vs 1.7%, p=0.008). No differences regarding previous MI (19.3 vs 21.8%, p=0.341) and on the admission diagnosis: STEMI (44.9 vs 43.7%, p=0.715) or NSTEMI (47.7 vs 52.4%, p=0.748). Patients with DMT were less likely to present with chest pain (66.7 vs 90.8%, p<0.001) but more with dyspnea (11.5 vs 4.5%, p<0.001)

or syncope (8.6 vs 1.5%, p<0.001), to evolve in Killip II-IV (38 vs 16.1%, p<0.001) and with LV dysfunction (Ejection fraction<50% - 58.9 vs 38.1%, p<0.001). They were less often treated with clopidogrel (81.1 vs 91.1%, p<0.001) or ticagrelor (0.7vs4.8%, p<0.001), beta-blockers (65.6 vs 80.2%,p<0.001), ACEi (78.6 vs 87%, p<0.001), statins (89.7 vs 95.2%, p<0.001) and less likely to receive coronary angiography (CA) (46.1 vs 87.8%, p<0.001) despite higher incidence of multivessel disease (61.5 vs. 49.7%, p=0.017). More often was not planned any revascularization (20.9 vs 11.3%, p=0.002) and coronary angioplasty was performed less often (35 vs 66.8%, p<0.001). DMT pts had higher length of stay (mean 6 vs 5 days, p<0.001) and incidence of HF (44.4 vs 17.4%, p<0.001), CS (10.8 vs 4.0%, p<0.001), AVB (6.2vs3.4%, p=0.022) and stroke (2.1 vs. 0.8%, p<0.041) but not re-infarction (1.2 vs 1.2%, p=1.0) or MB (2.1 vs 1.6%, p=0.604). Patients with DMT had higher in-hospital mortality (13.2 vs 3.7%, p<0.001). By multivariate analysis, DMT was established as an independent predictor of non performing CA (OR 0.19 [0.13-0.29] CI 95%, p<0.001) but not of in-hospital mortality or other adverse events.

Conclusions: In patients with AMI, the presence of DMT affects the therapy and is associated with an inferior rate of revascularization and with higher in-hospital morbidity. DMT established as an independent predictor of non performing coronary angiography.

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Impact of frailty on in-hospital adverse outcomes in a population of elderly patients admitted with acute coronary syndrome

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Background: Frailty represents a complex clinical syndrome of decreased physiological reserve and increased vulnerability to stressors. Little is known regarding interaction between frailty status and outcomes in patients with acute coronary syndrome. Our study aims to assess the prevalence of frailty and its impact on in-hospital adverse outcomes of patients aged ≥ 75 years admitted for acute coronary syndrome.

Methods: In this retrospective, observational study we included patients aged ≥ 75 years admitted for acute coronary syndrome between January 2011 to December 2015. Frailty was assessed using the Fried criteria. The primary endpoint was all-cause in-hospital mortality. Secondary endpoints included the occurrence of re-infarction, stroke and major bleeding.

Results: Of the 502 patients included, 25.5% (n=126) matched criteria for frailty. Frail patients were older (mean age 78±5.5 vs. 76.2±5.5 years; p=0.02), 68.3% (n=86) were male and had higher rates of comorbidities, namely dyslipidemia (57.1% vs. 44.9%; p=0.02). The frail population had higher risk profile according to GRACE (151.4±18.8 vs. 132.1±16.8; p<0.0001), TIMI (4.3±1 vs. 3.1±1; p<0.001) and CRUSADE (34.6±9.4 vs. 25.8±9.5; p<0.001) scores at admission. All-cause in-hospital mortality was significantly more frequent in frail patients (11.9% vs. 9.6%; p<0.001), as well as re-infarction (7.4% vs. 4.8%; p<0.001), stroke (8.7% vs. 0.5%; p=0.002) and major bleeding (7.9% vs. 1.6%; p=0.002). After adjustment for baseline characteristics and GRACE index, frailty remained independently associated with the primary endpoint (odds ratio 9.63; 95% confidence interval 5.05-18.35; p<0.001).

Conclusions: Frailty is frequent in elderly patients with acute coronary syndrome and according to the current data identifies a very high risk population. Frailty is a strong and independent prognostic marker in elderly patients with acute coronary syndromes.

P550

Influence of diabetes status on prescription of antiplatelet therapy in patients with acute coronary syndrome

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Background: Diabetes is associated with worse outcomes (including higher rates of recurrent ischemic events and bleeding complications) in patients with acute coronary syndrome (ACS). Prasugrel and ticagrelor are newer and more potent antiplatelet agents which have been introduced recently into our therapeutic arsenal. Current European guidelines recommend both agents over clopidogrel in patients with ACS. However, there are several factors (including diabetes status) that clinicians have to take into account while selecting the appropriate antiplatelets therapy for each patient.

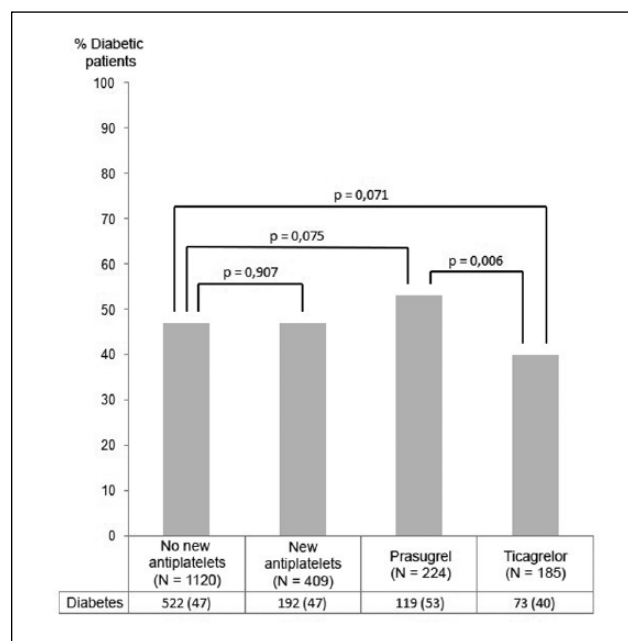
Purpose: to evaluate the influence of diabetes status on the antiplatelet therapy in a contemporary cohort of ACS patients.

Methods: A retrospective analysis of a prospective registry of ACS was performed. Patients meeting current American Diabetes Association criteria were considered to have diabetes. Baseline clinical characteristic and treatment at

discharge were recorded in detail. Patients who deceased during index hospitalization were excluded. We analyzed the impact of diabetes on new antiplatelets agents prescription through a multivariate logistic regression analysis.

Results: Between January 2012 to June 2015, 1532 consecutive admissions of 1360 patients (68 ± 13 years, 75% male) with ACS were analyzed (64% ACS without ST elevation, 32% ST elevation ACS, 4% undetermined SCA). Patients were considered to have diabetes in a total of 715 admissions (47%). Diabetic patients were older, had more comorbid conditions and higher ischemic and bleeding risk according to GRACE and CRUSADE risk score, respectively. Clopidogrel was the most frequently prescribed 2Py12 inhibitor at discharge, both in non-diabetic and diabetic patients. After multivariate adjustment, the presence of diabetes was an independent factor associated with the use of new antiplatelet agents (OR = 1,723 (1,266-2,346); p = 0.001), at the expense of a preferential use of prasugrel over ticagrelor in these patients (Figure 1).

Conclusions: In this contemporary cohort of ACS patients, clopidogrel remained the most frequently 2Py12 inhibitor at discharge. However, the presence of diabetes was an independent factor associated with the use of new antiplatelet agents, mainly due to a higher use of prasugrel in diabetic patients.



Prescription of antiplatelet therapy

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Management of frail patients with acute coronary syndrome: a prospective and multicenter registry

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Background: Frailty is emerging as an independent marker of adverse cardiovascular outcomes. However, in the majority of cases, the decision making process is done without objective knowledge of frailty status. Our study aims to explore the most common clinical features associated with the decision to use of an invasive strategy in a subset of frail high-risk ACS patients >75 years.

Methods: This prospective, multicenter and observational study included patients aged ≥ 75 years admitted due to type 1 myocardial infarction. Patients with dementia or in cardiogenic shock were excluded. Frailty was assessed by SHARE-FI index. Only frail patients were studied. Selection of revascularization strategy was left to clinician discretion and was performed without interference of frailty measurements or any study procedures. The main objective was to determine which clinical factors determined the use of an early invasive instead of a conservative strategy. We also aimed to evaluate the impact of an invasive treatment on overall prognosis.

Results: From October '13 to November '15, a total of 236 patients were studied and 88 (37.3%) frail patients were included. Catheterisation was performed in 61 (69.3%) patients, and revascularization in 44 (50%). Aggressive treatment did not affect in-hospital length of stay or mortality. Patients who underwent invasive treatment were younger, more often female, with a preserved renal function and with a lower punctuation in CRUSADE bleeding score (Table). On multivariate analysis younger age, female sex and a lower punctuation in CRUSADE score predicted aggressive treatment.

Conclusions: Among frail patients, being older, male or having a high punctuation in CRUSADE score may predict a conservative treatment. Invasive treatment may not change prognostic or in-hospital length of stay. Larger studies are needed to confirm this data.

Table 1.

| | Conservative treatment (n=27) | Invasive treatment (n=61) | P |
|---------------------------|-------------------------------|---------------------------|-------|
| Age (years) mean \pm SD | 86 \pm 6 | 83 \pm 5 | 0.004 |
| Female (n, %) | 9, 33.3% | 37, 60.7% | 0.018 |
| STEMI at admission (n, %) | 5, 18.5% | 24, 39.3% | 0.055 |

| | Conservative treatment (n=27) | Invasive treatment (n=61) | P |
|---|-------------------------------|---------------------------|-------|
| Preserved Renal Function (n, %) | 3, 12% | 21, 40.4% | 0.012 |
| Acute Heart Failure at admission (n, %) | 17, 63% | 33, 54.1% | 0.439 |
| CRUSADE mean \pm SD | 53 \pm 9 | 46 \pm 15 | 0.026 |
| GRACE mean \pm SD | 162 \pm 19 | 154 \pm 23 | 0.108 |
| In-Hospital Stay (days) mean \pm SD | 11 \pm 22 | 8 \pm 8 | 0.284 |
| Mortality rate (n,%) | 3, 11.5% | 3, 4.9% | 0.265 |

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Oral anticoagulation in geriatric population with atrial fibrillation (AF): therapeutic approach in primary care

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Atrial fibrillation (AF) is the most common sustained arrhythmia in developed countries. Its prevalence has increased significantly with the aging of the population. AF prevalence in the Portuguese population aged 40 and over is $\sim 2.5\%$. Secondary stroke prevention includes oral anticoagulants (OACs, such as, warfarin and Non-vitamin K antagonist OACs, NOACs) in any form of AF (ie, paroxysmal, persistent, or permanent). Anticoagulation in elderly patients is a challenge, given the common presence of comorbidities (including cognitive disorders, cardiovascular and kidney diseases), polypharmacy, lack of social support (or social isolation) and risk of falls (or major bleeds). This can lead to underuse of OAC therapy in the geriatric population, who could benefit most from it. However, paradoxically, elderly also have a higher relative risk of bleeding. Based on stratification of thromboembolic risk and/or ischemic stroke (score CHA₂DS₂VASc) and bleeding risk (HAS - BLED) anticoagulant therapy has been recommended, thus weighting the risks of thrombosis versus bleeding. However, in some cases, the risk/benefit ratio should be carefully individualized. Oral anticoagulants, such as warfarin and NOACs, have been compared for efficacy and safety. Finally, specific practical recommendations are provided for treating patients attending primary care in Portugal.

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Predictors of in-hospital outcome in young adults with acute coronary syndrome

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Background: Although acute coronary syndrome (ACS) primarily occurs in the older population, young adults are also affected and may have an adverse outcome.

Purpose: To analyse in-hospital complications and mortality in young patients (pts) with ACS and compare them with their older counterparts.

Methods: A unicentric prospective study was performed which included 3395 consecutive pts with ACS in a cardiology hospital centre (2005-2015). Pts were divided according to age: < 45 and ≥ 45 years old. Demographic, clinical, angiographic and prognostic data were collected.

Results: Pts < 45 years old represented 11.8% and males were more represented in this group (85.5% vs 69.1% in the older group; p=0.000). In-hospital complication rate in young adults was lower (18.1% vs 30.7%; p=0.000), including heart failure (0.4% vs. 3.6%, p=0.007), pulmonary acute oedema (0.4% vs 3.5%, p=0.007), cardiogenic shock (2.4% vs. 5.8%; p=0.022), cardiac arrest in asystole (0.4% vs. 2.8%, p=0.022), stroke (0% vs 1.3%, p=0.045), acute renal failure (0.8% vs. 4.9%; p=0.003) and major haemorrhage (0% vs 1.4%, p=0.036). In-hospital mortality in young pts was 5.0% and in the older group was 11.2% and age was an independent predictor of this outcome. Predictors of in-hospital mortality in younger pts are shown in Table 1.

Conclusion: ACS at younger age was associated with better in-hospital prognosis. Absence of classical cardiovascular risk factors and specific clinical presentations and complications were identified as predictors of poor in-hospital outcome in this population.

Table 1.

| | HR | CI | p |
|--|---------|-----------------|-------|
| Absence of classical cardiovascular risk factors | 43.333 | 6.426-292.229 | 0.000 |
| Atrial fibrillation at presentation | 16.533 | 1.455-187.832 | 0.024 |
| Glycaemia at presentation | 1.021 | 1.005-1.037 | 0.012 |
| Killip class IV | 65.429 | 5.288-809.535 | 0.001 |
| Ventricular fibrillation | 35.182 | 5.325-232.464 | 0.000 |
| Erythrocyte transfusion | 67.000 | 3.534-1270.385 | 0.005 |
| Invasive mechanical ventilation | 115.556 | 11.704-1140.936 | 0.000 |

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Short and mid term prognosis in elderly patients admitted for acute coronary syndrome

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Background/Introduction: Elderly patients represent a large proportion of patients admitted to hospital with an acute coronary syndrome (ACS), and this will be even more the case in the forthcoming decades.

Purpose: determine short (1 month) and mid (1 year) term prognosis in elderly patients (≥ 75 years) admitted for Acute Coronary Syndrome.

Methods: Descriptive, prospective registry considering elderly patients (≥ 75 years) admitted to the Cardiology Department of our centre, for ACS, between August 2013 and April 2015. Epidemiological, clinical and laboratory variables were included. Mortality, adverse cardiovascular events and haemorrhagic events were observed 1 month and 1 year after hospitalization. Furthermore, we assessed the applicability of the GRACE and CRUSADE scores and Barthel, Pfeiffer and Charlson scores in order to identify the main predictors of short and mid term events.

Results: 86 patients were included, average age was 81 years old; 54 % of the sample was male. The 1-month and 1-year events rate were 14 % and 31 %, respectively. At 1-month follow-up, stroke and congestive heart failure (4.7 %) resulted to be the most common events causing hospitalization. At 1-year follow-up, death from any cause (10.5 %) and congestive heart failure (8.1 %) resulted to be the most common events. Probably due to the small sample size, at 1 month follow-up the prognostic variables analysed did not reach statistical significance. Nevertheless, at 1-year follow-up a correlation between functional assessment scale (Barthel Index) and co-morbidity index (Charlson) and events rate was observed (Barthel <80, 25.9% versus 8.6% p=0.039; Charlson ≥ 3, 59.3% versus 37.3% p=0.048). No other epidemiological, laboratory and clinical variables (included GRACE and CRUSADE scores) resulted useful in determining short and mid term prognosis in the population studied.

Conclusions: The predictors classically used to determine a prognostic evaluation of patients admitted for ACS (age, creatinine, haemoglobin, type of ACS and Killip, GRACE, GRACE and CRUSADE modified) did not associate with a higher rate of global events in our study while fragility-related functionality and co-morbidity parameters are those associated with the appearance of new events.

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Should we perform echocardiograms to the very old population?

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Introduction: Although echocardiography is accepted as a useful and cost-effective tool in the investigation of a wide range of diseases and most cardiopathies, it may lose cost effectiveness when applied to the very old population.

Purpose: Investigate the therapeutic changes made as a result of the echocardiographic studies in our elder patients.

Methods: We revised the echocardiographies performed in 2015 to patients aged 86 or more years old, and the medical changes or surgical or other interventions performed as a result of them.

Results: Through 2015 we performed echo studies to 380 patients, aged 88,1±2,23 years old, 36% males. Main diagnosis where aortic stenosis (moderate to severe) in 26%, control of aortic prosthesis (surgically or percutaneously implanted in 21%(7,5% of those ha dysfunction). 10% had significative mitral or aortic regurgitation, and 9% had ventricular dysfunction (included ischemic cardiopathy)

25% of the studies showed no significant cardiopathy. 49 therapeutic changes were made as a result of the echo findings (12.8% of patients): 28 transaortic valve implantations (TAVI), 4 valve surgeries, 5 changes in medical treatment and 12 derived to cardiologist follow up. This therapeutic changes occurred mostly in patients with aortic valve disease (TAVI, surgery or follow up), while only 4% of the remaining patients with significative pathologic echo had changes in their treatment.

Conclusion: In the very old population the limitation of therapies may convert echocardiography in a less utile tool. Imaging studies should be limited to patients whose treatment will change as a result of the echocardiography, and avoided in those whose comorbidities or age limit therapeutic options. Aortic stenosis is a frequent disease that can be diagnosed and treated even in the very old

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Takotsubo patients aged eighty and older: clinical, electrocardiographic and echocardiographic findings at admission

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Introduction: Clinical, electrocardiographic (ECG) and echocardiographic (TTE) presentation in Takotsubo syndrome (TTS) mimics an acute coronary syndrome.

Several studies have shown that clinical, ECG and TTE findings in these patients have a prognostic value. On the other hand, the aging of our population is a growing reality. However, information about TTS presentation in this population is very scarce.

Purpose: To describe the clinical characteristics, ECG and TTE findings at admission of TTS patients aged ≥ 80 years.

Methods and results: 61 consecutive TTS patients (71±11 years, 87% female gender) were identify according to the Mayo Clinic diagnostic criteria for TTS, and were categorized into two age groups: ‘group A’ < 80 years (46 patients, 67±8 years) and ‘group B’ ≥ 80 years (15 patients, 84±3 years) (p<0,001). Clinical, ECG and TTE findings of the two groups were compared. There were no significant differences between the two groups regarding clinical presentation: presenting symptoms (chest pain 76% vs 80%, p=0.77; dyspnea 34% vs 27%, p=0.59) or Killip-Kimball>1 (37% vs 27%, p=0.48). Trigger events were reported less frequently in ‘group B’ patients (81% vs 66%, p=0.027). ECG presentation showed no differences between groups and non-ST elevation was the main ECG presentation in both groups (55 % vs 60%, p=0.75). There were no differences in LVEF at hospital admission (41±12% vs 37.5±10%, p=0.30). However, there were significant differences regarding apical involvement: non-apical or atypical form was more frequent in ‘group B’ patients (5% vs 16%, p=0.03).

Conclusions: TTS patients aged 80 years and older have a very similar clinical and ECG profile at admission compared to younger patients. Nevertheless, trigger event are less frequently reported and atypical (non apical) TTS form is significantly more frequent in patients aged 80 years or older.

Table 1. ECG and echocardiographic features

| | Age < 80 years (n=46) | Age ≥ 80 years (n=15) | P |
|--|-----------------------|-----------------------|--------|
| ST elevation ECG at admission | 35% | 40% | p=0.75 |
| Non-ST elevation ECG at admission | 55% | 60% | p=0.75 |
| ECG without significant ST/T abnormalities | 10% | 27% | p=0.13 |
| ANT-ECG | 42% | 53% | p=0.45 |
| LAT-ECG | 47% | 40% | p=0.62 |
| INF-ECG | 18% | 0% | p=0.07 |
| LVEF | 41±12 | 37.5±10% | p=0.30 |
| Typical/Atypical Takotsubo | 95%/5% | 84%/16% | p=0.03 |

ANT-ECG: ECG abnormalities in anterior leads; LAT-ECG: ECG abnormalities in lateral leads; INF-ECG: ECG abnormalities in inferior leads.

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Ten years follow-up results of left main percutaneous coronary intervention in elderly patients

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Introduction: The progressive aging of the population leads to higher prevalence of ischemic heart disease with an increased left main coronary artery (LMCA) disease. Elderly patients (>75 years) represent an unfavorable subgroup because of their fragility and high rate of surgical risk.

Purpose: The main objective of this study was to evaluate the efficacy and safety of percutaneous coronary interventions (PCI) in LMCA disease at 10 years follow-up in the elderly.

Methods: We prospectively included 125 consecutive patients (81 ± 3 years, 65.5% male) with LMCA disease treated with PCI between June 2006 and April 2015. We evaluated the presence of major adverse cardiovascular events (MACE) defined as cardiac death, non-fatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis after 10 years clinical follow-up (median 40.5 months).

Results: 48% of patients had stable coronary disease and 52% acute coronary syndrome (40% Non-STEMI and 12% STEMI). 41.6% were diabetic patients and 59.5% presented moderate-severe left ventricular systolic dysfunction.

60% of patients had logistic EuroSCORE ≥ 12% and 41.6% Syntax score ≥ 32.

The most frequently bifurcation technique employed was 'provisional stenting' in 64.4% of cases, and zotarolimus eluting stent was used in 71.1% of cases. Intraoperative mortality was 0.8% and stroke rate post-PCI was 1.6%.

During follow-up, MACE rate at 10 years was 13.6% (8.8% cardiac death, 0.8% non-fatal myocardial infarction, 3.2% TLR and thrombosis rate 0.8%). There were significant differences in the occurrence of MACE in patients with Killip class 3-4 at the procedure (p=0.05), ventricular dysfunction (OR=0.43, IC 95% 0.21 – 0.87, =0.009) and older patients (OR=1.25, IC 95% 1.06 – 1.47, p=0.03).

Conclusions: In elderly patients with high surgical risk, left main PCI provide very favorable results with a low rate of immediate complications in the procedure and low rate of cardiac adverse events at a very long-term follow-up.

Sudden death / resuscitation

P558

Assessment of sudden cardiac death risk in hypertrophic cardiomyopathy

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Background: Risk stratification for sudden death risk is now an essential component of disease management in hypertrophic cardiomyopathy (HCM), given the proven effectiveness of the implantable cardioverter-defibrillator (ICD) in preventing sudden death (SD). While highly useful in identifying high-risk patients, a complete stratification algorithm is necessary. Recently, the European Society of Cardiology (ESC) has advanced a novel score that provide individualized risk estimation aimed at identifying patients most likely to benefit from ICD and heavily promoted as a strategy to replace current evidence-based risk stratification methods.

The purpose of the present investigation was to calculate the ESC SD risk score and assess primary prevention ICD outcome in patients previously evaluated at single center.

Methods: We reviewed retrospectively the medical records of 49 patients with MCH who were implanted with primary prevention ICD between 2004 and 2015. Data regarding demographic, clinical and echocardiographic parameters as well as 24 hour-holter monitoring results were collected. ICD analysis was performed in all patients. Continuous data are presented as the mean ± standard deviation (SD) or median (interquartile range) and categoric data as percentages. Categoric variables were compared with the use of a chi-square test. The primary endpoint was appropriate ICD discharge (shocks or antitachycardia pacing) and safety endpoint was inappropriate ICD discharge. The median follow-up was 1180 (650-1852) days.

Results: Mean age was 45.5 ± 14.7 years (63.3% males). 19.2% had estimated risk score < 4%/5 years. 16.3% experienced an appropriate discharge. Of these, 14.3% had low calculated risk scores < 4%/5 years, equivalent to an ICD generally not considered recommendation according to the ESC risk calculator. 46.2% had received a risk score >6%/5 years, consistent with the strongest recommendation for ICD. These patients, 16.7% experienced an appropriate ICD intervention.

Regarding the complications, 14.3% experienced an inappropriate discharge, 6.1% lead failure and 2.0% infection. Replacement generator was performed on 14.3%.

The stronger predictor of appropriate discharge was atrial fibrillation (HR=24.8, [2.85-215.55], $p = 0.04$) even after correction for age and atrial left diameter.

In the regard the inappropriate discharge, beta blocker was associated with lower risk (HR=0.07 [0.00-0.60], $p=0.015$). Higher lead diameter was also associated with lower risk of inappropriate discharge (HR=0.33 [0.10-0.99], $p =0.05$). Atrial fibrillation was not associated with inappropriate discharge.

Conclusion: In our cohort of patients with MCH who were implanted with primary prevention ICD, atrial fibrillation was associated with an increased in appropriate discharge. Furthermore, about 15% of patients with low risk score may have benefited with primary prevention.

P559

Clinical profile and outcomes of a two-centre cohort of out-of-hospital shockable rhythm cardiac arrest survivors treated with therapeutic hypothermia

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Background: Post-resuscitation care of out-of-hospital cardiac arrest (OHCA) survivors remains a challenge for critical cardiac care units, neurological recovery being the most important goal to achieve. Although the benefits of therapeutic hypothermia to minimize neurological sequelae are unclear, many centres use it regularly.

Purpose: To analyse demographic characteristics of OHCA survivors, aetiology of the cardiac arrest, and outcomes.

Methods: Prospective registry of all patients admitted in two public hospitals after an OHCA due to a shockable rhythm and treated with therapeutic hypothermia for persistent unconsciousness, from October 2008 to October 2015. Our protocol includes rapid endovascular cooling to target temperature $T=33^{\circ}\text{C}$ to be maintained during a 24-hour period, and progressive rewarming.

Results: During this 7-year period, 141 patients were included (83% men, 17% women). Mean age was 56.4 years (SD 14.1 years). The frequency of cardiovascular risk factors was: tobacco use 48.2%, arterial hypertension 53.2%, diabetes mellitus 14.2%, dyslipidaemia 44.7% and chronic renal failure 21.2%. 74% of the patients were overweight or obese. Interestingly, the majority of them did not suffer from previous known heart disease (78.7%). Although the cardiac arrest was witnessed in 96.4% cases, basic life support by bystanders was initiated

in a smaller proportion, 79.4%. The majority of OHCA survivors (82.1%) at high risk of acute coronary syndrome (ACS) underwent emergent coronary angiography due to electrocardiographic findings or previous coronary heart disease. The final diagnosis was: ACS 61.0%, ischemic heart disease (non-ACS) 11.3%, congenital heart disease 11.3%, cardiomyopathies 9.9%, channelopathies 3.5%, unknown 2.8%. Hospital mortality was 35.5%; the cause of death was classified in three categories: neurological (61.1%), cardiac (8.3%) and multiorganism (30.6%). Thus, the main contributor to mortality was poor neurological status. In those patients where neurological status could be evaluated before discharge/death (133 patients), we used the cerebral performance categories (CPC) scale. 63.9% patients had a good neurological status (CPC 1-2), while 36.1% a bad neurological status (CPC 3-5).

Conclusions: In our setting, most of OHCA survivors did not suffer from previous known heart disease, being diagnosed during admission. Neurological status was the main contributor to hospital mortality, although an important proportion of patients could be discharged with good neurological status.

P560

Early coronary angiography in all out-of-hospital cardiac arrest survivors: ECG-mute cases can benefit too

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Background: Myocardial ischemia remains the leading cause of out-of-hospital cardiac arrest (OHCA). The debate about the early address of patients (pts) without ST elevation on ECG (no-STEMI) to catheterization laboratory (cath lab) is still open.

Purpose: To investigate survival of no-STEMI pts underwent early coronary angiography (CA) after OHCA.

Methods: The Trieste Cardiac Arrest Registry collects all consecutive cases of OHCA occurred in our province (212.51 Km²; 239972 inhabitants), since 2011. We excluded pts under 18 years of age and with weak resuscitation attempts (less than 1 vial of adrenaline or few minutes of chest compressions). At present we count 546 pts with OHCA, 184 of whom with return of spontaneous circulation (ROSC). We listed in the 'no-STEMI group' all pts with an ECG that did not meet the criteria for STEMI.

Results: We identified 80 pts (43%) with no-STEMI ECG after ROSC (49 pts with STEMI ECG and 55 pts whose ECG was not available). Comparing no-STEMI with STEMI

pts, we found out similar baseline characteristics in both groups, regarding age (77 vs 71 years; *p* ns), gender (males 57.5 vs 67%; *p* ns), cardiovascular risk profile (known heart disease: 51 vs 40%, *p* ns; known severe left ventricular dysfunction: 37 vs 12.5%, *p* ns; known cardiovascular risk factors: 84.5 vs 80%, *p* ns), OHCA place (private places: 53 vs 57%; *p* ns) and presence of witnesses (69 vs 81%; *p* ns). The two groups differed just for initial rhythm (PEA/asystole in no-STEMI vs STEMI pts: 51 vs 20 %, *p*<0.001) and bystander cardio-pulmonary resuscitation (no-STEMI vs STEMI pts 22 vs 39.5%; *p* 0.047). After a 'pit-stop' in the Emergency Department, in order to rule out possible extra coronary causes, we identified 69 out of 80 no-STEMI pts (86%) with OHCA of suspected cardiac etiology: 43 (62%) underwent CA. The drop off of the remaining 26 pts was driven by: age \geq 85 years (8 pts), death before arriving to cath lab (10 pts) or physician's judgment (8 pts). CA revealed normal coronary anatomy in 10 pts (23%), not critical stenosis in 9 pts (21%), critical stenosis in 13 pts (30%) and occluded vessel in 11 pts (26%). Pts with significant coronary lesions were revascularized either with PCI or CABG (29% and 21%). Survival was improved for no-STEMI pts treated with PCI or CABG, both at discharge (*p* 0.022) and at one-year follow-up (*p* 0.026).

Conclusions: In our population, one in four pts with no-STEMI ECG had significant coronary lesions deserving of urgent treatment. Despite their unfavorable pre-hospital setting, CA and revascularization with PCI or CABG turned out to be effective tools to improve survival of these outsider pts.

P561

Inflammatory cytokines (TNF- α , IL-6, IL-10) as prognostic parameters in out-of-hospital cardiac arrest patients treated with hypothermia

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Purpose: The outcome of patients after cardiopulmonary resuscitation for out-of-hospital cardiac arrest is poor. The mechanisms underlying neurologic disability and other organ dysfunctions after successful cardiopulmonary resuscitation probably involve whole-body ischemia and a reperfusion syndrome that triggers a systemic inflammatory response. In the present study we investigated the predictive value of inflammatory plasma cytokine levels and kinetics on outcome in consecutive patients with resuscitated cardiac arrest.

Methods: We prospectively enrolled 82 patients resuscitated from out-of-hospital cardiac arrest (25 women, 57 men). Mild therapeutic hypothermia (33°C) was initiated

on admission and maintained for 24h. Serum values of TNF- α , IL-6 and IL-10 were measured 0h and 6h after admission and daily for six consecutive days. Clinical and neurologic outcome was assessed by the Cerebral Categories Scale on discharge and after 4 weeks (CPC 4-5: poor outcome; CPC 1-3: good outcome).

Results: A favourable neurologic outcome was achieved in 37 patients (45%), while 45 patients (55%) had a poor outcome. Age was significantly higher in patients with unfavourable outcome (59 \pm 11 vs. 69 \pm 12 years, *p*<0.01), gender distribution was not different. Immediately following hospital admission, IL-6 (1724 \pm 8084 pg/ml vs. 80 \pm 93 pg/ml, *p*<0.001) and TNF- α (230 \pm 330 pg/ml vs. 65 \pm 113 pg/ml, *p*<0.01) demonstrated significantly higher values in patients with poor outcome as compared to those with neurologic recovery. These differences were maintained up to 6 days. In ROC analysis, the AUC to predict poor neurologic outcome was 0.76 for IL-6 and 0.83 for TNF- α measured on admission, respectively. IL-10 had lower predictive ability, with significant differences only 6 hours after admission (535 \pm 1783 pg/ml vs 54 \pm 70 pg/ml, *p*=0.013, AUC 0.54) and 72 hours after admission, but not at other time points.

Conclusion: In the present study we demonstrated a pronounced systemic inflammatory response in patients who were successfully resuscitated after cardiac arrest. There was a substantial increase of respective cytokines especially in patients with poor outcome. Especially TNF- α and IL-6 seem to be promising biomarkers for early prognostication in patients with successfully resuscitated cardiac arrest.

P562

Long-term outcome after ICD implantation in patients with ischemic left ventricular dysfunction

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Background and objective: Left ventricular (LV) dysfunction is a strong predictor of prognosis. Apart from the benefits of optimal medical therapy, the importance of implantable cardioverter-defibrillator (ICD) is undeniable. The goal of this study was to evaluate the long-term ICD performance in patients with ischemic cardiomyopathy regarding appropriated therapy (defined as occurrence of ATP or shock triggered by ventricular arrhythmia at first event) and outcome, defined by cardiovascular hospital readmissions, cardiac device-related infective endocarditis and mortality.

Material and methods: We performed a retrospective cohort analysis of patients with LV systolic dysfunction who were submitted to ICD implantation from January 2009 to December 2014. Clinical data was collected and inserted in a registry base.

Results: From a total of 237 patients, 140 had a diagnosis of ischemic cardiomyopathy. The majority of those were male (87.1%) and the mean age was 64.3±10.3 years-old. At least one cardiovascular risk factor was present in 97.1% of these patients, being dyslipidemia the most frequent (73.6%), followed by hypertension (64.3%). Regarding the echocardiographic findings before implantation, 80.7% had severe LV dysfunction and the mean LV ejection fraction was 25.2±8.3%. In these group of patients, 46.4% had ICD implanted for secondary prevention. During a mean follow up period of 36 months, 78.6% of the patients had at least one ICD therapy delivered and appropriated therapy was delivered in the majority of the cases (83.6%). The most common first event triggers were ventricular tachycardia (69.1%) and ventricular fibrillation (14.5%). The triggers of inappropriate therapies were supraventricular tachycardia, atrial fibrillation and atria flutter. During the follow-up time, 66 patients were readmitted to the hospital and 36 deaths had occurred. Shock therapy was associated with subsequent cardiovascular hospital readmission (OR 2.8, CI 1.3-6.0, p=0.009). Device-associated infective endocarditis was recorded in only 4 patients, with no mortality or other major complications associated.

Conclusion: ICD role in preventing sudden cardiac death (SCD) is well established in different groups of patients. Our study highlighted the good performance of ICD regarding appropriate therapy delivery and also the scarce incidence of device-related complications.

P563

Prognostic factors of clinical outcome in comatose out-of-hospital cardiac arrest survivors

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Background: Prediction of clinical outcome in comatose out-of-hospital cardiac arrest (OHCA) survivors who undergo targeted temperature management is notoriously difficult.

Purpose: The aim of this study is to identify clinical factors that determine the short and mid-term mortality and neurological status in these patients.

Methods: We performed retrospective analysis of a prospective registry on consecutive comatose OHCA patients undergoing targeted temperature management since

the year 2007. Study population consists of 190 patients. We analysed mortality and neurologic outcome (assessed by the CPC scale) at the time of hospital discharge and after six month follow-up. The outcome was related to clinical variables (age, gender, atherosclerosis risk factors, coronary artery disease history, left ventricular ejection fraction), pharmacological history, cardiopulmonary resuscitation parameters (initial rhythm, presence of witnesses at the OHCA scene, basic and advanced life support duration), laboratory parameters (plasma level of lactate, troponin, aminotransferases), ECG abnormalities and therapeutic measures (coronary arteriography timing, time to target temperature and its duration).

Results: Several adverse factors of prognostic significance were identified in an univariate analysis, the most important (p < 0,001) being older age, history of coronary artery disease, the absence of ventricular fibrillation/tachycardia as the initial rhythm, right bundle branch block or the presence of ST segment depressions on ECG. In a multivariate analysis, predictive factors for death at the time of hospital discharge were ST segment depressions (p = 0,03) and right bundle branch block on ECG (p = 0,04). On the other hand, the presence of ventricular fibrillation/tachycardia as the initial rhythm was significant predictor of good neurological outcome (CPC 1-2) at the time of discharge (p = 0,004), after six month's follow up (p = 0,003), and it was also the predictor of survival at six month (p = 0,003).

Conclusion: In comatose patients after OHCA, documentation of ventricular tachycardia/fibrillation on ECG at the time of emergency service arrival is the most important predictor of good short and mid-term prognosis. ST segment depressions and right bundle branch block are associated with higher in hospital mortality.

P564

Serum procalcitonin and c-reactive protein as marker of post-cardiac arrest syndrome and neurological outcome after cardiopulmonary resuscitation

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Purpose: The post-cardiac arrest syndrome (PCAS) has been identified as a systemic inflammatory response observed in patients with return of spontaneous circulation after cardiac arrest. Current guidelines recommend mild therapeutic hypothermia (MTH) for out-of-hospital cardiac arrest. So far, the search for reliable biomarkers to facilitate prognostication in patients with MTH has been proven difficult. In our study we hypothesize that procalcitonin (PCT) and C-reactive Protein (CRP), as markers of PCAS,

are associated with severity of illness and outcome in survivors of cardiac arrest receiving MTH.

Methods: Consecutive patients successfully resuscitated from out-of-hospital cardiac arrest and treated with MTH between 03/2011 and 10/2014 were included. The target temperature (33° C) was maintained for 24h. The Cerebral Categories Scale (CPC) was used as outcome measure (CPC 4-5: poor outcome, CPC 1-3: good outcome). Serum values of CRP and PCT were measured 0h and 6h after admission and daily for six days.

Results: 82 patients with out-of-hospital cardiac arrest were included. The median age was 59 years. 57 patients (70%) were men. 37 of the 82 patients had good outcome (45%). Age was significantly higher in patients with poor outcome ($p < 0.01$). PCT levels were significantly higher in patients with poor outcome than in patients with good outcome immediately after admission (1 ± 2 ng/ml vs 0.07 ± 0.08 ng/ml, $p = 0.007$), the difference remained after correction for patient age ($p = 0.02$), and a significant difference was maintained throughout the first 6 days. The maximum PCT levels in patients both with poor and with good outcome was reached at 48 hours. CRP levels increased later and reached their maximum at 72 hours in both groups (171 ± 88 vs 137 ± 53 mg/l, $p = 0.14$) It was significantly higher in the group with unfavourable outcome only at 24 hours after admission (58 ± 64 vs 30 ± 33 mg/l, $p = 0.023$). The area under the ROC curve to predict poor outcome was 0.84 for PCT and 0.65 for CRP, both measured 24 hours after admission.

Conclusion: PCT levels correlate with the severity of post-cardiac arrest syndrome and higher levels are associated with worse neurological outcome after cardiac arrest in patients treated with mild therapeutic hypothermia. CRP, on the other hand, is no reliable marker for prognostication after out-of-hospital cardiac arrest.

P565

The level of sudden and non-sudden cardiac death in patients after myocardial infarction: what happened from 90-th to present time

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Despite the significant progress made in the treatment of acute myocardial infarction (MI) in the last decades, the MI remains a major cause of cardiac death. Therefore, the question of predicting cardiac death as sudden (SCD) and non-sudden (NSCD) is still very important.

The study included patients with MI who were hospitalized in the cardiology department from 1998 to 2014

A total 3363 patients were included. Prospective monitoring of the patients was carried out in the period from 1 year to 7 years.

The frequency of the recurrent myocardial infarction, SCD and NSCD was highest in the first year after MI, and then it gradually decreased, and after 6 years began to grow again, making for the first year of observation - 5.3%, the second year - 2.7%, third year - 2.0%, the fourth year - 0.6%, the fifth year - 1.4%, the sixth year - 0%, the seventh year - 5%.

Since this study has been conducting for a long time and all patients were followed for at least one year after MI, it was interesting to evaluate how to change the mortality depending on the year after MI. We analyzed the frequency of deaths occurring during the first year after MI, in the period from 1998 to 2015. It was found that NSCD and recurrent MI for the observation period remained approximately at the same level, while SCD since 2002 declined steadily and reached for patients enrolled in 1998 - 7.5%, in 1999 - 6% 2000 - 6.9%, 2001 - 8.9%, 2002 - 6.3%, 2003 - 4.8%, 2004 - 4.2%, 2005 - 4.4% 2006 - 3.6%, from 2007 to 2014 ranged from 2 to 3.4%.

The most realistic explanation of the established fact of decreasing of SCD seemed to change the quality of care for patients, including the intensification of different revascularization methods, in the dynamics of observation.

Valvular heart disease

P566

Baseline predictors of in-hospital mortality in patients with infective endocarditis

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Introduction: The prognosis of patients hospitalized for infective endocarditis (IE) is often determined by complications that occur during hospitalization, so the early identification of patients at risk who may benefit from more aggressive approaches, is of great importance. This study aims to evaluate baseline predictors of in-hospital mortality in patients with IE.

Methods: Single-center prospective observational study of consecutive patients (pts) admitted to the Cardiology Department of a University Hospital between 2001 and 2015 with IE diagnosis (established by the Modified Duke Criteria and the European Society of Cardiology 2015 Modified Criteria). Clinical, laboratory, echocardiographic and microbiological parameters were collected on the admission day and its relationship with in-hospital mortality was analyzed by Cox regression analysis.

Results: The study population included 120 pts (67.5% males; age: 65 ± 14 years; length of stay: 42 ± 26 days). In-hospital mortality rate was 26% (31 patients). The most prevalent etiological agent was *Staphylococcus aureus* (17.5%) and the most frequently involved valves were aortic and mitral (57.5% and 46.7%). The baseline parameters identified as in-hospital mortality predictors were age >70 years ($p=0.01$), C-reactive protein $>11,29$ mg/dL ($p=0.012$), higher creatinine 1.7mg/dL ($p=0.002$), biological prosthetic valve endocarditis ($p=0.012$), immunosuppression ($p=0.007$) and positive blood cultures ($p=0.037$). By multivariate Cox regression, the presence of immunosuppression [hazard ratio (HR) = 29.04; 95% CI 6.79-124.13; $p<0.001$], creatinine >1.7 mg/dL (HR = 3.72; 95% CI 1.74-7.95; $p<0.001$) and positive blood cultures (HR = 2.80; 95% CI 1.23-6.38, $p<0.014$) proved to be independent predictors of in-hospital mortality.

Conclusions: This study confirms the high in-hospital mortality rate of patients with infective endocarditis and identified the presence of immunosuppression, creatinine >1.7 mg/dL and positive blood cultures as independent baseline predictors of in-hospital mortality in pts with IE. Early identification of these risk factors could help establishing which pts may benefit from more aggressive therapeutic approaches.

P567

Effect of aortic valve intervention on survival of octogenarians with severe symptomatic aortic stenosis

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Introduction: Aortic valve replacement (AVR) is indicated in patients with severe symptomatic aortic stenosis (AS). Transcatheter aortic valve implantation (TAVI) is recommended in those considered unsuitable for conventional surgery because of comorbidities, according to the 'heart team'. Both interventions prolong and improve quality of life, even in patients over 80 years. However, a large number of octogenarian candidates are not referred or refuse those interventions.

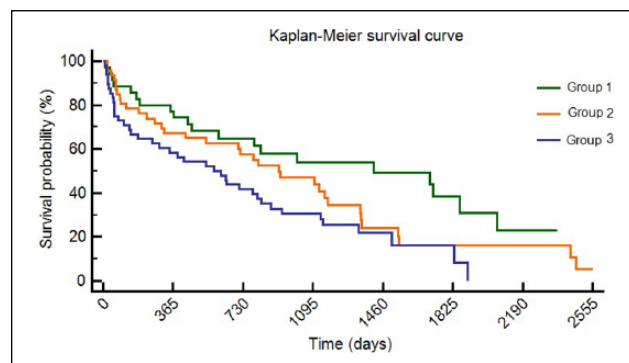
Purpose: To evaluate survival in patients over 80 years with severe symptomatic AS who underwent valve intervention (AVR or TAVI) or not, either because of unsuitability or patient refusal.

Methods: Between 2007 and 2014, consecutive patients older than 80 years who performed a transthoracic echocardiogram demonstrating severe AS (in accordance with European Society of Cardiology (ESC) guidelines) were evaluated and symptomatic patients were included. Patients were divided into

three groups: patients who underwent AVR or TAVI (group 1); patients suitable for valve intervention but who refused it (group 2) and patients unsuitable for intervention according to their physician or heart team (group 3). Basal characteristics were analyzed and EuroSCORE II was calculated. Follow-up data were obtained from clinical records or through telephone interviews. The mortality endpoint (for all-causes) was analyzed by the Kaplan-Meier method.

Results: One-hundred and twenty-nine patients (62% female, average age 84 ± 3 years) were evaluated. Median follow-up was 782 days (P25: 291 days - P75: 1410 days). Thirty-five patients underwent valve intervention (29 AVR; 6 TAVI), 46 refused and 48 were considered unsuitable for intervention. There were no significant differences in basal characteristics, including EuroSCORE II between groups. Ninety-three patients died (one during AVR). There was a statistically significant difference in mortality between the 3 groups according to Kaplan-Meier analysis (image) (p [logrank] = 0,0153). Mortality between group 1 and groups 2 and 3 together was also statistically different (p [logrank] = 0,0176).

Conclusion: In this population of octogenarian patients with symptomatic severe AS, survival was modified by valve intervention. Age should not be a reason for refusing ARV or TAVI in elderly people over 80 years of age.



Kaplan-Meier survival curve

P568

Is projected aortic valve area clinically meaningful in patients with severe aortic stenosis and left ventricular ejection fraction below 40% with low or high gradient?

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Background: Although patients with severe aortic stenosis (AS) and severely reduced left ventricular ejection fraction (LVEF) represent only 5% of AS patients, they also represent the most controversial and challenging subset. Dobutamine

stress echocardiography (DSE) has been shown to be useful to distinguish patients with truly severe (TS) AS and concomitant LV systolic dysfunction from those with pseudo-severe (PS) AS, in which a weakened ventricle is incapable of opening an aortic valve that is only mildly or moderately stenotic.

Objective: We aimed to compare the projected valve area between patients with severe aortic stenosis, low gradient and LVEF < 40% and patients with severe aortic stenosis, high gradient and LVEF < 40%.

Methods: We conducted a retrospective observational study that included all patients with severe aortic stenosis (AVA < 1,0 cm²) with LVEF < 40% that performed a DSE between September/2011 and November/2014. Data regarding DSE, invasive hemodynamics, demographic, clinical and blood tests parameters were collected in all patients. We used a Mann Whitney U test to compare the projected valve area between patients with low rest transvalvular gradient (rest mean gradient < 40 mmHg) and patients with high rest transvalvular gradient (rest mean gradient ≥ 40 mmHg).

Results: We analyzed 14 patients (10 (71,4%) males) with severe aortic stenosis (AVA < 1,0 cm²) and LVEF < 40% that performed a DSE to assess myocardium viability. 11 patients (78,6%) had a rest low transvalvular gradient (< 40 mmHg) and only 3 (21,4%) patients had a rest high transvalvular gradient (≥ 40 mmHg). Medians of the projected valve area were significantly different between patients with low gradient (median 0,92, IQR 0,83 – 0,98) and patients with high gradient (median 0,40, IQR 0,15) (Mann Whitney U 0,00, p = 0,036).

Conclusion: Projected valve area provides a standardized evaluation of AS severity. DSE improves the diagnostic accuracy in patients with low-flow, low-gradient AS.

P569

Long-term prognosis of patients with infectious endocarditis: a 14-year longitudinal study

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Purpose: Despite significant advances in the diagnosis and management of most cardiovascular disorders, infectious endocarditis still has a very high mortality. This study aims to evaluate the long-term prognosis of patients admitted due to infectious endocarditis.

Methods: We included consecutive patients admitted to the Cardiology department of a university hospital between 2001 and 2015 with a diagnosis of infectious endocarditis, established by the Duke criteria. We collected information

on demographic, clinical, laboratory, echocardiographic, and microbiologic parameters and their association with 2 years-mortality rate was determined by Cox regression analysis.

Results: One hundred and twenty patients were included (67.5% male; age 65±14 years; follow-up 31.9±38.4 months). The mortality rate within 2 years was 43% (52 patients).

Several parameters were associated with long-term prognosis, including: a baseline RCP > 13mg/dL (p=0.007), a baseline NT-proBNP level > 2500 pg/mL (p=0.016), infection of a bioprosthesis (p<0.001), significant dysfunction of prosthesis (p=0.009), the presence of cardiac fistula (p=0.036) and indication for surgery (p=0.037).

The occurrence of several complications during hospitalization, such as class IV heart failure (p<0.001), shock (p<0.001), the need for renal replacement therapy (p<0.001) and stroke (p=0.004) also presented a higher mortality rate.

On multivariate Cox regression analysis the only independent predictors of mortality within 2 years were the occurrence of shock [hazard ratio (HR)=8.99; 95% CI 3.02-24.31; p<0.001], stroke (HR = 3,04; 95% CI 1.03-6.52, p=0.043) and the presence of surgery's indication [HR=9.02; 95% CI 2.68-60.11, p=0.001]. On the other hand, patients submitted to valve surgery had a better prognosis presenting a lower mortality within 2 years (p=0.01).

Conclusions: In this study, infectious endocarditis presented a high 2 years-mortality rate. Several clinical and laboratory parameters were associated to a higher mortality rate. The occurrence of shock or stroke during hospitalization and the presence of indication for surgery were identified as the only independent predictors of adverse long-term prognosis, while performing valve surgery had a protective effect.

Thus, these parameters may be considered to be included in prognostic stratification of patients with infectious endocarditis.

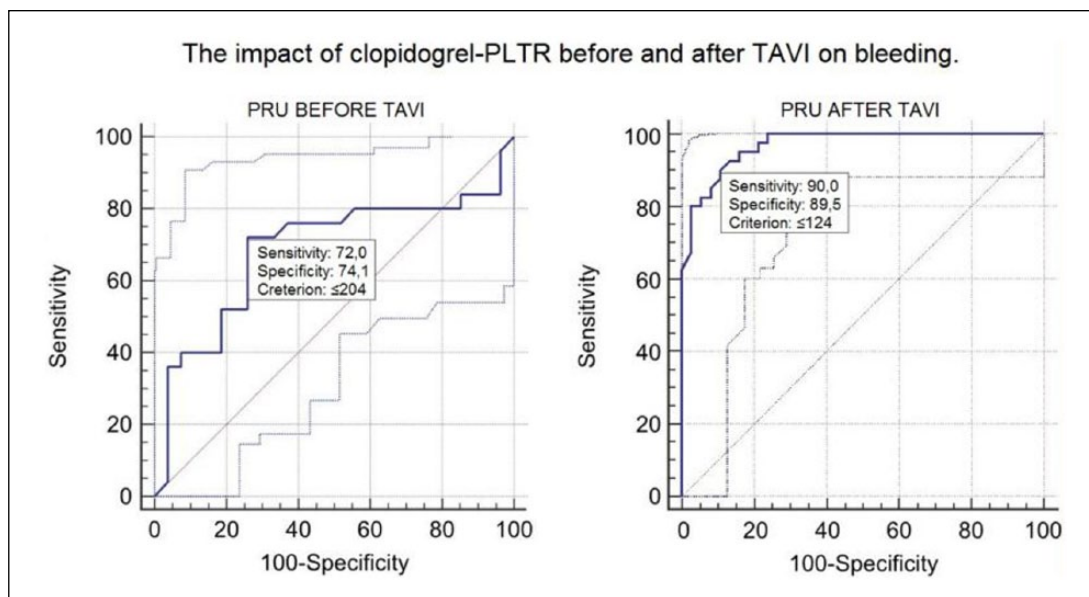
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Periprocedural platelet reactivity to clopidogrel-important for TAVI related bleeding

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Although dual antiplatelet therapy (DAPT) with aspirin and clopidogrel appears to increase the risk of TAVI related bleeding, this prophylaxis is still recommended. Since DAPT is recommended with loading doses shortly before TAVI, periprocedural platelet reactivity (PLTR) testing may be a useful tool in determining DAPT safety. Therefore, we assessed the importance of periprocedural



Periprocedural drop in clopidogrel-PLTR

PLTR on clopidogrel and aspirin, in predicting the risk of early, post-TAVI bleeding.

Methods: PLTR measured by light transmittance aggregometry with VerifyNow P2Y12/aspirin assays was performed within 24 h before and on the 6th day after TAVI. Follow-up was based on phone contact. The results were expressed as P2Y12 reaction units (PRU), and aspirin reaction units (ARU). Bleeding was defined according to VARC-2 scale. Statistical analysis: logistic regression, ROC curve with AUC 95%CI.

Results: PLTR was performed in 100 TAVI pts. Bleeding was noted in 30 (30%) pts. Pre-/post-TAVI: 34 (34%)/81 (81%)pts were on clopidogrel, 68 (68%)/87 (87%)pts were on aspirin. Clopidogrel-PLTR before TAVI (AUC 0.686 95%CI [0.542–0.808]; $p=0.02$) and after TAVI (AUC 0.970 95%CI [0.904–0.995]; $p<0.001$) predicted

bleeding with PRU cut-off values ≤ 204 and ≤ 124 , respectively. (Figure 1) The significant periprocedural decrease in clopidogrel-PLTR was noted, with PRU drop >78 as bleeding predictor (AUC 0.851 95%CI [0.725–0.935]; $p<0.001$). Only postprocedural aspirin-PLTR predicted bleeding (AUC 0.697 95%CI [0.585–0.794]; $p=0.008$). Follow-up (359 \pm 73 days after TAVI) included 85 (85%)pts (excluded: 4 in-hospital death; 11pts lack of contact). Major bleeding was noted only in 4 (4.7%)pts, all on combined prophylaxis.

Conclusions: 1. TAVI related bleeding occur mainly during the procedure or in the early postprocedural period. 2. Periprocedural clopidogrel-PLTR testing seems to be a useful due to its predictive value for TAVI related bleeding. 3. Significant periprocedural drop in clopidogrel-PLTR might predict early, postprocedural bleeding.

Moderated Posters Session 4: Arrhythmias, sudden death, basic science - Sunday, 16 October 2016 - 15:30 - 16:30

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Arrhythmias and conduction abnormalities in effusion and constriction in pericardial disease without structural heart disease

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Background: Arrhythmias and conduction disturbances in pericardial diseases (PD) are frequent in patients (pts) with underlying structural heart disease (SHD). However, their frequency and clinical associations in PD without (w/o) underlying SHD are not well established.

Purpose: We aimed to study arrhythmias and conduction disturbances in pts with pericardial effusion and constrictive pericarditis w/o SHD and their association with clinical and peri-interventional and peri-operative variables.

Methods: We retrospectively analyzed our prospective database of 243 pts with PD and included in the study 103 patients w/o SHD who underwent pericardiocentesis or pericardectomy: 69 pts with pericardial effusion and 34 pts with constrictive pericarditis. We analysed ECG, echocardiographic, chest X-ray, peri-interventional/peri-operative and hemodynamic variables for signs of tamponade and constriction, size and extent of effusion and calcifications, and mortality.

Results: In pts with effusion the most prevalent arrhythmia was atrial fibrillation (AF) – 13%, followed by atrial flutter – 4.3%, atrioventricular (AV) block – 2.9% and sinoatrial (SA) block – 1.4%. Patients with arrhythmias and effusion had higher NYHA class (3.07 ± 0.6 vs 2.7 ± 0.55, p=0.002), more often tachycardia and large effusion (76.8% vs. 62.8%, p=0.016) with signs of tamponade (47.8% vs 25.6%, p=0.04) and high mortality (17.4% vs 7%, p<0.05), than controls. Correlation analyses demonstrated positive association of arrhythmias with extent of effusion (r=0.23, p=0.012) and size of localized effusion (r=0.39, p=0.023).

In constrictive pericarditis, AF was detected in 13% of cases, atrial flutter in 4.3%, supraventricular tachycardias – 13%, AV block in 8.6% and SA block in 4.3% of cases. Patients with constriction and arrhythmias had higher mean pulmonary arterial pressure (mPAP) (27.88 ± 8.8 vs 20.7 ± 2.8 mmHg, p=0.007), higher heart rate (p<0.0001), higher sedimentation rate (SR) (21.2 ± 16.7 vs 11.3 ± 10.4 mm/h, p=0.016) and lower

hemoglobin (Hb) levels (118.6 ± 20.9 vs 133.6 ± 13.9 mg/dL, p=0.038) as compared to controls. Mortality rate was 20% in patients with constriction and arrhythmias, while no cases of mortality were recorded on controls. There was a positive correlation between frequency of arrhythmias and mPAP (r=0.51, p=0.01), SR (r=0.33, p=0.04,) and negative association with mean Hb levels (r=-0.384, p=0.023).

In conclusion, arrhythmias are common in PD w/o underlying SHD, complicated by effusion and constriction; manifest mostly by atrial arrhythmias and SA/AV conduction disturbances; related to mechanic irritation/compression of subepicardium by effusion/calcification; accompanied by worse NYHA class and sympathetic activation. In effusion, arrhythmias depend on the extent and size of effusion, while in constriction, they related to inflammation, hypoxia and increase of mPAP. Arrhythmias in these selected groups of pts with PD were accompanied by high mortality.

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Complete heart block complicating acute coronary syndromes: what is the long term prognosis?

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Background: The incidence of bradyarrhythmias in patients with acute coronary syndromes (ACS) varies from 0.3% up to 18% and, despite all the improvements in ACS management, complete heart block (CHB) is still an important complication.

Purpose: We aimed to assess the incidence and clinical outcomes of CHB complicating ACS, regarding morbidity and mortality at 1-year follow up.

Methods: Prospective study of 1276 consecutive patients, diagnosed with ACS, admitted in a single coronary unit, between October 2009 and September 2014. Patients were divided in two groups: group A- patients with CHB (n=36; 72.2% men); group B- patients without CHB (n=1240; 69.8% men). We compared them regarding the primary composite endpoint (PCE)-cardiovascular death, non-fatal myocardial infarction or stroke- and mortality at 1-year follow-up.

Results: Of 1276 patients with ACS, 2.8% had CHB. There were no statistical differences regarding baseline characteristics. Group A presented higher rate of ST elevation myocardial infarction (A=75.0% vs B=41.4%, $p<0.001$) and it was more associated to the inferior location (A=66.7% vs B=18.0%, $p<0.001$). At admission, patients in group A had lower systolic blood pressure (A=107.5±34.7mmHg vs B=142.2±29.6mmHg, $p<0.001$) and creatinine clearance (A=52.9±31.5ml/min vs B=65.9±36.6ml/min, $p=0.021$). Killip class >1 was also more prevalent in group A (A=41.7% vs B=20.4%, $p<0.001$). Regarding in-hospital management, patients in group A were less prescribed with beta-blockers (A=16.7% vs B=52.5%, $p<0.001$) and with more inotropes (A=44.4% vs B=7.3%, $p<0.001$). They were more often submitted to primary percutaneous intervention (A=55.6% vs B=36.0%, $p=0.022$) and needed more transvenous cardiac pacing (A=47.2% vs B=0.6%, $p<0.001$). However, group A experienced more negative outcomes, with a higher occurrence of cardiogenic shock (A=33.3% vs B=6.0%, $p<0.001$) and cardio-respiratory arrest (A=27.8% vs B=5.5%, $p<0.001$). In-hospital age-adjusted mortality was superior in group A (A=44.4% vs B=28.2%, $p=0.040$) as was PCE (A=25.0% vs B=7.3%, $p=0.001$). At discharge, group A was less prescribed with beta-blockers (A=19.4% vs B=56.0%, $p<0.001$) and 2.8% of these patients had a permanent pacemaker implanted. Follow-up at one-year also revealed a higher PCE (A=36.1% vs B=16.8%, $p=0.006$) and overall mortality (A=25.0% vs B=13.0%, $p=0.040$) in group A.

Conclusion: The occurrence of CHB in ACS patients remains associated with adverse outcomes, even in the current era of prompt reperfusion therapy.

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Are the factors used in clinical practice as sudden cardiac death predictors the most appropriate to predict the occurrence of ventricular arrhythmias in patients with hypertrophic cardiomyopathy?

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Introduction: The sudden cardiac death (SCD) secondary to ventricular arrhythmias is a major complication of

hypertrophic cardiomyopathy (HCM). The occurrence of ventricular arrhythmias has been linked to several factors that are used to predict SCD in clinical practice, but these factors have been questioned recently.

Purpose: To determine the factors that are associated with the occurrence of ventricular arrhythmias in patients with HCM.

Methods: Retrospective and Portuguese multicenter study involving 10 hospital centers and including all patients diagnosed with HCM. We evaluated clinical, genetic, electrocardiographic, echocardiographic and cardiac magnetic resonance imaging (MRI) data. Statistical analysis was performed to identify the factors associated with the occurrence of ventricular arrhythmias (ventricular tachycardia or ventricular fibrillation) (SPSS 20.0).

Results: We included 476 patients with MCH (58% male, mean age 62 ± 15 years).

The MCH was asymmetric (septal) in 72% of the patients, symmetric in 13% and apical in 15%.

The average interventricular septum thickness was 18 ± 5 mm and the posterior wall thickness was 11 ± 3 mm. The average left ventricular ejection fraction was 66 ± 9% (measured by echocardiography).

The average septal e' velocity was 5,3 ± 2,0cm/s and lateral e' velocity was 7,8 ± 3,0 cm/s.

Obstruction at rest was found in 33% of the cases and latent obstruction in 11% of the cases. Delayed gadolinium enhancement on cardiac MRI was found in 58% of the patients.

74% of the patients was symptomatic and dyspnea (57%), angina (19%) and syncope (13%) were the most common symptoms.

Most patients were in sinus rhythm (87%). About 21% of the patients had a history of atrial fibrillation. About 6% of the patients had a pacemaker and 16% had implantable cardioverter defibrillator. Family history of HCM was identified in 15% of the cases and family history of sudden death in 14% of the cases. Genetic testing revealed genetic mutations in 39% of the cases. Cardiac death occurred in 11 patients (2.3%) (mean follow-up of 6 years).

In this population of patients with HCM, the prevalence of the occurrence of ventricular arrhythmias was 17.9%. The factors that were associated with the occurrence of ventricular arrhythmias were the presence of supraventricular arrhythmias ($p<0.001$), pacemaker ($p=0.031$) and chronotropic incompetence in Holter ($p=0.006$).

In this population the factors used to determine the risk of sudden death were not associated with the occurrence of ventricular arrhythmias.

Conclusion: In this Portuguese multicenter study with patients with HCM, the occurrence of arrhythmias was not linked to the factors currently used in clinical practice to determine the risk of sudden death.

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Radiofrequency ablation in atrial fibrillation patients can reverse the miRNA expression abnormality

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Background: The pathogenesis of Atrial fibrillation (AF) remains unknown, and abnormal regulation of microRNA (miRNA) might play important roles in the development of AF. Our object was to assess the changes of miRNA profiles before and after radiofrequency ablation (RFA), and determine AF's potential regulatory mechanism and intervention value.

Methods and Results: 90 AF patients were enrolled, alongside 90 healthy subjects as controls. Peripheral blood (PB) samples were obtained before and at 3 months after RFA respectively. Compared with pre-operation, 584 miRNAs were revealed to be differentially expressed in PB of AF patients post-operation, in which, 503 miRNAs were increased and 81 miRNAs were decreased significantly. Interestingly, 25 miRNAs were down-regulated before RFA and up-regulated thereafter in the AF group, while 40 miRNAs was in opposite ($P < 0.05$). Among them, 8 miRNAs, including mir-199a-3p/mir-199b-3p, were downregulated >1.5 -fold before RFA and upregulated >100 -fold thereafter; 6 miRNAs, e.g. mir-BART8-3p, were up-regulated >1.5 -fold before RFA and down-regulated >10 -fold thereafter ($P < 0.01$). Especially, 6 known AF-related miRNAs, including mir-30b-5p, were down-regulated >5 -fold before RFA, and up-regulated >50 -fold thereafter ($P < 0.05$). In addition, 4 miRNAs involved in CACNA1C (L-type Ca⁺⁺ channel protein $\alpha 1c$ subunit) regulation, like mir-377-5p, were also significantly changed before and after RFA ($P < 0.05$).

Conclusions: miRNAs regulate AF occurrence and development. RFA can alter miRNA expression abnormality, which may be important for reversing the electrical, structural remodeling and maintaining sinus rhythm after RFA. MicroRNAs, such as mir-377-5p, miR-30b-5p, and mir-199a-3p/ mir-199b-3p, may become targets for early AF diagnosis and intervention in future.

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New-onset atrial fibrillation in acute coronary syndromes

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Introduction: New-onset atrial fibrillation (AF) often complicates acute coronary syndromes, with a frequency between 6-21%.

Methods: Prospective registry of 1057 consecutive patients admitted for ACS during a 4 year period. We divided the patients into 2 groups: Group A - patients with new-onset AF (n = 61; 5.7%; 68.9% men) and Group B – patients without new-onset AF patients (n = 996; 94.3%; 70.0% men). We compare them in relation to a primary composite endpoint (PCE) [re-infarction, stroke and cardiovascular mortality (CV)], and secondary objectives [re-infarction, stroke and CV mortality isolated] at 1-year follow-up.

Results: There were no differences in mortality alone or the composite primary endpoint, both during in-hospital stay (mortality: A = 8.2% vs B = 6.3%; p = ns; PCE: A = 14.8% vs B = 8.0 %; p = 0,06) and at 1 year follow-up (mortality: A = 18.0% vs B = 14.5%; p = ns; PCE: a = 23.0% vs B = 17.6%; p = ns). With respect to baseline characteristics only an older age (A = 73 ± 13 vs B = 66 ± 13, p < 0.01) and ST-elevation myocardial infarction (A = 65.6% vs B = 40.6 %, p < 0.01) were associated with the prevalence of AF. No differences were present in previous medication. During in-hospital stay there was a greater use of beta-blockers, statins, diuretics, digoxin and antiarrhythmic drugs (A = 75.9% vs B = 7.9%; p < 0.01) in group A. Group A also presented more frequently a need for the use of inotropic agents (A = 23.0% vs B = 7.5%; p < 0.01) and development of cardiogenic shock (A = 14.8% vs B = 6.4%; p < 0.05), more episodes of cardiac arrest (A = 13.1% vs B = 6.2%; p < 0.05) and stroke (A = 6.6% vs B = 0.5%; p < 0.01). At discharge no differences were present in terms of double antiplatelet prescription.

Conclusions: New-onset AF occurs in older individuals and is more associated with ST-elevation myocardial infarction. Despite having a worst in-hospital evolution, this was not reflected in overall mortality or in cardiovascular composite endpoint in both in-hospital phase and at 1-year follow-up.

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Investigation for pre-and post-treatments with an omega-3-acid ethyl esters emulsion and ATP in a four-chamber isolated working heart model

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Introduction: Myocardial ischemia and reperfusion injury both negatively affect the outcome of cardiac transplantation. Therefore investigations have been made to discover drugs for administration prior to organ procurement or ex vivo

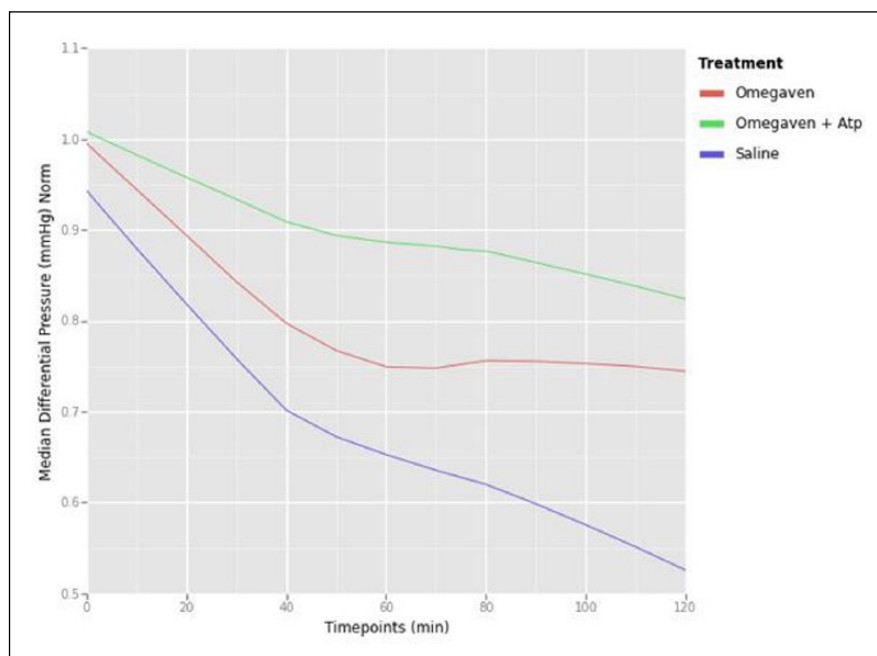
cardiac perfusion, aiming to maintain and recover functional performance of the organ clinically. Omega-3-acid ethyl esters (O3AEE) and adenosine triphosphate (ATP) have emerged as possible treatments. To assess their effectiveness we utilized a four-chamber working heart model to monitor hemodynamic and metabolic measurements.

Methods: As a preconditioning agent, either the O3AEE emulsion (n=4) or saline (n=6) was administered pericardially in situ to Yorkshire swine hearts. Two hours after drug administration, the hearts were explanted using standard clinical protocols and placed on an ex vivo four-chamber working perfusion apparatus. In further studies, ATP as a post-treatment was administered incrementally to the modified Krebs-Henseleit buffer solution shortly following reperfusion (n=8). Pressure catheters, a blood gas analyser, and piezoelectric sonomicrometry crystals were used to collect hemodynamic, metabolic, and contractility measurements. The clear buffer solution was replaced shortly after reperfusion prior to defibrillation and after 70 minutes of working. Cardiac function was assessed at 10-minute intervals for 2 hours.

Results: Pretreated hearts with O3AEE showed significantly better maintenance of differential left ventricular pressures

(systolic LVP - diastolic LVP normalised) after 110 minutes in comparison to hearts pretreated with saline ($p < 0.051$). Whereas the saline-treated hearts consistently lost left ventricular function, the O3AEE improved long-term functional sustention. Administering ATP to the O3AEE-pretreated hearts showed significantly better performance than the saline control hearts at the 60-minute time point ($p < 0.0015$). In the following course of time, O3AEE-pretreated hearts with and without the additional ATP presented similarly. This indicates that additional ATP has beneficial effects primarily during the first hour of function post reperfusion and initiation of working, when there is an accumulation of metabolites.

Conclusions: The administration of both agents in a transplant scenario is promising to improve organ recovery and outcome. In the setting of a procurement procedure, pericardial delivery is a precise method to directly target the heart. These data suggest that preconditioning with O3AEE enhances hemodynamic function on an ex vivo perfusion apparatus. Furthermore, the addition of ATP as a post-treatment in this experimental setup showed beneficial effects, in addition to those related to O3AEE. Further investigations of ATP as a post-treatment without a preconditioning agent are planned.



Differential Left Ventricular Pressures

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Definite stent thrombosis after cardiac arrest and target temperature management

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Background: Target temperature management (TTM) is recommended for comatose patients resuscitated from out-of-hospital cardiac arrest (OHCA). Some but not all case series of patients who underwent percutaneous coronary interventions (PCI) before TTM have suggested a high incidence of definite stent thrombosis (ST) in these patients.

Purpose: To investigate the incidence of definite ST in patients enrolled in the TTM-Trial and the effect of level of TTM.

Methods: Post-hoc analysis of TTM-Trial: a prospective, multicentre, randomized trial of OHCA patients undergoing TTM at 33 vs 36°C.

Results: A total of 939 patients were enrolled. Coronary angiography (CA) was performed in 591 patients (male 83%) - 62% (63% at 33°C vs. 62% at 36°C), median age was 63 years. A total of 412 patients (male 84%) - 43% underwent PCI (42% at 33°C vs. 45% at 36°C, p 0.288), median age: 63 years. Eleven patients – 2.6% (5 patients at 33°C vs. 6 at 36°C) underwent a new CA within 5 days after PCI and a definite ST was diagnosed in 3 patients (0.7%). Patients with definite ST received dual antiplatelet therapy (DAPT) with aspirin and clopidogrel, none received abciximab/tirofiban during or after PCI. All patients with definite ST were not on prasugrel or ticagrelor as DAPT after primary PCI. All patients with ST were treated with TTM 36°C, none with 33°C. At long-term follow-up (180 days), two patients survived with Cerebral Performance Category score of 1.

Conclusion: We observed a very low incidence of clinically significant definite ST, in contrast to previously

published case series. Further clinical trials are needed to confirm this data.

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QT prolongation during targeted temperature management at 33 degree C vs. 36 degree C and risk of ventricular arrhythmia by different methods of heart rate correction

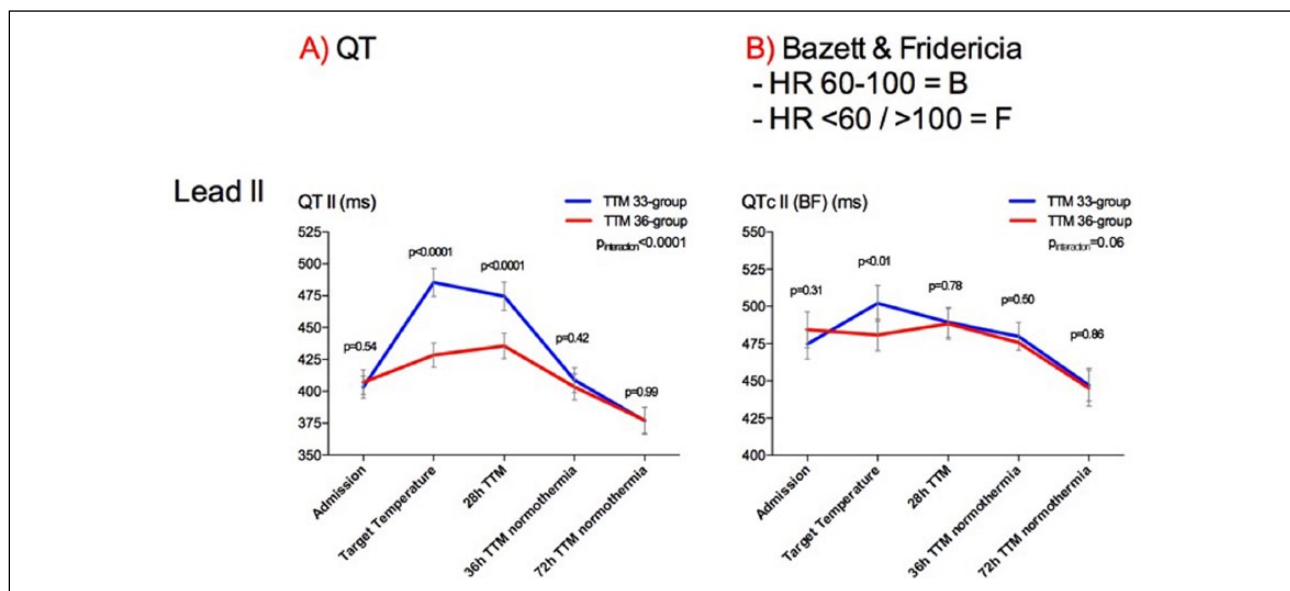
The Danish Heart Foundation, The Interreg IVA ØKS programme

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Background: QT-prolongation is associated with risk of ventricular arrhythmia. The level of targeted temperature management (TTM) following out-of-hospital cardiac arrest (OHCA) may affect the QT-interval, however as core temperature and heart rate are correlated, the method of QT-correction (QTc) during TTM may be of importance in assessing risk of ventricular arrhythmia.

Methods: A predefined ECG-substudy of the TTM-trial (950 OHCA-patients randomized to TTM at 33°C vs. 36°C). From 24 sites, serial ECGs (0,4,28,36 and 72 hours after admission) from 682 (94%) patients were analysed. Bazett's, Fridericia's and a combined formula according to heart rate were used for QT-correction. Occurrence of ventricular arrhythmia (VT and VF) was assessed during the first three days of post cardiac arrest care.



Results: The QT-interval increased more in the 33°C-group and decreased after rewarming reaching similar levels (Figure 1A). All three methods of correction attenuated the difference between the groups, with the smallest difference using the combined method (Figure 1B). Similar incidences of ventricular arrhythmia were found between temperature groups (33°C: 61 (18%) vs. 36°C: 49 (15%), $p=0.30$), however higher QTc intervals at target temperature, independent of correction method, were associated with increased risk of ventricular arrhythmia (Odds ratio-range per 50 ms increase: 1.2-1.2, p -range: 0.01 to <0.05), whereas the uncorrected QT-interval was not ($p=0.45$).

Conclusion: The QT-interval is affected by core temperature, but the observed increase with lower core temperature is largely explained by heart rate. Higher QTc intervals, independent of correction method, were associated with increased risk of ventricular arrhythmia in post cardiac arrest patients.

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Osborn waves following out-of-hospital cardiac arrest - effect of targeted temperature management level and risk of arrhythmia and death

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Background: The Osborn or J-wave, an upright deflection of the terminal part of the QRS complex in the electrocardiogram (ECG), is often observed during severe hypothermia. Case reports in post cardiac arrest patients treated with targeted temperature management (TTM) have reported a possible relation between the presence of Osborn waves and an increased risk of ventricular arrhythmia.

Purpose: We sought to determine whether the level of TTM affects the prevalence of Osborn waves following out-of-hospital cardiac arrest (OHCA) and to assess the associations between Osborn waves and the risk of ventricular arrhythmia and death.

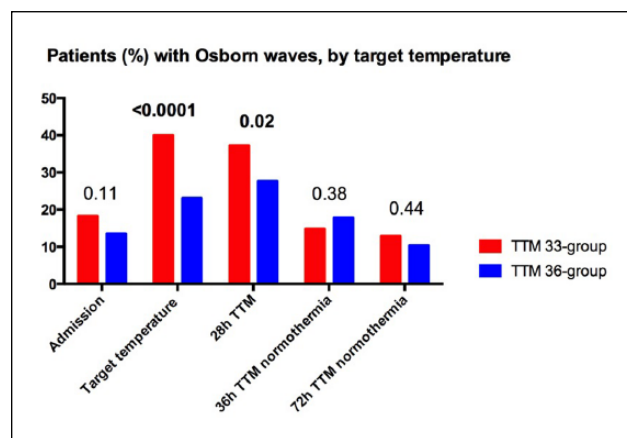
Methods: The present study is a predefined ECG-substudy of the TTM-trial (randomizing comatose OHCA patients to TTM at 33°C vs. 36°C) involving 24 out of 36 participating sites. Serial ECGs from 682 (94%) patients were analysed and Osborn waves at predefined time-points (0,4,28,36 and 72 hours after admission) were assessed by trained medical readers blinded to TTM allocation.

Results: On admission, the prevalence of Osborn waves was similar in the two temperature groups (33°C: 18% vs. 36°C: 14%, $p=0.11$). At target temperature (4h), the Osborn wave prevalence was significantly higher in the 33°C-group (33°C: 40% vs. 36°C: 23%, $p<0.0001$). The prevalence was similar after rewarming (Figure).

Neither the presence of Osborn waves at target temperature (Odds ratio= 0.81 (0.49-1.34), $p=0.42$) or at 28 hours after admission (Odds ratio= 0.62 (0.35-1.10), $p=0.10$) was associated with an increased risk of ventricular arrhythmia.

Any occurrence of Osborn waves during TTM was moreover associated with a lower 180-day mortality as compared to patients without Osborn waves in a univariable model (Osborn: 38% vs. no-Osborn: 52%, $plog$ -rank=0.001).

Conclusion: Osborn waves are frequent during TTM and more often seen in patients treated with 33°C compared to 36°C. Osborn waves are not associated with an increased risk of ventricular arrhythmia, and may be considered a benign physiological phenomenon, possibly associated with lower mortality.



Osborn Waves

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Number of patients with acute coronary syndrome admitted to a regional hospital, using prehospital electrocardiogram transmitted via telemedicine; a prospective three-year cohort study

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Background: The benefits of prehospital Electrocardiograms (ECG) for decreasing door-to-balloon time in patients with STEMI is well known and implemented in Denmark after the DANAMI-2 study. The total number of patients admitted via prehospital ECG in Denmark is however unknown.

Evaluation of the present algorithm for prehospital ECG transmission is important in order to ensure cost-effectiveness.

Purpose: To assess the number of patients with acute coronary syndrome admitted to a regional hospital, Denmark via prehospital ECG transmission from 2012 to 2015.

Methods: At the regional hospital the physician on call receives, evaluates and finally enters the transmitted ECGs into The Danish National Indicator Project database (NIP). Data from NIP and the diagnosis at discharge from hospital were obtained.

Results: A total of 9751 ECG's were included with an increase of 35% over the study period. 861 (8.8%) patients had verified acute coronary syndrome and 362 (3.7%) had STEMI (Table 1).

Number of patients evaluated per verified STEMI was 27:1

Conclusion: The number of patients with acute coronary syndrome were relatively few. The study suggests an evaluation of the present organization of the prehospitally transmitted ECGs via telemedicine is warranted in order to provide ideal patient care and cost-effectiveness.

Table 1. ECG criteria and patient diagnosis

| | | Year 1 | Year 2 | Year 3 | Total |
|---------------------------|------------------------------------|-------------|-------------|-------------|-------------|
| ECG's included in study | Total | 2786 | 3223 | 3742 | 9751 |
| ECG transmission criteria | Chest pain, ongoing (%) | 1223 (43.9) | 1496 (46.4) | 1710 (45.7) | 4429 (45.4) |
| | Chest pain within 12 hours (%) | 480 (17.2) | 564 (17.5) | 568 (15.2) | 1612 (16.5) |
| | New onset, unexplained dyspnea (%) | 110 (3.9) | 144 (4.4) | 144 (3.8) | 398 (4.1) |
| | Clinical MI (%) | 18 (0.6) | 15 (0.5) | 19 (0.5) | 52 (0.5) |
| | Syncope (%) | 140 (5.0) | 135 (4.2) | 131 (3.5) | 406 (4.2) |
| | Cardiac arrest (%) | 13 (0.5) | 17 (0.5) | 13 (0.3) | 43 (0.4) |
| | Others or not listed (%) | 802 (28.8) | 852 (26.4) | 1157 (30.9) | 2811 (28.8) |
| NSTEMI | Total (%) | 137 (4.9) | 167 (5.2) | 169 (4.5) | 473 (4.9) |
| | Male (%) | 73 (53.3) | 114 (68.3) | 114 (67.5) | 301 (63.6) |
| STEMI | Total (%) | 107 (3.8) | 129 (4.0) | 126 (3.4) | 362 (3.7) |
| | Male (%) | 77 (72.0) | 89 (69.0) | 92 (73.0) | 258 (71.3) |
| Unstable Angina | Total (%) | 9 (0.3) | 13 (0.4) | 4 (0.1) | 26 (0.3) |
| | Male (%) | 5 (66.6) | 9 (69.2) | 3 (75.0) | 17 (65.4) |
| Acute coronary syndrome | Total (%) | 253 (9.1) | 309 (9.6) | 299 (8.0) | 861 (8.8) |

Poster Session 4 - Sunday, 16 October 2016 - 14:00 - 17:30

Acute coronary syndrome - ST-elevation myocardial infarction

P571

Echocardiographic assessment of right ventricular function in inferior wall myocardial infarction and angiographic correlation to proximal right coronary artery stenosis and clinical outcome

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Background: Presence of right ventricular (RV) infarction imposes a higher risk of adverse events in inferior wall myocardial infarction (IWMI). In this study, we attempted to correlate various indices of RV function assessed by echocardiography with presence of a proximal right coronary artery (RCA) lesion in patients with first episode of acute IWMI.

Methods: In a prospective study, patients with first episode of acute IWMI underwent echocardiographic assessment within 24 h of symptom onset and indices of RV function viz. RV fractional area change (RVFAC), tricuspid annular plane systolic excursion (TAPSE), myocardial performance index (MPI) and tissue Doppler velocities from RV free wall were measured. Patients who underwent coronary angiogram (CAG) within one month and they were classified into group 1 and group 2 based on the presence or absence, respectively, of a significant proximal RCA lesion. Clinical outcome at 12 days.

Results: There were 158 patients with first episode of IWMI of which 119 patients underwent CAG. There was significant difference between group 1 i.e patients with significant proximal RCA lesion (n- 61) and group 2 i.e patients with out significant proximal RCA lesion (n - 58) in TAPSE (12.32 ± 1.75 vs 18.32 ± 2.37 , $p < 0.001$), MPI by tissue Doppler (0.85 ± 0.05 vs 0.63 ± 0.04 , $p < 0.001$) and in tissue Doppler systolic velocity from RV free wall ($S' 9.20 \pm 0.79$ vs 14.88 ± 1.03 , $p < 0.001$). There was a good inter observer correlation for TAPSE, MPI by TDI, and S' velocity. TAPSE ≤ 16 (sensitivity 93%, specificity 100%), MPI-TDI > 0.69 (sensitivity 94.7%, specificity 93.5%), S' ≤ 12.3 (sensitivity 90.3%, specificity 94.3%) were useful in predicting presence of proximal RCA lesion. Among patients with proximal RCA lesion 13 patients had symptoms of right heart failure predominantly even with Fair LV systolic function.

Conclusion: RV function indices like TAPSE, MPI-TDI and S' velocity are useful in predicting proximal RCA lesion in first episode of acute IWMI.

Table 1.

| variable | Gr I (61) with proximal RCA lesion | Gr II (58) with out proximal RCA lesion | P value |
|------------|------------------------------------|---|-----------|
| RVFAC | 21.94 ± 7.73 | 42.24 ± 2.05 | < 0.001 |
| TAPSE | 12.32 ± 1.75 | 18.32 ± 2.37 | < 0.001 |
| S' | 9.20 ± 0.79 | 14.88 ± 1.03 | < 0.001 |
| MPI by Pw | 0.55 ± 0.11 | 0.22 ± 0.11 | < 0.001 |
| MPI by TDI | 0.85 ± 0.05 | 0.63 ± 0.04 | < 0.001 |

P572

Heart rate turbulence prognostic value in patients with acute myocardial infarction

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Background: Heart rate turbulence (HRT) is the phenomenon of short-term fluctuations in the length of cardiac cycle immediately after ectopic ventricular beat. Its importance in assessing the long-term prognosis in patients after acute myocardial infarction (AMI) is widely debated today as HRT may reflect the degree of heart muscle electrical heterogeneity (which is a pathophysiological substrate for ventricular fibrillation) and therefore help to identify the cohort of patients with increased risk of sudden cardiac death.

Objective: to determine the significance of abnormal changes of the HRT parameters in their relationship with long-term prognosis prognosis in patients with AMI.

Materials and methods: 114 individuals who underwent hospital treatment in the intensive care unit of a National Institute of Therapy in Ukraine" for AMI had been observed. 25 patients (men – 16, women – 9) had been selected for further analysis, who had ventricular ectopic beats at 4-6 weeks of observation according to Holter ECG monitoring. Turbulence onset (To) and turbulence slope (Ts) were calculated using the commonly recognized algorithm. The patients were divided into subgroups according to presence of pathological and normal values of HRT markers: To $> 0\%$ vs. To $\leq 0\%$, Ts $< 2,5$ ms/RR vs Ts $\geq 2,5$ ms/RR. Subgroups were compared to assess the risk of hospital and 6-month mortality and combined point (death / AMI) using the GRACE scale.

Results: There was a significant correlation revealed between To and Ts ($R = -0,70$, $p < 0,05$), To and left ventricular ejection fraction (LV EF) ($R = -0,46$, $p < 0,05$), Ts and LV end-systolic diameter (ESD) ($R = -0,46$, $p < 0,05$), Ts and LV EF ($R = +0,55$, $p < 0,05$) on echocardiography in 8-10 days after AMI. Patients with abnormal values of To ($> 0\%$) in 4-6 weeks of

observation were characterized with significantly decreased LV EF in 8-10 days after AMI (40,5 (32,0; 42,9)% vs 53,0 (48,5; 61,0)%, $p = 0,019$), increased risk on GRACE scale for hospital mortality (7,5 (4,5, 29,0)% vs 2,0 (1,5, 3,0)%, $p = 0,056$), hospital mortality / AMI (24,0 (20,0, 37,5)% vs 16,0 (11,5; 17,0)%, $p = 0,018$), 6-month mortality (15,5 (9,0, 44,0)% vs 5,0 (3,5; 7,5)%, $p = 0,056$), 6-month mortality / AMI (38,0 (31,5; 59,0) vs 25,0 (19,0; 27,5)%, $p = 0,045$). Analysis of Ts relation to the risk on GRACE scale showed no such differences with increase in LV ESD (4,00 (3,80; 4,30) cm vs 3,50 (3,20; 3,90) cm, $p = 0,044$), decrease in LV EF (46,0 (27,0; 53,0)% vs 52,5 (48,5; 61,0)%, $p = 0,089$) in 8-10 days after AMI, as well as increase of mean heart rate to (75 (70; 81) bpm vs 69 (63; 70) bpm, $p = 0,030$) in 4-6 weeks term of observation.

Conclusions: Pathological values of HRT indices in 4-6 weeks after AMI are strongly associated with decreased LV contractility in short-term observation and higher risk of adverse events in 6-month catamnesis, validating the need for more detailed study of their role as a prognostic marker.

P573

Impact of Direct stenting on myocardial reperfusion and clinical outcome of patients with ST-segment elevation myocardial infarction

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Background: Myocardial reperfusion following primary percutaneous coronary intervention (PPCI) is limited due to atheroembolic events in patients with ST-segment elevation myocardial infarction (STEMI) despite epi-cardial recanalization.

Objectives: We aimed to evaluate the impact of direct stenting without pre-dilatation, on myocardial reperfusion and clinical outcomes of patients with STEMI undergoing PPCI.

Methods: Consecutive 78 patients were randomly assigned to the direct stenting or balloon pre-dilatation after selective aspiration thrombectomy. Epicardial and myocardial reperfusion were assessed according to Thrombolysis In Myocardial Infarction (TIMI) flow scale and TIMI myocardial perfusion (TMP) grade. A post-PCI Index of microcirculatory resistance (IMR) was assessed with thermodilution curves during maximal hyperemia using a pressure sensor/thermistor-tipped guidewire. One year clinical outcome was compared.

Results: Direct stenting was feasible in 34 of 39 patients who were initially randomized (DS group) and stenting after balloon pre-dilatation was done to 39 patients (Pre-dilatation group). There were no significant differences in baseline characteristics. Final TIMI grade 3 flow (93.1% vs 82.1 %, $p=0.25$), final TMP grade 3 (64.3% vs 53.8%, $p=0.6$) and peak CK-MB level

(178 vs. 190 ng/dL, $p=0.73$) were comparable between DS and Pre-dilatation group. Complete resolution of ST-segment elevation occurred more frequently in DS group (57.1%) than in Pre-dilatation group (29.4%) without significance ($p=0.25$). Post-procedural IMR showed lower tendency (23.3±16.5 vs. 29.4±19.9 mmHg·sec, $p=0.38$) in DS group than Pre-dilatation group. IMR could not be measured in 5 patients, including 1 in DS and 4 in Pre-dilatation group, due to cardiogenic shock after stenting. At one year, 3 cardiac death had occurred in Pre-dilatation group (0% vs 7.7 %, $p = 0.24$).

Conclusion: The DS without pre-dilatation has a tendency of improving myocardial perfusion and better clinical outcome compared with Pre-dilatation group. When anatomically and technically feasible, the use of DS technique may be considered in patients with STEMI undergoing primary PCI.

P574

Improving diagnosis of rethrombosis after the effective system thrombolytic therapy using the con-tinuous ECG monitoring in patients with STEMI

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Aim: To study the diagnostic value of ST segment re-elevation episodes, registered in STEMI patients after effective TLT during the telemetry ECG- monitoring.

Methods. The study included 117 patients with STEMI, 97 men and 20 women at the age of 59 (52; 64) years, who underwent after 150 (105, 240) minutes from the start of heart attack an effective systemic thrombolytic therapy. After 3-24 hours after TLT a selective coronary angiography with the assessment of infarct-related artery on the TIMI classification with the following PCI has been conducted. Before and after PCI a telemetric ECG using a 'Astrokard® - Telemetry' complex (CJSC 'Meditec', Russia) was performed with the online analysis of the dynamics of ST segment on the 12-leads in automatic mode with the subsequent medical verification.

Results. The patients were divided into 2 groups. Group 1 included 85 patients (72.6%), without new ST-segment deviations from contour lines. According to the coronary angiography in 77 patients of this group (90.6%) coronary artery thrombosis symptoms have not been identified, unstable atherosclerotic plaque was visualized. 8 patients (9.4%) of group 1 were diagnosed with thrombotic occlusion of the infarct-related artery. Group 2 included 32 patients (27.4%), who after the effective TLT had the episodes of ST-segment re-elevation of 1 mm or more in infarction-related leads, lasting at least 1 minute. According to coronary angiography in Group 2 in 27 of 32 patients (84.4%) the signs of thrombosis infarct-related coronary artery have been found, which was significantly

higher than in the group 1 ($p < 0.01$). In most cases (71.9%) episodes of recurrent ischemia are asymptomatic - 'acute silent myocardial ischemia', only 9 patients (28.1%) with transient ST-segment elevation was accompanied by the development of typical angina attack ($p < 0.01$).

Conclusions. Episodes of ST segment re-elevation with a sensitivity of 75.8% and a specificity of 91.7% suggests developing re-thrombosis of infarct-related coronary artery. Mostly painless nature of recurrent ischemia causes needed the application of the telemetric ECG monitoring in all patients for the early detection of the cases needed for performing the life-saving angioplasty.

P575

Influence of the change of reperfusion strategy in ST- elevation myocardial infarction on clinical profile of the patients and in-hospital mortality

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Introduction: Fibrinolysis followed by rescue or delayed percutaneous coronary intervention (PCI) was the treatment strategy for STEMI in our community from January 2006 to January 2015. Primary angioplasty (PPCI) in that time was reserved for those patients that had contraindications for fibrinolysis or with cardiogenic shock at admission. In January 2015 Infarct Code Program started, with primary angioplasty as a preferred option leaving the fibrinolytic therapy for settings where primary PCI cannot be performed within 120 min of first medical contact (FMC) by an experienced team.

Purpose: Our aim is to describe the modifications in clinical profile of the patients, delays and in-hospital mortality that this change of reperfusion strategy produced.

Methods: Retrospective analysis of 515 patients (212 pre-Infarct Code Program (Pre-IC, April 2012-November 2013) compared with 303 post-Infarct Code Program (Post-IC, January 2015-January 2016)).

Results: We didn't found significant differences by age and sex. There was similar prevalence of HTA (Pre-IC 45,3 vs Post-IC 41,9%, $p 0,25$), dyslipidemia (Pre-IC 33 vs Post-IC 37,3%, $p 0,18$) and previous surgical revascularization (Pre-IC 0,9 vs Post-IC 0,9%, $p 0,36$) in both groups and greater prevalence of diabetes (26,4 vs 18,5%, $p 0,021$), smoking (42 vs 32,7%, $p 0,02$) and percutaneous revascularization (10,4 vs 4,3%, $p 0,006$) in Pre-IC patients. Anterior infarction (Pre-IC 41,3 vs Post-IC 40,3%, $p 0,06$) and initial Killip \geq III (Pre-IC 5,2 vs 7,9%, $p 0,15$) prevalence was similar in both groups. The absence of coronary lesions in angiography was slightly superior in post-IC group (8.3 vs 6.1%, $p 0,23$). The

reperfusion strategy was primary angioplasty in 62.1% of pre-IC group and in 91.2% of post-IC group. Rescue angioplasty was observed in 8.6% of post-IC and in 37.9% of pre-IC patients. The proportion of procedural success was higher in post-IC group (96,4 vs 81,5%, $p 0,000$). When we analyse PPCI patients, system delay was significantly reduced in post-IC group (208,7 \pm 202 vs 121.3 \pm 96 minutes, $p 0,000$). In-hospital mortality for PPCI was lower in post-IC group (11,1 vs 6.5%, $p 0,1$). Global in-hospital mortality (without cardiogenic shock patients) was 8,2% for Pre-IC group and 6,2% for Post-IC group ($p 0,2$). Patients with initial Killip \geq III class had similar and really high mortality in both groups (54,2% for Pre-IC and 45.5% for Post-IC group, $p 0,45$)

Conclusions: The Infarct Code Program implementation reduced the delays in STEMI treatment with improvement in in-hospital mortality, without substantial changes in clinical profile of the patients. Improvement in cardiogenic shock patients mortality in our environment is required.

P576

Left ventricular-arterial uncoupling as an early marker of cardiac remodeling in patients with myocardial infarction

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Objective: Ventricular remodeling may occur following myocardial infarction (MI) of the left ventricle (LV) and such remodeling has been shown to be correlated with increased patient morbidity and mortality. It is important to estimate the likelihood of remodeling from the state of the infarcted LV. The aim of the study was to assess the ventricular-arterial coupling (VAC) in patients with ST segment elevation (STEMI) and non ST segment elevation MI (NSTEMI) treated with percutaneous coronary intervention (PCI).

Methods: In 93 patients with acute coronary syndrome and PCI (70% male, age 61.5 \pm 10.1 years (M \pm SD), 57 (61.3%) with STEMI, smokers 25%, arterial hypertension 20.4%, blood pressure 129 \pm 6/82 \pm 7 mmHg) 2-dimensional echocardiography was performed to assess arterial elastance (Ea) and end-systolic LV elastance (Ees) on admission and in 4 weeks. VAC was assessed as the ratio Ea/Ees.

Results: Baseline LV ejection fraction (LVEF) was 47.4 \pm 4.3%, E/A 0.95 \pm 0.18, Ea 1.9 \pm 0.3 mmHg/ml/m², Ees 2.1 \pm 0.4 mmHg/ml/m², VAC 0.89 \pm 0.1. At baseline all patients had LVEF $>$ 40% and VAC in optimal range. In 4 weeks after PCI VAC $>$ 1.2 (upper optimal level) was revealed in 19% of patients with STEMI and 44% with NSTEMI. In patients with achieved VAC $>$ 1.2 Ees (from 2.1 \pm 0.4 to 1.5 \pm 0.3 mmHg/ml/m², $p < 0.001$), stroke work (SW) (from 6585 \pm 1059 to 6919 \pm 2131 mmHg*ml/m², $p < 0.05$), potential energy (PE) (from 1976 \pm 371 to 3025 \pm 1127 mmHg*ml/m², $p < 0.001$), pressure-volume area (PVA) (from 6647 \pm 1060 to 6977 \pm 2136

mmHg*ml/m², $p < 0.001$), LV work efficiency (SW/PVA) (from 78 to 89%, $p < 0.001$) significantly decreased while Ea (1.9 ± 0.3 and 2.1 ± 0.4 mmHg/ml/m², $p > 0.05$) did not change. In patients with VAC in optimal range in 4 weeks Ees decreased from 2.3 ± 0.3 to 2.1 ± 0.4 mmHg/ml/m² ($p < 0.001$), Ea (from 1.87 ± 0.29 to 1.64 ± 0.17 mmHg/ml/m², $p < 0.001$) and VAC (from 0.82 ± 0.12 to 0.81 ± 0.19 , $p < 0.04$) did not change.

Conclusions: Impairment of functioning of cardio-vascular system assessed by increased value of VAC > 1.2 was revealed in 30% of patients with acute coronary syndrome. Increase of VAC is associated predominantly with decrease of Ees and LV work efficiency (SW/PVA). Increased VAC index > 1.2 indicating LV-arterial uncoupling may be an early marker of unfavorable cardiac remodeling.

P577

Long-term clinical outcomes after ST-elevation myocardial infarction (STEMI) in a Russian population (EPICOR-RUS study)

AstraZeneca

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Background: To date, there are no data on 2-year outcomes, including mortality, for patients after STEMI in Russia.

Purpose: To evaluate the prevalence of clinical outcomes during 2 years after STEMI in a Russian population.

Methods: EPICOR-RUS (NCT01373957) was a multi-centre (35 Russian hospitals), observational, cohort study, which evaluated short- and long-term (up to 2 years) antithrombotic management patterns. Patients ($n=599$) had been hospitalised for acute coronary syndrome within 24 hours of symptom onset. These patients had a diagnosis at discharge of STEMI ($n=375$), non-STEMI ($n=147$) or unstable angina ($n=77$). These analyses focus on the description of long-term clinical outcomes (at 1 and 2 years) after STEMI and patterns of antiplatelet treatment at discharge.

Results: Overall, 243 (65.0%) STEMI patients underwent percutaneous coronary intervention (PCI). At discharge, 34 patients (9.1%) were prescribed one antiplatelet agent, 337 patients (89.9%) had dual antiplatelet therapy (DAPT) (aspirin and clopidogrel), and 4 patients (1%) had no antiplatelet therapy. Three and 11 patients were lost to follow-up by the end of years 1 and 2, respectively. In the STEMI cohort the cumulative incidence of all cause mortality was 3.2% at 1 year and 5.1% at 2 years of follow-up. The frequency of hospitalisation/physician office visits due to a CV event through 1 year was 50.8% [185/364] and 56.3% [187/332] through 2 years. The prevalence of hospitalisation/physician

office visits due to a bleeding event was 1.7% [6/346] through 1 year and 1.8% [6/332] through 2 years.

Conclusion: In STEMI patients one-year mortality in EPICOR-RUS study was similar with the same population in EPICOR study. More than half patients were hospitalised or visited physician office due to a CV event. Meanwhile, the prevalence of hospitalisation/physician office visits due to a bleeding was low.

P578

Long-term prognosis of patients undergoing primary PCI due to stent thrombosis

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Introduction: Currently the incidence of metal stents thrombosis is lower than 1%, with potential fatal consequences when they involve reinfarction over an area previously damaged. It is known the worst prognosis in acute phase of these patients, but the long-term prognosis has been less studied.

Methods: We describe the baseline characteristics and analyze overall mortality, cardiovascular death and a combined endpoint of death, need for same vessel revascularization and new ACS in a cohort of patients undergoing PPCI due to stent thrombosis (ST) compared with other patients treated for STEMI and undergoing primary PCI in our center between 2005-2012.

Results: Among 976 patients undergoing primary PCI, only 17 (1.74%) had a STEMI due to stent thrombosis (mean age 71 ± 14 years, 79.3% male, 41.2% of diabetics). Some differences were found between both groups: prevalence of peripheral arterial disease, higher in the ST group (29.4% vs 7.8%, $p = 0.001$); presence of chronic renal dysfunction (defined as creatinine clearance < 60 ml/min), also higher in the ST group (56.3% vs 20.7%, $p = 0.02$); and use of COA with vitamin K antagonists, more frequent in the ST group (50% vs. 9.5% $p = 0.007$). About time of thrombosis, 37.5% were acute, 6.25% subacute and 56.25% late or very late. Most thrombosed stents were BMS or DES of paclitaxel.

In the follow-up analysis at 1, 3 and 5 years there were no significant differences when comparing global and cardiovascular mortality. However, the combined endpoint of death, need for same vessel revascularization and new ACS was significantly higher in patients with ST at one year (53.8% vs. 21.5%, $p = 0.006$), at 3 years (75% vs. 35%, $p = 0.001$) but not at 5 years of follow-up (75 vs. 52.6%, $p = 0.12$).

Conclusion: In our series, the portion of patients undergoing primary PCI for stent thrombosis is low, similar to that described in literature. These patients have

a worse prognosis during follow-up at 1 and 3 years with no differences at 5 years compared to patients with STEMI due to de novo lesion.

P579

Parameters influencing prolong in-hospital stay after first ST-elevation myocardial infarction treated with primary percutaneous coronary intervention

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Introduction: The optimal time for in-hospital stay after first myocardial infarction in patients treated with pPCI is unknown. There is no general consensus, and no guidelines related to this issue. Longer in-hospital stay is large medical but also an economic issue. Aim of this study was to assess the factors related to longer in-hospital stay.

Methods and results: In this retrospective observation study we evaluated 1939 consecutive patients (mean age 62.3±11.3 years; 31.5% female) with first ST-elevation myocardial infarction who had undergone primary percutaneous coronary intervention. Only the survived patients 1829 patients were included in analysis. Cardiovascular risk factors, maximal blood biochemical parameters, echocardiography parameters and parameters of selective coronarography were obtained. The median in-hospital stay was 6 days. In multiple regression analysis higher C-reactive protein ($\beta=0.774$, $p<0.01$), blood creatinine level ($\beta=0.774$, $p<0.01$), femoral artery access ($\beta=0.774$, $p=0.002$), number of significant coronary stenosis ($\beta=0.774$, $p<0.01$) and more severe mitral regurgitation ($\beta=0.774$, $p=0.001$) were independent predictors of longer length of hospital stay.

Conclusions: Independent factors associated with prolonged in-hospital stay in this study are CRP protein, blood creatinine level, femoral artery access, number of significant coronary stenosis and more severe mitral regurgitation.

P580

Predictors of in-hospital mortality in acute coronary syndrome - is there difference between genders?

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Purpose: Despite the current innovation in acute coronary syndrome (ACS) treatment, in-hospital mortality remains between 6 and 14%. The aim of the present study is to define predictors of in-hospital mortality and to assess the difference between genders.

Methods: Retrospective analysis of patients (P) admitted with ACS, included in a national ACS registry. P were divided according to the gender: male group (MG) and female group (FG). Comparative analysis was performed between the two groups with respect to clinical, laboratorial, echocardiographic and angiographic characteristics and determined predictive factors of in-hospital mortality in each group.

Results: Among 13320 P analysed, 9636 (72.3%) were male and the remaining 3684 (27.7%) females. FG were older (72±13 vs 64±13 years; $p<0.001$). FG had higher prevalence of hypertension (80.6% vs 65.7%; $p<0.001$) and diabetes (36.9% vs 28.0%; $p<0.001$), while MG had more smokers (34.3% vs 11.1%; $p<0.001$) and previous ACS (21.7% vs 16.1%; $p<0.001$). In MG 42.7% presented with STEMI comparing with 37.8% in FG ($p<0.001$), Killip class was lower in MG (Killip>I 13.3% vs 22.2%; $p<0.001$) and cardiogenic shock less prevalent (3.4% vs 5.6%; $p<0.001$) without difference in left ventricular ejection fraction (LVEF). Reperfusion therapy was performed more often in MG (84.3% vs 74.9%; $p<0.001$) and anterior descending artery was the culprit in 36.4% of males and in 40.2% of females ($p<0.001$). In-hospital mortality was 3.0% in MG and 5.8% in FG. Age, LVEF<30%, mechanical complication, amiodarone and inotropic agents administration were predictors of in-hospital mortality in both groups. However, previous pacemaker implantation (OR 3.09; $p=0.032$) was predictor only in MG. Higher heart rate (OR1.02; $p=0.002$) and maximum creatinine (OR1.21; $p=0.015$) were predictors only in FG.

Conclusion: ACS in-hospital mortality is higher in females. In this study, previous pacemaker implantation was predictor of in-hospital mortality only in MG, while higher heart rate and maximum creatinine were predictors only in FG.

P581

Predictors of mortality in octogenarians with ST segment elevation myocardial infarction

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Introduction: Old age is a predictor of mortality in acute myocardial infarction (MI). With the ageing population, there is a growing frequency of ST segment elevation MI (STEMI) in the very elderly.

Purpose: The aim of the authors was to characterize the in-hospital and 1-year mortality predictor factors in the elderly ≥ 80 years with STEMI.

Methods: We conducted a retrospective, descriptive and correlational study, encompassing all patients aged ≥ 80 years with STEMI interned in a cardiology department between 1st October 2010 and 30th June 2013. The follow-up was 1 year, through consultation/contact telephone made by Cardiologist.

Baseline patient characteristics were evaluated and uni and multivariate analysis performed of in-hospital and 1-year mortality. For statistical analysis we used the SPSS 20.0.

Results: In the period indicated, 151 patients aged ≥ 80 years with STEMI were admitted, 77 of which (51%) were male. 68.9% performed coronariography (COR) and 66.2% angioplasty (PTCA) - 27.2% of whose being revascularized in the first 3 hours and 50.3% in the first 6. The average left ventricular ejection fraction (LVEF) was $52 \pm 13\%$, and it was depressed ($<50\%$) in 49%.

In-hospital and 1-year mortality were 16.6% and 27.8%, respectively.

The factors associated with in-hospital mortality were: female sex (FS); history of aortocoronary bypass surgery (CABG), kidney disease (KD) and dementia; not performing COR or PTCA; reperfusion after 6 hours; presentation in Killip class 3 or 4 (KK3/4) and valvular disease (VD). The only independent predictor of in-hospital mortality was depressed LVEF ($p < 0.05$).

The factors associated with 1-year mortality were: history of stroke/transient ischemic attack; anterior STEMI; not performing COR or PTCA; reperfusion after 6 hours; KK3/4 and depressed LVEF. The only independent predictor of mortality in the first year was multivessel disease ($p < 0.05$).

Conclusion: In-hospital and 1-year mortality was 16.6% and 27.8%, respectively.

The only in-hospital mortality predictor identified was depressed LVEF.

The only independent predictor of mortality in the first year was multivessel disease.

P582

Preliminary results of introduction of state programme on primary percutaneous coronary intervention in ST elevated myocardial infarction in Republic of Armenia

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Purpose: Cardiovascular diseases (CVD) cause about a half (48%) of all deaths In Republic of Armenia (RA). To reduce deaths from CVD one approach is to prevent fatal outcome of myocardial infarction (MI). On January 1, 2015 a state cost-free programme on Primary Percutaneous Coronary Intervention (PPCI) in ST elevation myocardial Infarction (STEMI) was launched in RA. Current work summarizes 1-year outcomes of above initiative.

Material and methods: 11 medical centers (9 in Yerevan, capital of RA and 2 in regions) have been covered by the programme. A total of 1516 patients with STEMI (76% males, 52% in Yerevan), admitted within 12 hours from the onset

of symptoms were included in this study in 2015. Among them, 36% were diagnosed with arterial hypertension, 28% - with diabetes mellitus, and 20% has history of past MI. Cardiogenic shock occurred in 8.2% of patients. All patients were scheduled for coronarography, followed by PPCI of infarct-related artery if required. All PPCI patients received adequate treatment according to ESC guidelines and stayed under 6-month outpatient follow-up.

Results: PPCI was performed for 1393 patients (92%) who met indications. For 43 patients (3%) 2 or more stents were placed. Hospital death rates (63 cases) were 4.2% for all patients and 4.5% of PPCI patients.

Conclusion: Initiation of RA state programme on PPCI in STEMI patients significantly reduces hospital mortality from cardiac death and makes this rate comparable with those of European states.

P583

Prevalence and importance of forgotten cardiovascular risk factors in patients with ST-segment elevation myocardial infarction

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Purpose: Prevalence of classic Cardiovascular Risk Factors (CVRF) has been previously described in patients with acute myocardial infarction (AMI). However, the prevalence and importance of other CVRF of easy assessment but less used in daily clinical practice has not been fully described in ST-segment elevation myocardial infarction (STEMI) patients.

Methods: Observational and prospective study of patients admitted in our center with STEMI diagnosis from April-2015 to March-2016. We analyzed the presence of classic CVRF (hypertension, diabetes, dyslipidemia, tobacco use and obesity) as well as other less used CVRF (family history of early ischemic heart disease, sedentarism, stress, insomnia, overweight and depression) and their influence on patients demand of medical assistance.

Results: We included 174 patients (Age: $62,82 \pm 12,59$ years; 20% women). The most frequent CVRF was hypertension (hypertension: 54,4%; dyslipidemia: 47,9%; active tobacco use: 47,9%; diabetes: 29,0%; obesity: 30,5% and previous tobacco use: 26,6%). The most frequent 'forgotten' CVRF was stress (stress: 52,1%; overweight: 47,3%; sedentarism: 39,9%; insomnia: 35,0%; family history of early ischemic heart disease: 12,4% and depression: 4,2%). Family history of early ischemic heart disease was numerically more frequent in male patients (14,8% vs. 2,9%; $p=0,06$) while depression was more frequent in women (14,7% vs. 1,5%; $p=0,001$).

Patients younger than 65 years had more stress (58,4% vs. 41,0%; $p=0,03$), family history of early ischemic heart disease (17,5% vs. 3,1%; $p=0,005$) and active tobacco use in comparison to patients older than 65 years, who had more diabetes, hypertension and previous tobacco use. Out of all the patients, only 29,1% of the patients thought they were having a myocardial infarction and only 34,4% requested assistance by the Emergency Medical Services (EMS). Median and mean patient delay times were 57 minutes (IQR: 20-135 minutes) and 124 minutes, respectively. Dyslipidemia was the only CVRF associated with a greater suspicion of having a myocardial infarction (39,7% vs. 19,2%; $p=0,006$) and this fact was associated with a higher probability of requesting assistance by the EMS (53,5% vs. 29,1%; $p=0,005$). Finally, dyslipidemia patients had a trend to have lower mean patient delay times (97 min. vs. 152 min.; $p=0,057$) without significant differences in the other CVRF.

Conclusion: In patients with STEMI the prevalence of 'forgotten' CVRF it's high, being stress and overweight the most frequent. However, dyslipidemia was the only CVRF associated with a higher suspicion of having an AMI and an earlier demand of medical assistance. A greater awareness of importance of the other classical and 'forgotten' CVRF among the public is needed.

P584

Replacing of clopidogrel with ticagrelor in treatment of acute STEMI on national level. Real life data

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Background: The advantage of ticagrelor in comparison with clopidogrel in acute coronary syndrome was demonstrated in PLATO ("Platelet Inhibition and Patient Outcomes") study in prevention of the combined endpoint, ie, cardiovascular death, myocardial infarction and stroke on 18,264 investigated patients. The favorable results of the study appeared early (after 30 days), with a sustained favorable effect during the entire period of 12 months, and without significant difference in total large bleeding, nor as a fatal bleeding.

In the first half of 2015, the Croatian national health insurance started with full six month reimbursement for

ticagrelor in patients treated with primary PCI (pPCI) in acute ST-elevation myocardial infarction (STEMI). This decision has gradually increased the percentage of these patients compared to those treated with clopidogrel at the national level.

Purpose: comparison of clopidogrel and ticagrelor in the treatment of acute STEMI in real-life on national level.

Methods: In this prospective multicentric observational study authors compare results of treatment of around 1500 acute STEMI patients treated with pPCI in 11 pPCI centers inside Croatian pPCI Network. Patients were divided in three groups: the ticagrelor group (patients treated with ticagrelor during the entire follow-up), converted group (treatment initiated with clopidogrel and after the procedure last was replaced with ticagrelor), and clopidogrel group (treated with clopidogrel during the entire follow-up). pPCI were performed within 12 hours after the first medical contact (in cardiogenic shock within 18 hours) between June 1st 2015 and May 31st 2016. After comparing the basic data (age, gender, door-to-balloon time, the region of infarction, target of the coronary arteries, the presence of cardiogenic shock) three groups of patients were compared according to the results of treatment (post-procedural TIMI 3 flow, intrahospital mortality, clinically significant bleeding). Data were analyzed separately for patients directly received in pPCI center and those transferred from the surrounding county hospitals, and after that mutually compared.

Results and Conclusion: The hypothesis of this research is that ticagrelor also in real-life circumstances shows equal or better treatment results compared to clopidogrel in patients with STEMI treated with pPCI, especially those with short door-to-balloon time. Last is particularly important for patients directly admitted in pPCI center. This hypothesis was proven in pilot-study, and will be definitely tested after obtaining of results on the end of the May 2016.

P585

Revascularization in STEMI patients with multivessel coronary artery disease

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Background: Revascularization strategy for STEMI patients with multivessel disease, who underwent primary PCI of the infarct-related artery in the acute phase with remaining multivessel disease, is not well established. Performing PCI of non-culprit vessel in the acute study of myocardial infarction is a subject of debates.

Purpose: The aim of this study was to compare a strategy of revascularization of culprit vessel only and strategy of PCI in all significant lesions in the acute phase of STEMI in patients with multivessel coronary artery disease.

Methods: 224 patients (mean age 63.2 ± 8.8 ; 68.8% males, 56.3% smokers,) have been included. STEMI were anterior in 36.6%, Killip I-II in all patients. Median time between onset of symptoms and PCI was 235 min. In group I (n=114) stenting were performed in culprit vessel acutely and other vessels with significant residual stenosis were treated during hospital stay. The decision of stenosis significance was based on $\text{FFR} < 0.8$. In group II (n=110) PCI were performed in culprit vessel only. All patients got drug-eluting stents and medical therapy (double anti-platelet therapy, beta-blockers, ACE inhibitors, statins).

Results: During 12 months in each of two groups three cardiovascular deaths occurred (2.6% vs. 2.7%, $p > 0.05$). Myocardial infarction had occurred in 5 patients of group I and in 7 patients of group II (4.4% vs. 6.4%; $p > 0.05$). Symptoms of heart failure (NYHA II-III) were registered in 16 patients of group I and in 28 patients of group II (14% vs. 25.2%, $p = 0.03$).

Conclusion: Although there were no benefit in the reducing of cardiovascular deaths and myocardial infarction, in STEMI patients with multivessel the strategy of performing PCI in all significant stenosis disease were more effective in the preventing of heart failure than the strategy of PCI in culprit vessel only.

P586

Serum AXL levels are increased in patients with heart failure during acute myocardial infarction

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Background: The GAS6-AXL system plays a role in tissue repair through modulation of fibroblast and macrophage function. We previously showed that AXL is increased in late stages of human heart failure and provides prognostic information, but little is known on AXL expression in ST-segment elevation myocardial infarction (STEMI).

Purpose: To determine plasma levels of soluble AXL (sAXL), a tyrosine kinase receptor belonging to TAM family acutely and at 6 months following STEMI, and to study its association with heart failure.

Methods: Blood samples were drawn at day 3 and 6 months in 27 STEMI patients (60 ± 8 years, 78 % men, 44 % anterior infarction), and in 23 healthy controls matched for age and cardiovascular risk factors. Soluble serum AXL levels were measured using an ELISA technique. The occurrence of heart failure during admission was registered using Killip classification.

Results: STEMI patients had increased levels of sAXL at day 3 (90 ± 39 ng/ml) and at 6 months follow-up (105 ± 65 ng/ml) when compared to controls (68 ± 17 ng/ml, $p < 0.05$ for both). Increasing Killip Class during admission was associated with increased levels of sAXL at baseline and follow-up ($p < 0.05$ for both trends, figure 1A). Accordingly, patients with Killip class > 1 (n=7) showed higher sAXL levels than the remaining (n=20) both at 3 days (120 ± 51 vs 80 ± 29 ng/ml, $p < 0.05$) and 6 months (161 ± 105 vs 85058 ng/ml, $p < 0.05$, figure 1B).

Conclusion: Patients with STEMI who develop heart failure have higher levels of sAXL acutely and specially at mid-term follow-up. These preliminary results suggest a potential role of AXL in post-STEMI remodelling and development of heart failure that needs to be confirmed in larger studies.

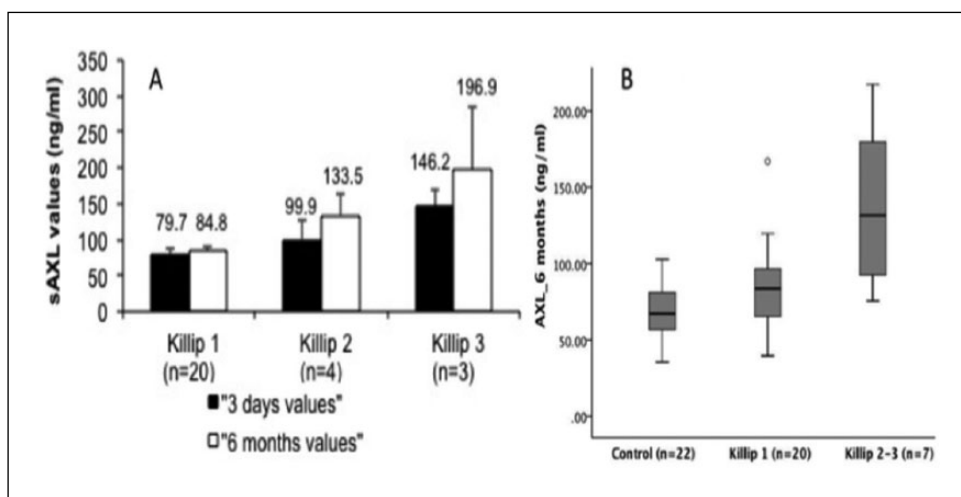


Figure 1A

P587

ST elevation infarction and multivessel disease: meta-analysis of randomized trials

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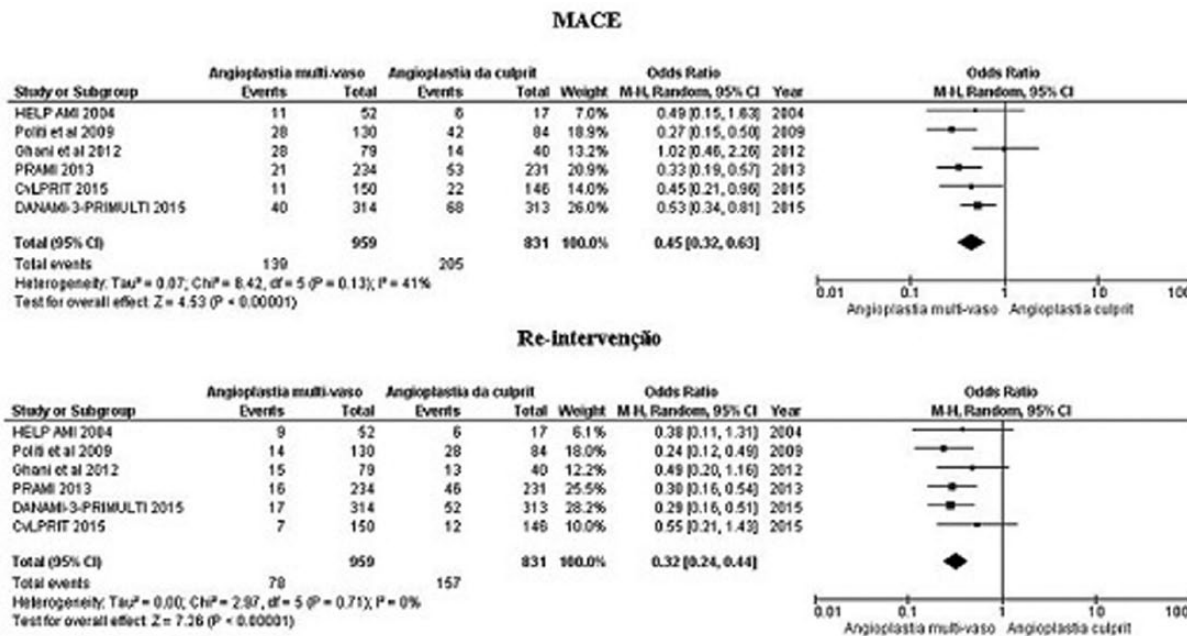
Introduction: Complete Revascularization (CR) in context of myocardial infarction with ST elevation (STEMI) and multivessel disease (MVD) is controversial, due to recent randomized trials suggesting a potential benefit from CR, that challenges contemporary guidelines. We present a meta-analysis of the clinical impact of CR, including only randomized trials.

Methods: Through a Pubmed research, the trials that randomized STEMI patients and MVD for CR vs incomplete

revascularization (IR) were included. It was evaluated the isolated incidence of total death; non-fatal infarction; repeated revascularization and their combined incidence (MACE). The program used was RevMag 5.3

Results: 6 randomized trials were included, encompassing 959 patients submitted to CR and 831 to IR. Basal characteristics are presented in table 1. On an average follow-up of 2 years, CR was associated with a significant reduction of MACE (OR 0.45 [0.32,0.63] p<0.001) and repeated revascularization (OR 0.32 [0.24;0.44] p<0.001) (Figure 1). There was no difference on the rate of infarction (OR 0.77 [0.51,1.15] p0.2) or total death (OR 0.76 [0.42,1.38] p=0.36).

Conclusion: On context of STEMI and MVD, CR was associated with a lower rate of MACE in a 2-year follow up, mainly due to a inferior incidence of repeated revascularization.



P588

STEMI in women: outcomes from a primary angioplasty registry

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Background: During the past years mechanical reperfusion has reached a central role in the treatment of STEMI, nevertheless it is still not clear how female gender can influence the outcome.

Aim: To verify the features of the female population and the prognostic value of the female gender in pPCI population.

Methods: We consecutively enrolled 1340 STEMI patients treated with primary angioplasty from January 2007 to December 2014 (median follow up 48 months, IQR 49 months).

Results: In our study population, 24,9% of patients were women. They were older than men (average age 72±11 years vs. 63±11), less exposed to risk factors (only hypertension is more prevalent: 72,1% in women vs. 59,7% in men), characterized by a worse clinical profile [more CKD (29,8 % in women vs. 16,3% in men), Killip class 3-4 (16,4% vs 9,8%) and TIMI index (30±17 vs. 24±13)],

less affected by multivessel coronary disease (38,1% vs. 44,6%), had a lower benefit from mechanical reperfusion in terms of TIMI flow 2-3 (93,4% vs. 96,9%), received later the reperfusion therapy (ischemic time 4:03 hours with 3:09 IQR vs. 3:26 hours with 2:51 IQR), suffered more frequently from post-procedural heart failure (28,1% vs. 18,5%) and were less frequently treated with Abciximab (21,9 % vs. 34,8%), thrombectomy (68,6% vs. 75,7%), Prasugrel (14,7% vs. 24,9%) and statins (86,5% vs. 92,9%). In-hospital mortality was higher in women (9,6% vs. 4,4%) and the 30-day mortality was higher too compared to the male population (10,8% vs. 4,8%). The results were not influenced by age: mortality worsens equally in the over-65 years group and in the under-65 years group. At multivariate analysis, female sex was an independent predictor of 30-day mortality, together with chronic kidney disease, severe or moderate left ventricular dysfunction, Killip class 3-4, cardio-respiratory arrest and creatinine level at admission. Women under 65 years had a lower post procedural TIMI flow 2-3, compared with men (91,6% vs. 97,5%)

Conclusions: In our population, composed by patients diagnosed with STEMI and treated with primary angioplasty, female sex was an independent predictor of 30-day mortality. In women there was a lower efficacy of mechanical reperfusion. Finally, women are, on average, undertreated in comparison with men.

P589

Temporal trends and treatment delay among patients presenting with ST elevation myocardial infarction in a hospital without haemodynamic laboratory

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Introduction: Time to treatment is a key prognostic indicator of mortality and morbidity outcomes in ST-elevation myocardial infarction (STEMI) patients.

Purpose: To evaluate temporal trends in time to reperfusion therapy, among patients with STEMI in a hospital without cardiac catheterization facilities.

Methods: Retrospective study including all patients admitted between 2011 and 2014, with diagnosis of STEMI. Detailed data on patient demographics, treatment time intervals, mode of reperfusion therapy and in-hospital management were confirmed and validated by emergency medical services (EMS) and hemodynamic center.

The main parameters evaluated concerning to time were time from symptom onset to first medical contact (FMC)

(defined as either arrival of EMS to the patient or, for patients self-presenting, the first documented presentation time at the emergency department (ED)); in hospital time of ischemia, that is, time from FMC to reperfusion and total time of ischemia (TTI), time from symptom onset to reperfusion.

Results: 185 individuals were included (75% male) with 62±13 years. Most patients self-presented to the ED (75%) and had the FMC in ED (80.9%). The predominant reperfusion strategy was primary percutaneous coronary intervention (PPCI) (98%).

About 43% of the TTI (median of 276.5 min) was due to patient delay. Median time from symptom onset to FMC was 118.5 min. Time from FMC to reperfusion (median of 139 min), was 50% of the TTI.

From 2011 to 2014 there was a significantly progressive reduction of the time from symptom onset to FMC and so, also of the TTI (p=0.029) (table 1). Nevertheless, the most constraining step of the delay in the treatment of STEMI remains this period.

Conclusion: There was a TTI far greater than what is recommended. We concluded that a reduction of the TTI relies on the effective implementation of an emergency physician activated protocol and on the education of population.

Table 1.

| Intervals | 2012 | 2013 | 2014 | |
|-----------------|---------------|---------------|----------------|---------|
| Median (p5/p95) | | | | |
| S-FMC | 137 (35/549) | 107 (21/690) | 163.5 (48/870) | p=0.033 |
| ED-EKG | 42 (11/278) | 30 (6/160) | 33 (6/327) | P=0.367 |
| ED-PPCI | 149 (78/564) | 124 (86/372) | 135 (91/527) | p=0.172 |
| TTI | 310 (145/730) | 234 (139/800) | 357 (188/1092) | p=0.029 |

P590

The appearance of acute myocardial infarction in the region with humid continental climate

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Introduction: The appearance of acute myocardial infarction (MI) is associated with weather conditions (air temperature, humidity and pressure) and concentrations of air pollutants. Furthermore, air pollution represents a great health risk even in developed countries with legally defined thresholds of air pollutants.

Purpose: To investigate the unknown influence of air pollutants and meteorological conditions on appearance of acute MI in the region with a humid continental climate.

Materials and methods: This retrospective study included 1552 patients with/without ST-segment elevation MI (STEMI/NSTEMI) admitted to Emergency Department. The number of patients with MI, values of meteorological parameters (air temperature, average humidity and atmospheric pressure) and concentrations of air pollutants (particles of dimensions ~10 micrometers or less (PM10), ozone (O3) and nitrogen dioxide (NO2)) were recorded and evaluated for each season (spring, summer, autumn, winter) during a two-year period (July 2008 - June 2010).

Results: There were 998 (64.3%) STEMI and 554 (35.7%) NSTEMI patients. The prevalence of STEMI was higher than NSTEMI, especially during autumn and winter, but without statistical significance. During the winter, the appearance of STEMI was in a weak positive correlation with the concentrations of NO2 particles three days before hospital admission; during the spring, the appearance of NSTEMI was in a weak positive correlation with the concentrations of O3 particles one day before hospital admission (for all $P < 0.05$).

Conclusion: The appearance of acute MI is in positive correlation with concentration of air pollutants during the spring and winter, while meteorological parameters had no impact. It could be explained by the traffic expansion and cooperation of hydrometeorology services and media on informing of citizens about weather conditions in our region with humid continental climate. Finally, we would like to emphasize the need for decreasing the upper lawful limits of air pollutants as it increases the number of patients with acute MI.

P591

The manchester triage system - predictors of high priority triage and impact in st-elevation myocardial infarction

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Background: Time until diagnosis and treatment in ST elevation myocardial infarction (STEMI) must be as short as possible. The Manchester Triage System (MTS) is implemented in most of the Emergency Departments (ED) in our country. It depends on a number of factors that can influence its efficiency in assigning the highest priority to these patients.

Aim: Analyze the factors that determine a high priority triage (HPT - very urgent/orange and immediate/red) and determine its impact in the time between admission

and reperfusion (AR) and in-hospital mortality (IHM) in STEMI patients.

Methods: Retrospective study of patients admitted to our ED, between September 2011 and June 2015, with the final diagnosis of STEMI. Demographic, clinical and triage data were analyzed.

Results: We included 271 patients, predominantly men (70,1%), with a mean age of $66,7 \pm 14,2$ years. The majority of patients had HPT (81,9%). The gender did not influence the triage. Patients with HPT were younger, with significance over 78 years ($p=0,039$). Patients brought to the ED by a medical emergency team had HPT more frequently (93,5% vs 79,6%; $p=0,033$). There was a higher number of HPTs in patients with history of coronary disease (89,7% vs 81,0% $p=0,189$).

As to the initial presentation, the absence of chest pain at admission was associated with less HPTs (43,1 vs 56,9%, $p<0,001$). Patients in Killip class II, III or IV were assigned a HPT more frequently (90,9% vs 81,1% $p=0,201$). Those with HPT had a shorter duration of symptoms (median 2:30 hours vs 5:10 hours; $p<0,001$).

In the multivariate analysis, symptoms duration of $<3h$ ($p=0,013$), the presence of chest pain at admission ($p<0,001$) and a Killip class III or IV at admission ($p=0,005$) were independent predictors of HPT.

Patients with HPT had reperfusion therapy more frequently (80,7% vs 62,9%; $p=0,020$), with a significantly shorter AR time (median 2:32 hours vs 4:28 hours; $p=0,006$), regardless of the type of the reperfusion.

Overall IHM was 8,1%, being lower in patients with a HPT (7,2% vs 12,2%; $p=0,243$).

Conclusion: MTS is a good but fallible system of triage. The majority of STEMI patients had HPT, however those who didn't were less frequently submitted to reperfusion therapy, with a longer AR time and higher IHM. The initial presentation of STEMI patients greatly influences MTS and, in this study, presentation with a shorter duration of symptoms, with chest pain and/or overt heart failure were predictors of HPT.

P592

The study of candidate gene polymorphism in cardiovascular disease with decreased glomerular filtration rate in patients with st segment elevation myocardial infarction

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Aim: To study the association of polymorphic genetic variants of inflammatory response, endothelial function, lipid metabolism and blood coagulation with impaired renal function in patients with ST segment elevation myocardial infarction (STEMI).

Material and methods: 171 patients admitted to our Cardiology Dispensary with STEMI, less than 24 hours after symptoms commenced, were enrolled in the study. All patients underwent genotype identification of 25 polymorphic variants of 18 major candidate genes for cardiovascular disease. Genotyping was performed using the DNA chip SINKAR -1 ('RI of Medical Genetics' SB RAMS and LLC 'Genomic Diagnosis').

Results: The comparison of allelic and genotype frequencies for the studied polymorphisms has revealed angiotensin-converting enzyme (ACE) gene rs4291 is associated with a decrease of GFR: odds ratio (OR) for carriers of rare TT genotype was 2.31 [1.01–5.25], $p=0.043$. Analysis of genotype combinations of ACE rs4343 polymorphism and hepatic lipase gene (LIPC) rs1800588 has shown that AA genotype of rs4343 polymorphism in combination with CC genotype of rs1800588 polymorphism is associated with a lower risk of renal dysfunction, whereas GG and AG genotypes of ACE gene rs4343 polymorphism in combination with TT and CT genotypes of LIPC gene rs1800588 polymorphism — with the highest risk. The analysis of combinations of genotypes for three loci has reported the following: ACE gene rs4291 and rs4343 and LIPC gene rs1800588 have revealed that the combination of risk genotypes on three genetic variants leads to a significant increase of odds ratio, which reaches 4.42 [1.37–14.26], $p=0.012$.

Conclusion: STEMI patients have reported an association between reduced glomerular filtration rate, measured by the serum creatinine levels at the time of admission to the hospital, and TT genotype of ACE gene rs4291, as well as genotype combinations of ACE gene rs4291, rs4343 and LIPC gene rs1800588. Higher odds ratios obtained for the combination of 'risk' genotypes on three polymorphisms, have demonstrated additive effects of genetic loci on the studied trait.

P593

Thrombus aspiration: who has the greatest benefit?

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Background: Thrombus aspiration has been proposed as an adjunct during primary percutaneous coronary intervention (PCI), to further improve epicardial and

myocardial reperfusion by prevention of distal embolization of thrombotic material and plaque debris in patients with T-segment elevation myocardial infarction (STEMI). However, this technique is still very controversial. The goal of this study is to evaluate the efficacy and the best candidates for manual aspiration thrombectomy.

Methods: Observational retrospective study including 236 patients with STEMI admitted to the catheterization laboratory for primary PCI during the year 2014, with an average follow up of 13 ± 6 months. The primary endpoint was defined as death during the index hospitalization or new acute coronary syndrome (ACS) during follow up.

Results: The study included 236 patients, 75% male, mean age 61 ± 13 years, 21% of patients were diabetic, 14% of which were under insulin therapy. The aspiration thrombectomy was used as an adjuvant technique in 52% of patients. During follow up, we recorded an in-hospital mortality rate of 5.9% and 2.5% of patients had new admissions for Acute Coronary Syndrome (ACS). The analysis of the Kaplan-Meier survival curves demonstrated a reduction in the primary endpoint in patients who did thrombectomy versus those that did not (log Rank 4.27 with $p < 0.04$). Comparing patients who did thrombectomy versus those who did not, were not recorded differences in the rate of hemorrhagic complications or cerebrovascular events. Analyzing the patients into subgroups, it was found that the benefit of the thrombectomy was exclusively in diabetic patients (log Rank 7.43 with $p < 0.01$) compared to non-diabetics (that didn't benefit of this technique). The sub-analysis by gender revealed that the benefit of thrombectomy occurred only in males (log Rank 4.74 with $p < 0.03$).

Conclusion: Thrombus aspiration contributed to the reduction of mortality and ischemic events in diabetic male patients, and this may be a group with greatest benefit of this technique.

Acute coronary syndrome - Non ST-elevation myocardial infarction

P594

Early diagnosis of type I acute myocardial infarction using uigh-sensitivity troponin I Abbott Diagnostics provided measurement of hs-TnI

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Background: The early and accurate diagnosis of acute myocardial infarction (AMI) is important. Current ESC guidelines recommend serial troponin measurement to diagnose AMI. The aim of our study was to challenge these algorithms to rule-in Type 1 AMI using high-sensitivity troponin I (hs-TnI) and testing (1) different baseline concentrations and (2) different absolute hs-TnI changes after 1 hour.

Methods: We analysed 1,040 patients with suspected AMI that presented to the chest pain unit. The final diagnosis was determined by 2 independent cardiologists and based on high-sensitivity troponin T, clinical data and imaging results. Type 1 and Type 2 AMI were distinguished according to the universal definition of AMI. For the diagnostic evaluation hs-TnI was measured at admission and after 1 hour. We evaluated different baseline concentrations and absolute hs-TnI changes to diagnose Type 1 AMI. Patients with ST-elevation AMI were excluded from the analyses.

Results: 114 patients were diagnosed with AMI type 1. Cardiovascular risk factors were more common in Type 1 AMI patients, compared to the overall population.

(1) A baseline hs-TnI concentration of 50 ng/L, which is close to the recommended cut-off in current guidelines, resulted in a positive predictive value (PPV) of 69.0% with still 31 false positive patients. Application of a low concentration of 6 ng/L resulted in a PPV of 25.7% with 304 false positive patients. A PPV of 100.0% was reached at a baseline hs-TnI concentration of 2,000 ng/L, but ruled in only 18 Type 1 AMI patients.

(2) A 1-hour hs-TnI change of 6 ng/L, as recommended in current guidelines, resulted in a PPV of 57.0% with 86 true and 65 false positive patients for the diagnosis of Type 1 AMI (Table). With rising hs-TnI changes, the PPV increased. A cut-off of 12 ng/L translated to a PPV of 81.8% and a sensitivity of 67.9 (72 true and only 16 false positive patients). A PPV of 100.0% was reached at a change of 200 ng/L.

Conclusion: Rule-in based on hs-TnI is still difficult. The clinically best PPV with still a high sensitivity was achieved by using a hs-TnI change of 12 ng/L after 1 hour, which may be easy to apply in acute cardiac care.

Table 1.

| Hs-TnI Delta | Sensitivity | Positive Predictive Value | True + False Negative Patients |
|--------------|------------------|---------------------------|--------------------------------|
| ≥ 6 ng/L | 81.1 (72.4,88.1) | 57.0 (48.7,65.0) | 86+65=151 |
| ≥ 12 ng/L | 67.9 (58.2,76.7) | 81.8 (72.2,89.2) | 72+16=88 |
| ≥ 25 ng/L | 59.4 (49.5,68.9) | 87.5 (77.6,94.1) | 63+9=72 |
| ≥ 50 ng/L | 44.3 (34.7,54.3) | 95.9 (86.0,99.5) | 47+2=49 |
| ≥ 200 ng/L | 21.7 (14.3,30.8) | 100.0 (78.9,100.0) | 23+0=23 |

Diagnostic performance of absolute hs-TnI changes from 0 to 1 hour

P595

ECG scoring system as a predictive tool of Left ventricular ejection fraction in ACS patients (PLATIS-5)

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Background: Echocardiography (Echo) is the prime tool for assessing left ventricular ejection fraction (LVEF). Nevertheless, access to Echo may be limited in some facilities. Data regarding the correlation between ECG and LVEF is lacking. The aim of the study was to propose simplified criteria to assess LVEF based on ECG parameters in ACS patients.

Methods: We prospectively assigned 130 consecutive patients who were admitted to cardiac care unit after sustaining myocardial infarction. ECG changes have been

documented throughout the admission period in as well as LVEF in at least 2 Echo tests. An ECG scoring system (ESS) was built to predict LVEF [Start from EF=65%, then subtract points based on the finding below: Anterior Q waves (V2-V4)- 30 pts; Inferior Q waves (II,III,AVF)- 10 pts; Lateral Q waves (I,AVL,V5)- 15 pts; Septal Q waves (V1,V2)- 10 pts; Right Q waves (v1R,v2R,v3R)- 15 pts; Posterior Q waves- 15 pts; ST↓ - 10 pts; Low Voltage QRS (V2-V6)- 5 pts]. Patients were divided into 3 groups: A-EF≥45%; B-30%≥EF<45%; C-EF<30%. ESS was compared with the Echo findings.

Results: Out of 130 patients, the ESS predicted LVEF in 121 (92%) patients. With 91% (104/114) prediction rate in group A; 92% (12/13) in group B and 100% (3/3) in group C.

Conclusions: The ESS demonstrated high accuracy for prediction of LVEF following ACS. This can serve as a helpful tool to assess LVEF where access to Echo may be limited and/or when LVEF is lower than expected at the first days of ACS.

P596

Evaluation of the diagnostic precision of a single determination of high sensitivity troponin in the screening of acute coronary syndrome in emergencies

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Introduction: The new clinical guidelines (ESC 2015) propose an algorithm, in which a single determination of high-sensitivity troponin of < 5 ng/L (Elecsys) could be used as an independent rule-out tool for patients presenting with chest pain in an ER setting, without needing further testing. The purpose was evaluate its diagnostic precision and security.

Methods: We designed a retrospective and consecutive registry of patients who presented with chest pain lasting less than 24h upon the arrival to the ER, during the 2013-2015 period. Patients with an interpretable EKG and a negative value of hsTnT for acute coronary syndrome (ACS) were included, all of them undergoing an early non-pharmacological treadmill stress test. Diagnostic precision was evaluated using a definite ACS diagnosis by independent cardiologists. Security was evaluated by presentation of intra-hospital events and in the follow-up.

Results: Of a total of 274 patients, 74 (27%) had an initial hsTnT value of <5ng/L.

A total of 65 (87%) negative and 9 (13%) positive stress tests were registered. In all positive cases a second diagnostic test was performed: 5 by a nuclear stress testing (SPECT) and 4 by a coronary angiogram, all of them turning out negative or without coronary lesions.

There was no final diagnosis for ACS, allowing calculating a 100% specificity value. No ACS, revascularization or death were registered in a 1-month follow-up in this group of patients, thus estimating a negative predictive value (NPV) of 100% for this cut point.

Conclusion: In our population, a single determination of hsTnT of < 5ng/L shows a high specificity and high negative predictive value. Its implantation as a single rule-out test for chest pain should be prospectively examined in larger studies.

P597

Higher doses of atorvastatin decreases mortality in acute coronary syndromes

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Background: Recent experimental studies have been described reduction in inflammatory markers related to higher doses of statins in acute coronary syndromes. However, its clinical effect remains uncertain.

Purpose: To analyze the outcomes of patients with acute coronary syndromes related with statin doses at admission.

Methods: This was an observational, multicentric and retrospective study with 929 patients (464 in the group I [atorvastatin < 40 mg/day] and 465 in the group II [atorvastatin > 40 mg/day]) with acute coronary syndromes included between May 2,010 and May 2,015. The following data were obtained: age, sex, diabetes, systemic arterial hypertension, smoke, dyslipidemia, familial history of precoces coronary artery disease, previous coronary artery disease (percutaneous coronary intervention or coronary artery bypass graft), hemoglobin, creatinine, higher troponin, left ventricle ejection fraction, medication used at hospital and coronary definitive treatment. The primary endpoint was all cause of in-hospital death. The secondary end point was combined events (death, non-fatal unstable angina or myocardial infarction, cardiogenic shock, bleeding and stroke). Comparison between groups was made by T-test and Q-square. Multivariate analysis were determined by logistic regression and was considered significative when $p < 0.05$. Long term mortality was studied using Kaplan-meyer curves with median follow-up of 8.79 months.

Results: Were observed significant differences in prevalence of dyslipidemia (49.1% vs. 56.3%, $p = 0.028$), use of B-blockers (63.1% vs. 75.2%, $p < 0.0001$), use of clopidogrel (65.1% vs. 72.3%, $p = 0.018$) and administration of angiotensin converting enzyme inhibitors (45.5% vs. 55.9%, $p = 0.001$), respectively between groups I and II. Significant difference was not observed between groups I and II in multivariate in-hospital analysis. Long term mortality was higher in group I (8.4% vs. 3.9%, $p = 0.013$).

Conclusions: In patients with acute coronary syndromes the early use of higher doses of atorvastatin could improve long term survival.

P598

Impact of complete revascularization on prognosis in octogenarians with Non-ST-Segment Elevation Acute Coronary Syndrome

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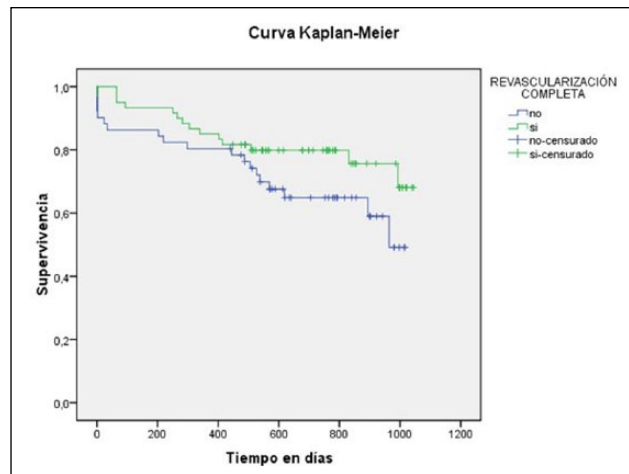
Introduction: Complete revascularization is important in young patients with non-ST-Segment Elevation Acute Coronary Syndrome (NSTEMI-ACS), but this principle remains less absolute in elderly patients.

Purpose: To determine how complete revascularization influenced long-term prognosis in octogenarians in our midst.

Methods: We followed consecutive patients aged ≥ 80 years hospitalized with NSTEMI-ACS during 2013-2015 and treated with percutaneous coronary intervention. Among them, we divided into 2 groups according to complete revascularization or not complete revascularization. We analyzed baseline characteristics, major events (reinfarction, stroke, need for any revascularization, major bleeding), readmissions and survival curves. Mean follow-up was 25.3 ± 0.83 months. We also studied the quality of life in the follow-up, through a telephone survey, making the quality of life questionnaire EuroQol 5D and EQ-5D index-5L value. Statistical analysis using SPSS version 18 Statistics.

Results: Percutaneous coronary intervention was made in 111 patients. Revascularization was complete in 50.5% (60) patients and incomplete in 45.95% (51). There were no significant differences in age, sex, occurrence of diabetes mellitus, chronic obstructive pulmonary disease, hypertension, and uncured malignancies and other baseline characteristics between the two groups, except in renal function. The group with complete revascularization (CR) presents significantly better renal function compared to no complete revascularization (NCR) (≥ 3 chronic kidney disease: CR 48.3% (29) vs NCR 68.6% (35); $p = 0.013$), but there was not significant worsening of renal function in any group. The NCR group had a higher rate of total readmissions than CR group (CR 1.39 ± 1.6 vs NCR 0.83 ± 1.2 ; $p = 0.031$) and readmissions in the first 6 months (CR 0.8 ± 1.33 vs NCR 0.27 ± 0.55 ; $p = 0.012$). No statistically significant differences between groups was found either in mortality (CR 23.3% (14) vs 37.3% (19)), in the composite event of death and major events (CR 30% (18) vs NCR 45.1% (23)), nor in cardiogenic shock, heart failure or length of stay. Complete revascularization in patients with NSTEMI-ACS did not significantly influence the quality of life at follow-up (index value EQ-5D-5L CR group 0.79 ± 0.16 vs NCR 0.8 ± 0.145)

Conclusion: In this cohort, complete revascularization in octogenarian patients with NSTEMI-ACS was correlated with lower rate of readmissions. There were no differences in major events or quality of life between groups, and no improved long-term survival in follow-up.



Survival in octogenarian

P599

Impact on prognosis of the pre-treatment with clopidogrel in patients with non-ST elevation myocardial infarction submitted to coronary angiography

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Introduction: Following the results of ACCOAST trial, the most recent ESC guidelines on Non-ST elevation myocardial infarction (NSTEMI) came to question pre-treatment with P2Y12 inhibitors in these patients (Pts). But could these results applied to clopidogrel?

Purpose: To evaluate the impact in in-hospital morbidity and mortality at one-year follow-up of pre-treatment with clopidogrel in Pts with NSTEMI submitted to coronary angiography.

Methods: From a database of 6673 Pts with NSTEMI included in a multicenter national registry, we studied all Pts submitted to coronary angiography and who performed loading dose of clopidogrel (300 or 600mg) ($n = 2944$ Pts). We compared two groups: Pts who underwent Pre-treatment with clopidogrel with a loading dose administered before catheterization and Pts without Pre-treatment with clopidogrel who underwent the loading dose administered during or after catheterization. We registered age, gender, clinical history, clinical presentation, in-hospital therapy, coronary angiography results and ejection fraction (EF). We evaluated the following in-hospital complications: major bleeding, need for blood transfusion, Re-infarction, heart failure (HF), cardiogenic shock and stroke. We compared in-hospital mortality and mortality at a one-year of follow-up. We conducted multivariate analysis to assess

whether pre-treatment with clopidogrel is an independent predictor of major bleeding, Re-infarction, HF and in-hospital mortality. Sub-analysis was also performed to assess if there were differences between the loading doses of 300mg and 600mg.

Results: Pre-treatment with clopidogrel was performed in 2443 Pts with NSTEMI (87%). These Pts were older (64 ± 12 vs 62 ± 12 years, $p < 0.001$), more often female (25,7 vs 20,0%, $p = 0,007$), had a higher prevalence of hypertension (71,4% vs 64,5%; $p = 0,002$), diabetes mellitus (30,1% vs 20,0%, $p = 0,024$), previous HF (4,7% vs 1,6%, $p = 0,002$) and a lower prevalence of previous angina (37,7% vs 18,1%, $p < 0.001$) and previous haemorrhage (1,8 vs. 0,6%, $p = 0,01$). At admission, Pts with pre-treatment with clopidogrel more often presented with chest pain and higher Killip-Kimball (KK) classes (KK ≥ 2 : 12,7 vs 5,0%, $p < 0.001$). Pts with pre-treatment had more HF (13,7 vs 3,4%, $p < 0.001$), worse EF (EF $< 50\%$: 31,0 vs 10,5%, $p < 0.001$), more need for blood transfusion (1,5 vs 0,2%, $p = 0,017$) but no differences were observed in the Re-infarction, cardiogenic shock, stroke or major bleeding. There were no differences in in-hospital mortality and mortality at a one-year follow-up. These results were independent of the loading dose administered (300 or 600mg). By multivariate analysis, Pre-treatment with clopidogrel was only an independent predictor of HF.

Conclusions: In the real world, pre-treatment with clopidogrel in NSTEMI remains a common practice, but is associated with an increase prevalence of HF but not major bleeding, Re-infarction or in-hospital mortality and mortality at one-year follow-up.

P600

MiR-1, miR-133a and miR-499 plasma levels correlate with cardiac necrosis markers and reflect the impaired left ventricular systolic function in early phase of acute coronary syndromes

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Background: Circulating microRNAs (miRs) are small non-coding RNA molecules regulating expression of multiple genes. They are promising as biomarkers for various diseases, but their diagnostic value in non-ST elevation acute coronary syndrome (NSTEMI-ACS) remains unclear.

Purpose: We sought to evaluate the relationship between cardiac-enriched miRs levels (miR-1, miR-21, miR-133a, miR-208a, miR-499) and cardiac necrosis markers (high-sensitive cardiac troponin T, hs-cTnT and creatinine kinase-MB, CK-MB), as well as with global left ventricular systolic function (LVEF) in early phase of NSTEMI-ACS.

Methods: Our study was designed as prospective, single-center observational study. The study group was composed of 71 patients (pts) with NSTEMI-ACS (mean age 66.1 ± 11.6 , 28% female) with symptoms onset < 24 hours before the hospital admission. Blood was sampled at hospital admission. LVEF was assessed with the biplane Simpson's method at the day one. Relative expression of miRs were calculated using the $\Delta\Delta Ct$ method after normalization to the cel-miR-39 spiked-in control.

Results: In NSTEMI-ACS patients we observed significant positive correlations of hs-cTnT with miR-1 ($r = 0.45$, $p < 0.001$), miR-133a ($r = 0.48$, $p < 0.001$) and miR-499 ($r = 0.51$, $p < 0.001$), as well as CK-MB with miR-1 ($r = 0.57$, $p < 0.001$), miR-133a ($r = 0.57$, $p < 0.001$) and miR-499 ($r = 0.64$, $p < 0.001$). Moreover, we found negative correlation between the relative expression of miR-1 ($r = -0.33$, $p = 0.009$), miR-133a ($r = -0.33$, $p = 0.009$) and the left ventricular ejection fraction in early phase of NSTEMI-ACS. There were no significant relationships between analyzed miRs and other clinical parameters including diabetes, body mass index, estimated glomerular filtration rate (eGFR), creatinine, white blood cells count and concentrations of C-reactive protein.

Conclusions: We identified significant correlations between circulating miRNAs (miR-1, miR-133a and miR-499) and cardiomyocyte necrosis markers as well as left ventricular contractile dysfunction (miR-1 and miR-133a), indicating their promising role as new biomarkers and predictors of long-term outcomes in NSTEMI-ACS patients.

P601

Risk scores in non-ST elevation acute coronary syndromes: a blessing and a curse

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Introduction: Several risk scores were developed in order to ascertain which patients are at highest risk of an adverse outcome. Patients with non-ST elevation acute coronary syndromes (NSTEMI-ACS) are an especially heterogeneous group. Determining which patients benefit most from a more aggressive approach is extremely important.

Purpose: The objective is to apply already validated risk scores in a population of patients admitted for NSTEMI-ACS and determine which risk score is best in predicting mortality.

Methods: A retrospective study of patients admitted to a Cardiac Intensive Care Unit with a diagnosis of NSTEMI-ACS was performed. Clinical, analytical and imaging parameters were evaluated. The following risk scores were applied: the TIMI score (Thrombolysis in Myocardial Infarction), the PURSUIT score (platelet glycoprotein IIb/IIIa in unstable angina: Receptor Suppression Using Integrilin), the GRACE score (Global Registry of Acute Coronary Events) and the FRISC score (Fast Revascularisation in Instability in Coronary disease). ROC curves were performed to ascertain the relationship between the risks scores and in-hospital mortality and at one-year follow-up.

Results: The study population included 628 patients, 66.6% male patients with a mean age of 71.4±12 years. Mean values for each risk score were determined: GRACE 142±42, TIMI

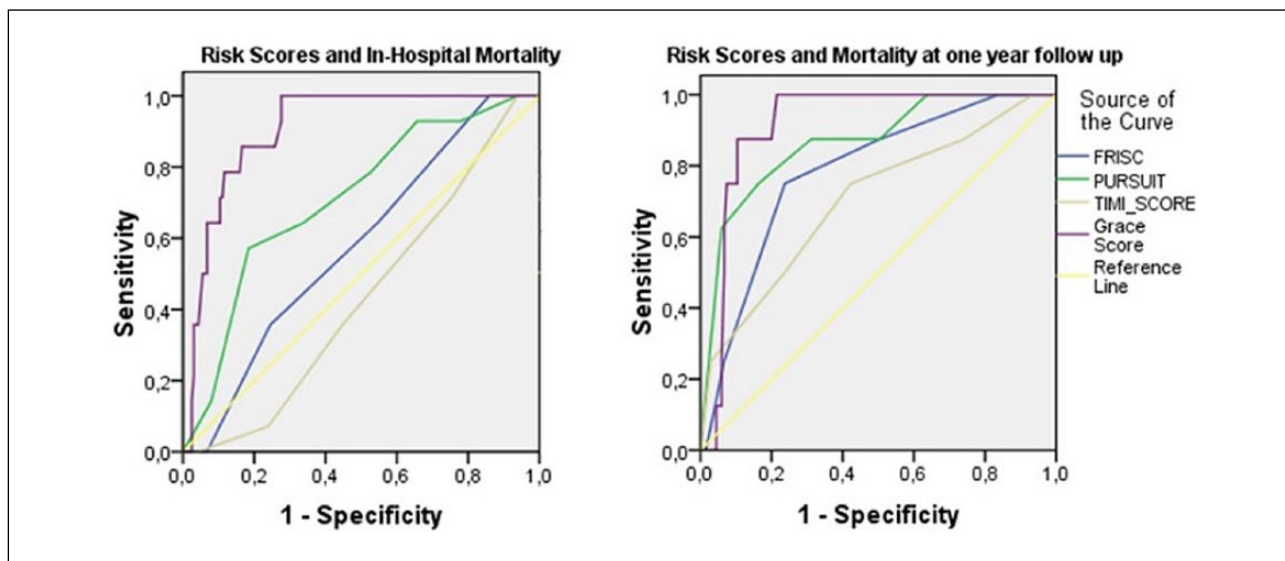
3±1, PURSUIT 14±3 and FRISC 3±1. The overall in-hospital mortality was 7.0% and at one-year follow-up 5.5%.

The following ROC curve in the picture was obtained.

Regarding in-hospital mortality, statistical significance was only found with the GRACE (AUC 0.908, $p < 0.001$) and the PURSUIT (AUC 0.711, $p = 0.009$) risk score, but not with the FRISC (AUC 0.580, $p = 0.320$) or the TIMI (AUC 0.435, $p = 0.421$) scales.

Concerning mortality at one-year follow-up, the following results were obtained: TIMI (AUC 0.703, $p = 0.054$), FRISC (AUC 0.784, $p = 0.007$), PURSUIT (AUC 0.867, $p = 0.001$) and GRACE (AUC 0.915, $p < 0.001$).

Conclusions: Even though all of these scores were developed for short-term prognosis, only the GRACE and the PURSUIT scores performed well in predicting poor in-hospital mortality. However, when evaluating mortality at one-year follow-up, all of the risk scores showed better results. The GRACE score was the best risk score at predicting a poorer prognosis, followed by the PURSUIT and the FRISC scores. The TIMI score was not capable of predicting mortality.



P602

Some gender features of acute coronary syndrome

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Purpose: to evaluate the features of the risk factors, clinical course, diagnostic and therapeutic interventions in patients with acute coronary syndrome (ACS), depending on the sex.

Methods: 160 patients (80 men and 80 women) who were hospitalized in the cardiology department of the Regional

Clinical Hospital from November 2013 to April 2014 due to ACS were included in a retrospective cross-sectional study. The diagnosis was verified according to medical records. The estimation of the risk factors, comorbid diseases, ACS type, diagnostic activities and treatment strategies was made by the original questionnaire. To evaluate the differences between the groups Mann-Whitney, chi-square and Fisher's exact tests were used. Differences were considered to be statistically significant at $p < 0.05$.

Results: Women with ACS were significantly older than men: 68,5 ± 10,8 and 54,7 ± 9,8, respectively ($p < 0.0001$). STEMI developed in 68.8% of men and 35% of women ($p < 0.0001$). Family history for cardiovascular disease was

more common in women (76% vs 38% men, $p < 0.0001$), smoking was more common in men (62.5% vs 34% women, $p < 0.0001$). The prevalence of dyslipidemia was the same: it was detected in 95% women and 87% men, $p = 0.162$. Evaluation of alcohol consumption has been hampered due to the retrospective nature of the study and not fully reflection of this information in the medical records. Hypertensive heart disease was the most frequent comorbid disease, and in women it was found more frequently than men (91% vs 75% for men, $p = 0.011$). The incidence of diabetes was the same: 20% in women and 12.5% in men ($p = 0.284$).

ECG was used to verify the ACS diagnosis in 100% cases, regardless of gender; the evaluation of troponin T was performed in 75% men and 60% women ($p < 0.0001$). Risk stratification was carried out using the TIMI scale, and men more often had high risk (68.8% vs 25% of women; $p < 0.0001$), and women – moderate risk (75% vs. 31.2% of men, $p < 0.0001$). Coronary angiography was performed in 80% of men and 82.5% of women ($p = 0.743$). PCI with BMS stent was performed more often in men (78.8% vs 40% of women $p < 0.0001$).

Treatment of men and women with ACS was the same: β -blockers (92.5% and 93.8%, $p > 0.05$), nitrates (100% and 95%, $p > 0.05$), anticoagulants (98.8% and 95%, $p > 0.05$), ACE inhibitors (96.3% and 97.5%, $p > 0.05$), statins (100% and 100%, $p > 0.05$), both ASA and clopidogrel (100% and 100%, $p > 0.05$), calcium antagonists (37.5% and 33.8%, $p > 0.05$).

Conclusions: The clinical features of ACS is the younger age and more frequent development of STEMI in men. Invasive treatment was also more common in men. There were no differences in drug treatment programs based on gender.

P603

The role of coronary artery disease in patients with atrial tachy-arrhythmias and positive troponin

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Introduction: There are scarce data regarding the significance of an elevated troponin concentration in patients with atrial tachy-arrhythmias. We aim to characterize these patients and examine the prevalence of coronary artery disease (CAD) in this group.

Methods: 446 patients were included. 223 with an atrial tachy-arrhythmia and troponin elevation were matched for age, gender and troponin with patients with troponin elevation but without an arrhythmia on presentation.

Results: Significant CAD was demonstrated in 28.9% of patients with an atrial tachy-arrhythmia, and in 86.1% in patients without an arrhythmia ($p < 0.001$). Patients who presented with an atrial tachy-arrhythmia and troponin elevation had almost one sixth the probability for significant CAD if their troponin concentration was below 0.1 ng/ml and there was no known prior ischemic heart disease.

Conclusions: Patients with an elevated troponin level are less likely to have a significant CAD if they present with a supraventricular tachy-arrhythmia with rapid ventricular response.

Arrhythmias, general

P604

Endogenous and exogenous pore-forming toxins cause acute cardiac injury

BHF

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Purpose: The impact of critical illness is severe and large numbers of people die or suffer from continued morbidity. Cardiovascular injury and dysfunction is very common and sometimes leads to early death(1). Sepsis is a leading cause of mortality in critically ill patients. As the host response to infection, most deaths in sepsis are attributed to the development of multiple organ failure (2). Cardiac complications, including arrhythmia(3) and cardiac dysfunction(4), are very common. Paroxysmal cardiac arrhythmias and conduction abnormalities frequently occur in severe sepsis (5). In particular, new onset atrial fibrillation (AF) is associated with increased mortality by up to 3 fold (6). Its occurrence in patients without pre-existing cardiac disease, particularly in children with sepsis (7, 8) suggests that factors arising directly from the septic insult are important. Although earlier reports suggested that development of impaired cardiac function and left ventricular (LV) dilatation during sepsis might be protective (9), it is now widely recognized that myocardial dysfunction occurring in 20-40% of patients with severe sepsis has a negative prognostic impact and increases the mortality rate to 70-90% (10, 11). Elevation of circulating cardiac troponins, a specific marker of cardiomyocyte injury, can be detected in 30-85% of septic patients and associated with poor prognosis (12-14). However, no sufficient researches have been carried out in this important field yet.

Methods: the cultured HL-1 cells and mouse models were used to test the toxic effects of pore-forming toxins. Calcium influx and resultant membrane potential changes in

cultured cells were demonstrated using different methods. The cardiac injury in mouse was evaluated by measuring circulating troponins. Arrhythmia was monitored with ECG and cardiac function was evaluated using both TTE and catheters.

Results: Work from our group suggests showed that both endogenous and exogenous pore-forming toxins play important roles in cardiovascular injury and dysfunction, including arrhythmia. Those toxins allowed calcium to enter cytoplasm and disturb calcium homeostasis and cause troponin release, arrhythmia and reduction of contractile performance in both cultured cells and animal models.

Conclusion: Pore-forming toxins are important pathological factors in critical illness, especially in sepsis, in which both endogenous toxin, such as histones, and exogenous toxins released from infected bacteria, may coexist and special attention should be paid.

P605

QTc interval duration decreases from admission to 72 hours in critically ill patients and is independent from serum electrolytes levels

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Background and Aim: The QT interval reflects the total duration of ventricular myocardial repolarization and its prolongation can be a precursor of malignant arrhythmias, as torsade de pointes. Critically ill patients are particularly prone to suffer from this condition since they often aggregate multiple risk factors. Many clinicians are unaware of the several factors (mainly drugs) that increase the risk of QT interval prolongation in the intensive care unit setting. We sought to determine the prevalence of Bazett's formula corrected-QT (QTc) interval prolongation at admission to an intensive care unit and its variation during the hospitalization.

Methods: We conducted a prospective study between November and December 2012, including 34 patients (mean age 62 ± 13 years; 23 of male gender) admitted to an intensive care unit. Data collected included demographic information, past medical history, medication administration records, laboratorial data, severity scores and diagnostic reports. All patients had a baseline 12-lead ECG, obtained at admission, and follow-up ECG obtained 72 hours later. QT intervals were determined manually from the V2 lead. QTc interval prolongation was defined as ≥ 470 ms for males and ≥ 480 ms for females. In both, QTc interval > 500 ms was considered abnormally high.

Results: The reason for admission was medical pathology in 67.6% of the patients, surgical in 14.7%, trauma in 11.8%

and intoxication in 5.9%. 73.5% of these patients came from another department. QTc interval prolongation was present in 47.1% of the patients at admission; 29.4% had a QTc interval > 500 ms. Of the 10 patients admitted with QTc interval > 500 ms, 6 had risk factors. Interestingly, the QTc interval decreased significantly from admission to 72 hours (464 ± 49 vs 442 ± 38 , $p=0.027$), although patients had been started on several potentially toxic drugs. Concomitantly, Sequential Organ Failure Assessment score decreased numerically (9.25 ± 3.3 vs 9.12 ± 3.6 , $p=0.243$) and systolic blood pressure increased (119 ± 19 vs 132 ± 17 , $p=0.004$). Importantly, these changes could not be attributed to laboratory parameters, as there were no change in electrolytes levels between admission and the 72 hours. Additionally, the number of patients treated with QT-prolonging drugs was very similar (41.2% vs 42.3%).

Conclusion: QTc interval prolongation is very common among patients admitted to intensive care units; in our cohort we detected a significant decrease in QTc interval duration between admission and 72 hours. This fact is not explained by drug toxicity nor laboratory findings and merits further investigation.

P606

High diagnostic yield of implantable loop recorders - a 5-year experience

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Implantable loop recorders (ILR) provide an important tool in the investigation of symptoms including syncope, presyncope and palpitations. We aimed to review the characteristics of patients implanted with an ILR and utilise the outcomes to improve our local management of symptomatic arrhythmia.

Methods: All ILR implants at a single centre over 5 years ($n=183$) were reviewed. ILR which had not yielded a diagnosis yet and were still being actively interrogated were excluded. We reviewed clinical notes and ILR interrogations to collect data on remaining cases.

Results: Only 1 death occurred out of 183 implants during the 5 years (due to malignancy). Complication rate was 4% (2 displacements with loss of ECG sensing, 2 with discomfort necessitating removal, 1 infection and 2 keloid scars).

There were 84 ILR implants and subsequent explants during 5 year follow up. 43/84(51%) were female and mean age at implant was 64 years (range 23-88). Indications for implant were syncope 62/84(74%), presyncope 21/84(25%) and palpitations 1/84(1%). All had resting ECG and echocardiography and 99% had at least one external loop recorder or 24hr Holter monitor prior to implant.

ILR was able to confirm a diagnosis in 56/84(67%) of which 50(60%) had an indication for anti-bradycardia pacing and 6(7%) had clinically relevant symptomatic tachycardia.

Indications for those 50 cases who required pacing were ventricular pauses or asystole in 21/84(25%), Mobitz Type 2 or complete heart block in 12(14%) and symptomatic sick sinus syndrome in 17(20%). The median time from implant of ILR to pacemaker was 140 days (range 5-976).

Comparison between those who required pacing and those in whom a diagnosis could not be established, age was a significant factor in determining likelihood of pacing (mean 71yr vs 56yr, $p \leq 0.0001$). An age >60 was associated with significant increase in likelihood of requiring pacing ($p=0.001$). There was no significant difference in LV systolic function ($p=0.55$), presence of normal ECG ($p=0.11$), resting sinus bradycardia ($p=0.52$), bundle branch block ($p=0.72$) or first degree heart block ($p=0.31$).

On reviewing the 28/84(33%) cases without a diagnosis identified by ILR, all cases either had an alternative non-arrhythmogenic cause for symptoms identified 9/84(11%) or no recurrence of symptoms during the time of implant 19/84(22%).

Conclusions: There was a high diagnostic yield of ILR with 60% requiring anti-bradycardia pacing and 7% with clinically relevant symptomatic tachycardia. The median time from ILR implant to pacemaker was 140 days. The LV systolic function or resting ECG (whether normal or abnormal) does not predict the need for permanent pacing. There should be a lower threshold for an ILR in those over 60 years given the greater likelihood of requiring permanent pacing.

Where a diagnosis was not identified, ILR provided an excellent prognosis given all cases either had no further symptoms or a non-arrhythmogenic cause identified.

P607

Implantable cardiac defibrillator

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Background: Sudden Cardiac Death in Heart Failure Trial (SCD-HeFT) and Multicenter Automatic Defibrillation Trial II (MADIT II) have provided data of benefits for prophylactic implantable cardiac defibrillator (ICD) in selected patients with systolic heart failure (sHF). The aim of this study was to describe clinical profile and follow-up (FU) of patients with ICD for primary prevention in a real-life cohort.

Methods: We retrospectively analysed 144 consecutive patients with sHF who received prophylactic ICD based

on international guidelines, between 2009 and 2014, in a tertiary centre. Clinical data and ICD interrogation printouts were reviewed.

Results: In our cohort, mean age was 62.2 ± 10.8 years and 78.5% were males. Ischemic cardiomyopathy (CM) was the main diagnosis (52.1%), followed by dilated CM (42.4%) and valvular heart disease (3.5%). Preimplantation data showed a mean ejection fraction of $23.3 \pm 6.3\%$, a mean left ventricular (LV) end-diastolic dimension of 66.9 ± 9.0 mm and right ventricular (RV) dysfunction in 10.6% of cases. During a mean FU of 2.5 ± 1.6 years, appropriate ICD therapy (Rx) (antitachycardia pacing and/or shock) was detected in 24.3% of patients. First appropriate ICD Rx occurred at a median of 11.0 months from ICD implantation. Atrial fibrillation/flutter (AF/AFL) was identified in 28.5% of patients, whereas nonsustained ventricular tachycardia was present in 45.8% of cohort. In 7 patients, the first ICD Rx was inappropriate (mostly due to AF/AFL). No predictor for appropriated ICD Rx was found. Among ICD complications, 5 patients had device-related infective endocarditis. Fifty patients (38.7%) were admitted for cardiovascular (CV) causes and 30 patients (20.8%) died during FU. Concomitant RV dysfunction (OR 4.4, CI 1.32-14.9, $p=0.01$), AF/AFL (OR 3.7, CI 1.7-7.9, $p=0.001$) and ICD shock (OR 5.25, CI 2.2-12.9, $p<0.001$) were predictors of hospitalization. Kaplan-Meier analysis showed that AF/AFL (log-rank $p=0.04$) were associated with CV death.

Conclusions: In this study, ICD implantation aborted life-threatening arrhythmias in almost a quarter of patients. AF/AFL was prevalent in ICD recorders and was associated with readmissions and CV mortality. Monitoring arrhythmias can be used to optimize clinical treatment and probably change the prognosis of these patients. In the era of prophylactic ICD implantation and limited healthcare resources more studies are needed to find out which patients are actually profiting from ICD Rx and how to improve medical approach to these patients.

P608

Temporary cardiac pacing using active fixation permanent pacing lead and re-used permanent pacemaker in anticoagulated patients

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Background: Patients with bradiarrhythmias are usually temporary paced by using temporary wires connected to an external pacemaker. This approach has inconvenients and

complications, such as lead displacements and ventricular perforations. It affects patient mobility and care. Bleedings in anticoagulated patients are seen often.

Method: We describe a new way of temporary pacing using active fixation permanent leads connected to a reusable external, resterilised, permanent pacemaker for a safer and longer period of temporary pacing via external jugular vein cut-down.

Results: We temporary-paced 3 male patients, aged 59 to 65, with INR of 3 (2.9-3.2) for a period of 48h to 12 days using our method. Patients were paced for 3rd degree AV block, brady-tachy syndrome and asystole following ventricular tachycardia. Pacing measurements were optimal. There were no procedural complications, no infections. Leads were stable, there were no leads displacements and patients got high mobility during temporary pacing and proper medical care with no discomfort.

Conclusions: Temporary cardiac pacing via external jugular vein cut-down using permanent active fixation leads, is safe for patients anticoagulated for up to 2 weeks. With this method, we preserved usual veins suitable for permanent pacing. Also, we avoided complications such as those commonly encountered with anticoagulated patients when using blind punctures.

P609

Main electrocardiographic findings in takotsubo cardiomyopathy

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Background: Electrocardiogram (ECG) manifestations of takotsubo cardiomyopathy (TC) produce ST-segment elevation or T wave inversion, mimicking acute coronary syndrome (ACS). We describe the ECG manifestation of TC, including ECG evolution, and its different points from ACS.

Results: Two common ECG findings in TC were ST-segment elevation (n = 13, 35%) and T inversion (n = 24, 65%), mostly in the precordial leads. After ST-segment resolution, in a few days (3.5 days), diffuse and often deep T wave inversion developed. Eight patients (22%) had transient Q-waves lasting a few days in precordial leads. No reciprocal ST-segment depression was noted. T-wave inversion continued for several months. QT prolongation (> 440 msec) was observed in 37 patients (97%). The main findings in this study are: (1) There were two forms of representative changes in ECG, ST elevation and T inversion; (2) In the form of ST elevation, T inversion appeared when ST elevation had subsided; (3) When T inversion appeared, QT prolongation occurred; (4) There

was no reciprocal change in limb leads; (5) Q waves were reversible; (6) There was no atrioventricular block; and (7) There was no significant arrhythmia event.

Conclusion: There are distinct differences between the ECGs of TC and ACS. These differences will help to differentiate TC from ACS.

P610

Different causes and significance of arrhythmia in coronary care unit

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Introduction: Every disturbance of the normal heart rhythm in which there is an increase or decrease frequency (heart rate), or skipping in the work of the heart, are called arrhythmias. Most arrhythmias are harmless, but some can be serious or even fatal.

Purpose: Prevention, early recognition and treatment of arrhythmias.

Method: In order to assess the incidence of arrhythmias and risk factors for their development, we analysed medical records and follow-up of patients in the Coronary Care Unit, during the period from January 2010. to December 2012.

There was 57% of men and 43% of women with arrhythmias, among 2434 pts (aged 25 to 95) hospitalized during that period in CCU. Causes of arrhythmia were: acute myocardial infarction and angina pectoris (75,5%), mitral valve prolapse (2,0%), cardiomyopathies (13,4%), myocarditis (0,2%), congenital heart disease (0,22%), valvular heart disease (1,0%), hypokalemia (4,3%), medications (antidepressants, bronchodilators) after surgery (0,23%), during the treatment of different infections (0,67%), abuse of alcohol (3,2%).

In patients with atrial ES and rare ventricular ES (85,5%), there were no symptoms. But in those with atrial fibrillation or with frequent ES (14,5%), the patients usually complained (85% of them) of accelerated or slowed heart rate, irregular heart beat, blinking in the chest, shortness of breath, fainting, dizziness, weakness, and syncope. These symptoms usually scare patients, creating discomfort and embarrassment. Diagnosis is made based on ECG, monitoring of ECG, Holter (24 hour ECG) and the causes of the arrhythmias are discovered by echocardiography, ergometry, laboratory analysis, coronary angiography and electrophysiological study. Treatment depends on the type of arrhythmia and the cause.

Results: The results showed that many factors can cause arrhythmias. There was no significant difference between gender among those with arrhythmias ($p \geq 0.05$), but those

with arrhythmias were older ($78,6 \pm 12,3$ vs. $68,5 \pm 11,5$ yrs, $p < 0,05$), had preexisting heart disease ($79,2\%$ vs $55,0\%$ $p < 0,05$), were diabetics ($56,4\%$ vs $32,2\%$, $p < 0,05$),

Conclusion: Arrhythmias occur in healthy and sick people. Prevention and health education work are necessary to avoid the risk of disease (alcohol, smoking, stress), increased physical activity, sport. Nurses working in coronary units must be familiar with ECG and ECG changes on the monitor, recognize them and know how to respond at any time.

P611

Improving knowledge of carotid sinus massage and the Valsalva manoeuvre in acute medical settings: a quality improvement initiative

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Purpose: Carotid sinus massage (CSM) and the Valsalva manoeuvre (VM) are safe and internationally recommended first-line approaches to terminate haemodynamically stable supraventricular tachycardia (SVT), before resorting to drug treatments. Education in CSM and VM techniques has been rather informal, relying heavily on cultural practice and individual learning. We studied the knowledge of various grades of doctors regarding CSM and VM and evaluated a training video.

Method: We sent a short questionnaire to doctors and medical students exploring their experience of managing cases of SVT. We asked about aspects of their CSM/VM technique, including method, duration and posture of patients. A short video was made to demonstrate the techniques shown to be most effective in the randomised controlled REVERT study (1). The participants were then asked to complete a second questionnaire to re-assess their knowledge after this educational intervention.

Results: Of the 44 participants, there were 26 doctors in training, 10 senior consultants and 8 medical students. Most of the trainee doctors had not seen a case of SVT nor performed CSM or VM. Consultants had as expected more experience in managing patients with SVT. However, there was significant variability in terms of their technique, particularly with respect to duration of, and patient posture during both manoeuvres. 5 participants opted a supine position for CSM, 1 attempted CSM <5 seconds, 7 participants selected the sitting, then recumbent with feet elevation at the end of the VM and 4 carried out VM for 11-15 seconds.

After watching the video, 41 participants would opt a supine position for CSM, 33 would attempt CSM <5

seconds, 22 participants would select the sitting, then recumbent with feet elevation at the end of the VM and 32 would do VM for 11-15 seconds. Before viewing the video, 7 of the more senior doctors reported that they would ask the patient to strain or 'blow against a closed glottis' to perform VM, while afterwards 9 claimed they would now ask the patient to blow into a syringe. 43 participants would ask their patients to blow into a syringe when attempting VM to terminate the arrhythmia.

Conclusion: This study has highlighted the lack of standardised education regarding CSM and VM, with limited exposure to treating SVT among junior doctors. An effective technique, proven in a randomised trial, was not known by the majority of doctors, even those who claimed to have managed many patients. A simple educational video proved to be a successful intervention to increase knowledge, however, continuing an education program is fundamental to ensure that this knowledge is sustained and can be put safely into practice to improve patient care.

P612

Global management of patients treated with direct oral anticoagulants referred for implantation or replacement of cardiac pacing device

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Purpose: we analyze our experience in the management of direct oral anticoagulants (DOACs) in patients with cardiac pacing device (CPD) indication.

Methods: prospective analysis of 28 consecutive patients treated with DOACs referred for CPD implantation or replacement. We analyzed baseline characteristics and treatment of the patient. The type of procedure performed and type of CPD was collected. In addition, we analyzed the patients thrombotic and hemorrhagic risks. DOACs reduction was practiced by Arrhythmia Unit cardiologists, according to the DOAC half-life (24 hours suspension for 12 hours half-life DOACs and 48 hours suspension for 24 hours half-life DOACs. Finally we collected thrombotic and bleeding complications.

Results: DOAC indication in our series was NVAF in 96% of cases. In one patient (4%) the indication was secondary prevention of stroke. 14% of patients had treatment with antiplatelet agents in addition to the DOAC. In 68% of patients with NVAF, it was permanent. In 96% of patients, DOAC

reduction was performed according to the protocol described. Only in one patient, the procedure was performed without suspension of DOAC due to the occurrence of a transient ischemic stroke. All other variables are shown in the table.

Conclusions: the CPD replacement/implant with DOACs suspension according to the protocol described was safe, with a low complication rate and comparable to that of patients with vitamine-K antagonists.

Table 1. Patient characteristics and treatment

| Gender (%) | Male: 19 (68%) | Female: 9 (32%) | |
|--|------------------------|-------------------------|------------------|
| Main age (years) | 74 ± 12 | | |
| Procedure type and CPD: | Implants: 20 (71%) | Replacements: 8 (29%) | |
| | - Pacemakers: 16 | - Pacemakers: 8 | |
| | - ICD-CRT: 4 | - ICD-CRT: 0 | |
| DOAC type | Dabigatran 14 (50%) | Rivaroxaban 9 (32%) | Apixaban 5 (18%) |
| CHADS ₂ VASC ₂ (range) | 4 ± 1 (1-7) | | |
| Thrombotic baseline risk | High: 29% | Medium: 50% | Low: 21% |
| Hemorrhagic baseline risk | Alto: 21% | Bajo: 79% | |
| Mean INR at procedure day | 1,04 ± 0,14 | | |
| Complications during procedure | 0 | | |
| Subacute Hemorrhagic Complications | Mild haematoma: 3(11%) | Severe haematoma: 0(0%) | |
| Subacute thrombotic Complications | 1 (4%) | | |
| Later persistent complications | 0 (0%) | | |

CPD: cardiac pacing device. ICD-CRT: internal cardioverter defibrillator- cardiac resincronization therapy. DOACs: direct oral anticoagulants.

Biomarkers

P613

Biomarkers of oxidative stress in patients with acute coronary syndrome

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Purpose: To evaluate comparatively association between biomarkers of oxidative stress(OS) in patients with acute vs chronic coronary artery disease, and in comparison with healthy volunteers.

Methods: Cross-sectional observational study was performed in patients admitted because of coronary artery disease (CAD). Pts were evaluated for their demographics, risk factors and co-morbidities, lipoprotein profile, HgbA1C and markers of oxidative stress: malondialdehyde (MDA) and hydroperoxids (HP), and antioxidant enzymes: superoxide dizmutaza (SOD), CATALASE and glutathione peroxidase (GPS). Pts were divided in 2 groups: pts with acute coronary syndrome (ACS) and chronic coronary artery disease (HCAD), and then subdivided, ACS pts in: STEMI,

NSTEMI and APNS, HCAD in: asymptomatic CAD, revascularised and post MI patients. Statistical analysis: descriptive, t-test, ANOVA, Kruskal-Wallis ANOVA, correlation. Significance was determined at level of 0.05.

Results: 300 pts. 194 males and 106 females at mean age of 62.9±11,2 y were analyzed. 187 were with ACS and 113 with HCAD. 62,3% of pts. had HTA, 42,7% HLP, 28,3% DM, 57% smokers, 8% had anemia. There was no significant difference in the risk profile between the two groups. Mean values of the markers of OS (Table 1). Statistically significant differences didn't existed between ACS and HCAD groups but inside the groups (Table 1), in lipid profile and HgbA1C in ACAD pts compared to HCAD.ACAD pts had higher HgbA1C, total, LDL and ApoB, but lower HDL-C and ApoA1. Correlation was found for HgbA1C and MDA ($r=-,154^{**}$, $p=0,008$); age and total HP ($r=-,143^{*}$, $p=0,013$); ApoA1 and total HP ($r=-,157^{*}$, $p=0,035$);

Conclusion: Markers of oxidative stress were significantly higher, and antioxidative activity was lower compared to healthy volunteers, but between ACAD and HCAD group significant differences were found only for HP from pro-oxidative, and SOD from anti-oxidative markers. Inside the groups, revascularised HCAD pts were with the highest pro-oxidative and lowest anti-oxidative activity, while in ACAD group, different markers of OS were the most pathological in different ACAD groups.

Table 1. Table 1. Mean values of oxidative stress

| Patients subgroup | Nr | Marker of oxidative stress | | | | |
|-------------------------|-----|----------------------------|------------------------|-------------------------|------------------------|----------------------|
| | | MDA(nm/ml) | HP (CARR U) | SOD (U/ml) | CAT (KU/l) | GPX(U/ml) |
| CAD Healthy volunteers | 300 | 34.1±9.1 | 282.7±73.9 | 131.7±113.0 | 64.6±38.1 | 6.4±6.0 |
| Sig (p) | 30 | 22.2±6.7 <0.00001 | 240.5±62.2 <0.00185 | 358.7±180.9 <0.00001 | 99.1±36.7 <0.000013 | 7.0±5.5 .3757(ns) |
| ACS | 187 | 34.3±7.6 | 293.6±76.3 | 118.8±106.9 | 63.2±39.5 | 6.5±6.9 |
| HCAD | 113 | 33.2±7.9 | 256.1±72.1 | 153.2±119.9 | 66.8±36.8 | 6.3±4.9 |
| Sig(p) | | .739(ns) | 0.0102 | 0.0031 | .459(ns) | .4315(ns) |
| Asymptomatic HCAD | 17 | 33.5±5.8 | 336.1±92.0 | 129.7±114.7 | 78.3±40.9 | 5.1±4.5 |
| PCI/CABG revascularized | 30 | 34.8±0.6 | 285.3±61.9 | 101.9±76.9 | 52.5±34.6 | 5.9±4.5 |
| Post MI | 66 | 33.6±6.4 | 260.3±68.4 | 182.2±122.1 | 70.5±33.3 | 7.3±5.6 |
| Sig (p) | | 0.839(ns) | 0.0006 | 0.0010 | 0.0394 | 0.396(ns) |
| STEMI | 84 | 34.6±9.7 | 278.8±68.9 | 106.8±91.1 | 67.0±37.1 | 4.7±5.7 |
| NSTEMI | 22 | 30.2±6.1 | 307.3±73.4 | 82.8±79.0 | 63.6±31.8 | 7.9±5.4 |
| APNS | 81 | 34.9±10.9 | 286.1±77.1 | 140.4±123.5 | 59.3±39.5 | 7.9±8.8 |
| Sig(p) | | 0.0441 | 0.0719 | 0.034 | .459(ns) | 0.0314 |

MDA-malondialdehyde; HP-hydroperoxids; SOD-superoxide dismutase; GPx-glutation peroxidase

P614

Circulating endothelial-derived and mononuclear progenitor cells in post-myocardial infarction patients with metabolic syndrome and diabetes mellitus

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Introduction: Metabolic disorders remain a leading contributor to cardiovascular mortality worldwide. Circulating endothelial progenitor cells (EPCs) are decreased in metabolic disorders, thus identifying the different populations of EPCs could assist in prognosis. This study was conducted to investigate the population of circulating endothelial progenitor cells (EPCs) in post Q-myocardial infarction patients with type two diabetes mellitus (T2DM) or metabolic syndrome (MetS).

Materials and Methods: The study retrospectively involved 101 patients after Q myocardial infarction (54 subjects with T2DM and 47 patients with MetS) treated primary PCI or thrombolysis and 35 healthy volunteers as a negative control for biomarker measurements. All patients have given their informed written consent for participation in the study. T2DM was diagnosed with revised criteria provided by American Diabetes Association when source documents were reviewed. Flow cytometry was used for detecting EPCs using CD45, CD34, CD14, Tie-2, and VEGFR2 (CD309) markers, which were measured at the beginning of the study.

Results: There is a significant difference between the median total number and frequency of CD14/CD309+ and CD14/CD309/Tie2+ in patients with dysmetabolic disorders vs control. CD14/CD309+ and CD14/CD309/Tie2+ EPCs were 19% and 14% higher among MetS subjects in comparison with T2DM patients. Using multivariate age- and gender-adjusted logistic regression analysis, independent impact of T2DM (odds ratio [OR] = 1.08, P = 0.003), hs-CRP per 4.50 mg/L (OR = 1.12, P = 0.001), number of MCRFs >3 (OR = 1.15, P = 0.001), OPG per 125.5 pg / mL (OR = 1.14, P = 0.002) on decreased of CD14/CD309+ EPCs was determined. CD14/CD309/Tie2+ EPCs were negatively impacted by T2DM (OR = 1.10, P = 0.001), hs-CRP per 4.50 mg/L (OR = 1.12, P = 0.001), number of MCRFs >3 (OR = 1.17, P = 0.001), OPG per 125.5 pg / mL (OR = 1.11, P = 0.001), and HOMA-IR per 0.65 mmol/L × μU/mL (OR = 1.06, P = 0.001). Osteoprotegerin (OPG) and hs-C-reactive protein (hs-CRP), significantly improved the predictive model based on T2DM + number of multiple cardiovascular risk factors (MCRFs) >3 for both subsets of EPCs. Among patient study population for category-free NRI, 5% of events and 11% of non-events were correctly reclassified by the addition of hs-CRP and OPG to the base model for decreased absolute number of circulating EPCs labeled CD14+CD309+. Therefore, 6% of events and 14% of non-events were correctly reclassified using category-free NRI for depleted CD14+CD309+Tie2+ EPCs

Conclusions: In conclusion, we suggest that inflammatory biomarkers (hs-CRP, OPG) could be a predictor for decreased CD14+CD309+ and CD14+CD309+Tie2+ EPCs among dysmetabolic patients after myocardial infarction.

P615

CT-IGFBP-4 as a novel biomarker for long-term prognosis in patients with chest pain Mercodia (Uppsala, Sweden)

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Background: Pregnancy associated plasma protein A (PAPP-A) is related to atherosclerotic plaque activation, but several physiological and methodological issues preclude its use in CP patients. PAPP-A cleaves Insulin Growth Factor Binding Protein-4 (IGFBP-4) in amino- and carboxy-terminal (CT-IGFBP-4) fragments; accordingly, IGFBP-4 fragments have been suggested as additional biomarkers in this setting.

Purpose: To investigate the prognostic role of CT-IGFBP-4 in patients with CP, with or without ACS and its kinetics.

Methods: 68 patients with CP, but not ST-elevation in the electrocardiogram were sampled at admission and 1, 2 and 4-6h later. High-sensitivity troponin T (hs-cTnT) and CT-IGFBP-4 (by a research-use-only ELISA) were measured. Patients were followed during 2 years and major cardiovascular events (MACE) –defined as angina, myocardial infarction, need of revascularization or cardiac death– were registered.

Results: ACS was ruled-out in 42 patients (non-ACS), whereas 16 were diagnosed as unstable angina (UA) and 10 as non ST-elevation myocardial infarction (NSTEMI) by clinical, ECG and hs-cTnT data. 34.3% of patients were female and mean (\pm SD) age was 68 ± 14.1 years. History of cardiovascular risk factors or cardiac disease, body mass index and calculated glomerular filtration rate (eGFR) did not differ among different subgroups.

As expected, median hs-cTnT concentrations at admission differed among diagnostic groups (non-ACS=9; UA=15, NSTEMI=52 ng/L; $p=0.003$), however CT-IGFBP-4 concentrations did not differ among the different groups. CT-IGFBP-4 did not show kinetics in serial sampling and was correlated with age ($p<0.01$), sex ($p=0.011$) and eGFR ($p<0.01$).

In the follow-up, there were 8.8% MACE at 6-months and 13.2% and 22.0% at 1- and 2-years, respectively. A basal CT-IGFBP-4 value of 53 μ g/L was predictive of adverse outcomes at the 2-y follow-up (73% sensitivity, 68% specificity, AUC ROC 0.711, $p=0.014$); 73.3% of MACE occurred in patients with basal CT-IGFBP-4 >53 μ g/L (Figure 1). However, CT-IGFBP-4 values lost their prognostic power when age, gender, diabetes, smoking status, eGFR or previous coronary disease with revascularization were added in a multivariable analysis.

Conclusions: When considered alone, the admission CT-IGFBP-4 concentration was a prognostic marker of MACE

in CP patients without STEMI. When coexisting risk factors or cardiac previous conditions were included in the analysis, IGFBP-4 lost its prognostic power. These data, obtained in a small group of patients should be cautiously considered and require further addressing in larger populations.

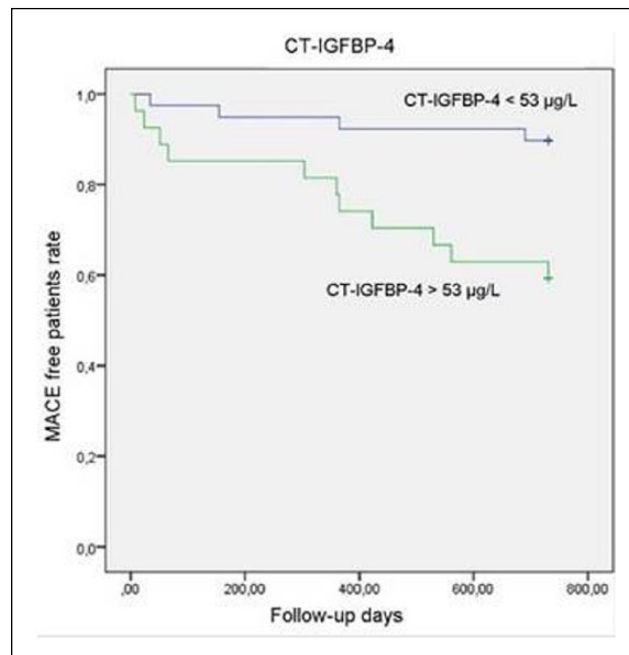


Figure 1. Kaplan-Meier survival curve

P616

Delta troponin plus decision limits for the confirmation and exclusion of myocardial infarction using contemporary and high sensitive assays

UK Health Technology Assessment Program

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Objective: To examine the impact of a combination of a delta troponin with different decision limits for the rapid confirmation or exclusion of myocardial infarction (MI).

Methods: The study was a sub study of the point of care arm of the RATPAC trial (Randomised Assessment of Treatment using Panel Assay of Cardiac markers), set in the emergency departments of six hospitals. Prospective admissions with chest pain and a non-diagnostic electrocardiogram were randomised to point of care assessment or conventional management. Blood samples were taken on admission and 90 minutes from admission for measurement of a panel of cardiac markers. An additional blood sample was taken at admission and 90 minutes from admission, separated and the serum stored frozen until subsequent analysis. All patients

were followed up to 30 days for major adverse cardiac events (MACE). Samples were analysed for cardiac troponin I (cTnI) by the Stratus CS (CS), range 30-50,000 ng/L 10% CV 60ng/L 99th percentile 70 ng/L; the Beckman AccuTnI enhanced (B) (Access 2, Beckman-Coulter) range 1 - 100,000 ng/L, 10% CV 30 ng/L, 99th percentile 40 ng/L, the Siemens Ultra (S), range 6 - 50,000 ng/L, 10% CV 30 ng/L 99th percentile 50 ng/L. and cardiac troponin T (cTnT) by the Roche high sensitivity cardiac troponin T assay hs-cTnT (Elecsys 2010, Roche diagnostics), range 3 - 10,000ng/L, 10% CV 13ng/L, 99th percentile 14 ng/L. The universal definition of myocardial infarction utilising laboratory measurements of cardiac troponin performed at the participating sites together with measurements performed in a core laboratory was used for diagnosis. Myocardial infarction was diagnosed by the combination of a delta troponin plus a value exceeding the 99th percentile. Myocardial infarction was excluded when all values fell below the limit of detection of the assay and there was no delta troponin. All other patients were classed as non-diagnostic.

Results: Samples were available from 617 /1132 patients enrolled in the study, 357 male age 23.7-92.8 years median 53.8 years. Both samples remaining below the detection limit of the assay with no delta change excluded myocardial infarction in 99.8% of cases and was associated with a MACE rate of 0.2-0.3%, all of which were readmissions with acute coronary syndrome. Confirmation of MI, though improved was only 85.7-87.5%.

Conclusion: In low risk chest pain patients, troponin below the limit of detection measured with a sensitive or contemporary sensitive assay without a delta change identified a very low risk group who can be considered for immediate further investigation or discharge.

P617

Evaluation of the clinical significance of high-sensitive cardiac troponin T versus contemporary troponin T assays in patients presenting with symptoms of acute coronary syndrome

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Background: The high-sensitive (Hs) cardiac troponin T (TnT) assays were introduced into the clinical practice in emergency departments in the region of Southern Denmark in 2013. Hs cardiac troponins are preferred biomarkers of cardiomyocyte necrosis. However, the clinical implications of very low-level increases has been widely debated, as Hs cardiac troponins at some level can be detected even in healthy individuals.

Purpose: The aim of this study was to comparatively describe patients with chest discomfort admitted to the acute coronary ward according to the HsTnT levels. The cutting-off point was the HsTnT value of 50 ng/L, reflecting the transition from older TnT assays to Hs troponin assays. Patients were allocated to the 'HsTnT group', if the TnT measurement at admission was ≥ 14 and < 50 ng/L and to 'conventional TnT group', if TnT ≥ 50 ng/L. Data on demographic characteristics, comorbidity, ECG changes, echocardiography findings and results of coronary angiography (CAG) were analysed.

Methods: Data from hospital admissions from 1. April to 30. September 2013 were collected. The total of 753 consecutive patients presenting with symptoms of acute myocardial infarction to the emergency department were enrolled and eligible for statistical analyses. Inclusion criteria was: age > 18 years and measurement of at least two HsTnT-values.

Results: The total of 481 patients met the inclusion criteria. Of these, 261 patients (54%) had a HsTnT-value ≥ 14 ng/L including the Hs-TnT group (n=161, 62%) and the conventional TnT group (n=100, 38%). TnT elevation was related to: coronary disease in 15% (n=24), to non-coronary cardiac cause 43% (n=70), and to non-cardiac cause 42% (n=67) in the HsTnT group, respectively: 46% (n=46), 20% (n=20) and 34% (n=34) in the conventional TnT group.

The demographic characteristics were not significantly different. There was no significant difference concerning comorbidity, apart from male patients with elevated serum creatinine (p=0,046). The results of CAG (n= 71) were similar in both groups, as well as echocardiographic findings of LVEF of 51% (SD=13,5) in 106 patients in the HsTnT group and 46% (SD=14,2) in 77 in the conventional TnT group. The subgroup analysis revealed a difference in CAG outcome: patients, who had non-coronary cardiac cause of TnT elevation and were allocated to the HsTnT group had more frequently disease of coronary arteries (p=0,045).

Conclusion: We evaluated the clinical significance of low-level versus contemporary increases in Hs cardiac TnT in setting of acute coronary syndrome. The study population was found homogenous. Interestingly, no statistically significant difference was found regarding the pathology of coronary arteries segments examined by CAG, nor regarding the impairment of left ventricle systolic function. Furthermore, the statistically different CAG findings in the subgroup analysis are a hypothesis generating and can be assessed in future studies.

P618

High-sensitivity troponin I assay in patients with chest pain: correlation between significant coronary lesions with or without renal failure

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Background: Use of high-sensitivity troponins have been increased in all world. Besides its better sensitivity compared with conventional troponins, the specificity became lower, mainly in patients with renal failure.

Purpose: To analyze the correlation between significant coronary lesions and values of high-sensitivity troponin I in patients with chest pain with (group I) versus without (group II) renal failure.

Methods: This was an observational, retrospective and unicentric study with 991 patients (184 in the group I and 807 in the group II) included between May 2,010 and May 2,015. Significant lesions were defined as coronary lesions higher than 70% occluded in coronary angiography. Renal failure was defined when creatinine was > 1.5 mg/dL. Troponin assay was ADVIA Centaur TnI-Ultra with 99th percentile if > 0.04 ng/dL. Statistical analysis was made by ROC curve calculating the area under the curve (AUC) and the cut-off score of the relation between value of troponin and significant coronary lesion. Confidence interval used was 95%.

Results: About 52% were male and the median age was 63 years. In general, AUC was 0.685 (CI 95% [0.65 – 0.72]). In group I and group II, AUC were 0.703 (CI 95% [0.66 – 0.74]) and 0.608 (CI 95% [0.52 – 0.70]), respectively. The cut-off scores were 0.605 ng/dL (sensitivity = 63.4% and specificity = 67%) in general population, 0.605 ng/dL (sensitivity = 62.7% and specificity = 71%) in group I and 0.515 ng/dL (sensitivity = 80.6% and specificity = 42%) in group II. In general population the value of 0.05 ng/dL (immediately higher than the 99th percentile) showed sensitivity = 93.7% and specificity = 23%. In group II, the specificity of 67% was obtained with troponin = 1.58 ng/dL.

Conclusions: In this study, high-sensitivity troponin I showed good correlation with significant coronary lesions when higher than 0.605 ng/dL. In patients with renal failure, we observed important decrease in specificity.

P619

Interleukin-12 serum level may possess clinical and prognostic value in patient with STEMI

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Aim: to study clinical and prognostic value of various inflammation markers in patients after ST-segment elevation

myocardial infarction (STEMI). We recruited 214 patients who were admitted within 24 hours of STEMI onset to a Research Institute for Complex Issues of Cardiovascular Diseases in 2013. Cytokine (IL-1 α , -6, -8, -10, -12, and TNF- α) and C-reactive protein (CRP) serum levels have been measured by enzyme-linked immunosorbent assay (ELISA) in all patients on the 10-14th day after STEMI onset. The serum levels of IL-12, TNF- α , and CRP have been significantly increased along with the number of affected coronary arteries. Statistically significant associations of cytokine serum levels with severity of polyvascular disease (PVD) have been found regarding IL-6 and IL-12 serum level. Using stepwise logistic regression, we have found that >50% coronary stenosis has been significantly associated with age \geq 53 years (OR=1.4, p<0.01) and IL-12 serum level \geq 87.1 pg/mL (OR=1.6, p<0.01) whilst >50% stenosis of extracranial arteries (ECA) or lower extremity arteries (LEA) has been significantly associated with age >65 years (OR=3.3, p<0.01) and IL-12 serum level \geq 108.8 pg/mL (OR=3.2, p<0.01). However, only Killip class II-IV at admission and IL-12 serum level >90.0 pg/mL have been defined as the statistically significant predictors of adverse STEMI outcome after 1 year of follow-up. We suggest that IL-12 serum level measured 10-14 days after STEMI onset can be a valuable clinical marker of PVD and coronary atherosclerosis severity, and it may assist in predicting adverse STEMI outcomes after 1 year of follow-up.

P620

Plasma catestatin predicts all-cause and cardiac death of heart failure patients

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Background: Catestatin (CST) is a fragment of chromogranin A with a broad spectrum of activities in cardiovascular system. We have noticed that level of plasma CST increased in chronic heart failure patients. And plasma CST gradually increased in patients from NYHA class I to class IV. Thus CST might be a novel biomarker in heart failure. However, the potential relationship of plasma CST and adverse prognosis of patients is unknown.

Purpose: The aim of this study is to investigate the potential prognostic predictive ability of plasma CST in heart failure patients. Our hypothesis was that elevated plasma CST might be an indicator of adverse prognosis of heart failure.

Methods: We measured baseline plasma CST with enzyme-linked immune-sorbent assay in 202 heart failure patients admitted in our center. These patients were followed up for a mean 52.5 months by visiting or telephone contact to

acquire major cardiac adverse events. We focused on the two major events, i.e. all-cause deaths and cardiac deaths. The relationship between baseline plasma CST level and occurrence of these events were analyzed.

Results: There were 59 cases of all-cause deaths at the end of follow-up, and among them included 49 cases of cardiac deaths. The levels of plasma CST were higher in patients with all-cause death and cardiac death than in survivors (1.06(0.66-1.82) ng/ml vs. 0.75(0.58-1.12) ng/ml, $p=0.005$; and 1.18(0.69-1.83) ng/ml vs. 0.75(0.58-1.12) ng/ml, $p=0.002$, respectively). In univariate COX regression, higher plasma CST predicted increased risk of all-cause and cardiac death, the hazard ratio (HR) was 1.81 (95% CI, 1.39-2.36, $p<0.001$) and 1.89 (95% CI, 1.43-2.50, $p<0.001$), respectively. In multivariate COX regression, after adjusted for covariates including age, gender, plasma BNP level, NYHA function class and LVEF, increased CST concentration remained as an independent risk factor for cardiac death (HR=1.52, 95% CI: 1.02-2.25, $p=0.039$). For all-cause death, it had marginally significance (HR=1.43, 95%CI: 1.00-2.05, $p=0.051$). The new risk-predictive model with CST as a parameter showed superiority over the old one for both outcomes with ANOVA and likelihood ratio test ($p=0.008$ and $p=0.04$ respectively). Concurrent elevation of plasma BNP and CST predicted the highest risk for both all-cause and cardiac deaths (HR=5.18 (95% CI: 1.94-13.87, $p=0.001$) and HR=9.19 (95% CI: 2.75-30.78, $p<0.001$)).

Conclusions: Plasma CST predicted all-cause and cardiac deaths in heart failure patients. Large-scale studies are needed to verify the value of plasma CST in predicting prognosis of heart failure.

P621

Relationship between fibrinogen levels with severity of coronary artery disease assessed by angiographic Syntax score

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Introduction: The first prospective study to show an association between fibrinogen levels and subsequent cardiovascular disease risk was the Gothenburg Heart Study from Sweden in 1984. However, its relationship to expansion of coronary artery disease remains unclear.

Objectives: To assess the relationship between plasma fibrinogen levels with severity of coronary atherosclerosis in patients with stable coronary artery disease (CAD).

Methods: We evaluated 246 patients, 198 men (79.8%) and 50 women (20.2%) with stable coronary artery disease. 60.5% patients had previous myocardial infarction. In all

subjects fibrinogen levels were determined and the results were compared to 24 healthy age and sex matched controls. Patients were all submitted to coronary angiography and CAD severity was evaluated by Syntax score.

Results: Mean value of fibrinogen levels in CAD patients was 4.01 ± 0.83 g/l comparing to 3.28 ± 0.44 g/l in healthy subjects ($p=0.001$). Patients with single vessel CAD had average fibrinogen value 3.92 ± 0.85 g/l while patients with established multivessel disease had mean value of serum fibrinogen 4.14 ± 0.84 g/l ($p=0.053$). Serum fibrinogen levels showed significant correlation to Syntax score (Pearson's correlation coefficient 0.152, $p=0.02$) **CONCLUSION:** Serum fibrinogen levels were significantly related to severity of CAD assessed by angiographic Syntax score in our study group. Inflammation determined by simple markers constitute grounds of atherosclerosis.

P622

The role of oxidative stress and inflammation for microvascular disease and obstructive coronary artery disease

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The clinical significance of inflammation (resistin, hs CRP) and oxidative stress (8-isoprostanes) for microvascular disease (MVD) and obstructive (CAD) is still elusive.

Our aim is to determine the role of inflammation and oxidative stress as independent markers for MVD and obstructive CAD.

The study included 112 consecutive patients (40 with obstructive CAD; 35 with MVD and 37 healthy controls). All of them underwent coronary angiography. Adenosine test was executed in those without obstructive CAD. Markers for inflammation (hsCRP, resistin) in plasma and oxidative stress (8-isoprostanes) in urine were measured. The correlations of all these indices with obstructive CAD and MVD were studied.

8-isoprostanes showed statistically significant difference ($p<0,005$) between patients with MVD, obstructive CAD and healthy controls. The highest values of 8-isoprostanes were detected in patients with MVD. hsCRP, resistin were found to be statistically different ($p<0,005$) between healthy controls and patients with obstructive CAD, but similar in patients with MVD and obstructive CAD ($p>0,005$).

The markers for inflammation (hs CRP, resistin) can be used in the diagnostic panel for both: obstructive CAD and MVD. However, the marker for oxidative stress (8-isoprostanes level) could be of key importance for the pathogenesis of MVD and its early detection.

P623

Urine NGAL predicts poor short-term outcomes in patients with acute kidney injury and decompensated heart failure

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Objective: Acute decompensated heart failure (ADHF) is one of the leading causes of hospitalization worldwide. The development of acute kidney injury (AKI) is associated with poor outcomes. There is a strong need to detect AKI before the rise in serum creatinine (SCr). The aim of the study was to determine the AKI in patients with ADHF, to evaluate the association of urine neutrophil gelatinase associated lipocalin (uNGAL) with changes in kidney function and outcomes.

Methods: in 51 patients with ADHF (18 male, 70.3±9.1 years (M±SD), 92% arterial hypertension, 56% ischemic heart disease, 67% myocardial infarction, 67% atrial fibrillation, 27% diabetes mellitus, known chronic kidney disease 33%) levels of SCr and uNGAL were determined on admission. AKI was defined using 2012 KDIGO Guidelines. Patients with AKI were classified into three groups on the basis of their levels of SCr and uNGAL. Mann-Whitney and multiple logistic regression analysis were performed. $P < 0.05$ was considered statistically significant.

Results: 53% of patients developed AKI. Patients with AKI compared with patients without AKI had higher SCr (188.8±94.3 vs 114.5±50.2 μmol/l, $p < 0.001$) and uNGAL (203.3±270.7 vs 11.4±5.6 ng/ml, $p = 0.001$). Urine NGAL >184.3 ng/ml (odds ratio 3.85; 95% confidential interval 2.4-6.1) was determined to be significant and independent factor for development of AKI. Of 27 patients with AKI 48% had isolated SCr criteria of AKI [NGAL(-)/SCr(+)], 15% - isolated increase of uNGAL [NGAL(+)/SCr(-)] and 37% - both SCr criteria of AKI and increase of uNGAL [NGAL(+)/SCr(+)]. Patients with NGAL(-)/SCr(+) compared with patients NGAL(+)/SCr(-) or NGAL(+)/SCr(+) demonstrated better short-term outcomes: the 30-days mortality 0% vs 100% ($\chi^2 = 17.00$, $p < 0.001$) and 0% vs 50% ($\chi^2 = 8.31$, $p < 0.01$). Patients with AKI and NGAL(+)/SCr(-) or NGAL(+)/SCr(+) compared with patients without increase of uNGAL demonstrated worse short-term outcomes ($\chi^2 = 17.00$, $p < 0.001$ and $\chi^2 = 8.31$, $p < 0.01$). All patients with AKI and NGAL(+)/SCr(-), 50% of patients with AKI and NGAL(+)/SCr(+) died in 30 days. There were no deaths in 30 days in patients with AKI without uNGAL increase.

Conclusions: 53% of patients admitted to the hospital with ADHF developed AKI. Level of uNGAL >184.3 ng/ml in patients with AKI is associated with higher risk of 30-days mortality. The use of uNGAL might be useful for the clinician to suspect the subgroup with high risk of poor outcomes in patient population with ADHF and AKI.

Cardiac surgery

P624

Acute coronary syndromes in patients with a history of coronary artery bypass graft surgery

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Introduction: Coronary revascularization surgery (CABG) confers an indisputable benefit in reducing morbidity and mortality in patients with ischaemic heart disease. However, currently the patients undergoing CABG present an increasing complexity. Thus, the acute myocardial infarction presents an annual incidence of 3-8% in this population of patients and the existence of CABG is pointed to by some studies as an independent Predictor of mortality in patients with Acute Coronary Syndrome (ACS).

Goals: Assess what are the predictors of hospitalization and mortality to 1 year in the patients admitted with ACS and previous CABG, in a cardiology department.

Methods: We performed a retrospective, descriptive and correlational study, encompassing all patients admitted by ACS with history of CABG in a cardiology department, during the period between 1st October 2010 and 31st August 2014. An one year follow-up was done, by appointment or telephone contact. Then, we performed an univariate and multivariate analysis of the possible factors related to death and hospital readmission in the first year.

Results: In this period, 2814 patients with ACS were admitted, 157 (5.6%) of whom had CABG history. Among these, the follow-up was possible in 106 (67.5%).

Relatively the subgroup of followed-up patients, 81 (76.4%) were male and 25 (23.6%) were female, with an average age of 70.7 years and left ventricular ejection fraction (LVEF) of 53.9%. The one year mortality rate was 13.2% (14 patients) and hospital readmission of 30.2% (32 patients).

The factors associated with mortality were the older age ($p = 0.022$), history of myocardial infarction ($p = 0.038$), significant valvular disease ($p = 0.040$), heart failure ($p < 0.01$), chronic kidney disease ($p = 0.014$), chronic obstructive pulmonary disease ($p = 0.029$) and significant bleeding ($p < 0.01$), absence of prior therapy with acetylsalicylic acid ($p = 0.011$) and inhibitors of angiotensin converting enzyme ($p = 0.010$), coronariography ($p < 0.01$) or angioplasty not performed ($p < 0.01$) and the lower LVEF ($p = 0.025$). There were no independent predictors of death.

The factors associated to the hospital readmission were peripheral arterial disease ($p = 0.027$), prior therapy with nitrates ($p = 0.037$) and reduced LVEF ($p < 0.01$). The prior therapy with ivabradine was an independent predictor of hospital readmission ($p = 0.045$) in this population.

Conclusions: In patients with CABG history admitted by SCA, the prior therapy with ivabradine was an independent predictor of hospital readmission. We didn't find independent predictors of death in these patients.

P625

An ultraviolet air sterilizer, can it be reduced the rate of infections in patients underwent to cardiac surgery?

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Introduction: Nosocomial infections represent the most common postoperative complications in the intensive care unit (ICU) associated with longer hospital stay, higher mortality rates, and increased healthcare costs. Pathogens are transmitted by the direct contact person-to-person, with the skin, clothes, or when manipulating instruments and medical devices, and through the air. When surfaces have not been successfully disinfected pathogens can survive. Several studies have demonstrated that standard cleaning methods are currently ineffective. Novel disinfection technologies, based on hydrogen peroxide vapor, ozone mists, or ultramicrofiber cloths, have emerged to solve this situation.

Purpose: The objective was to evaluate the impact of an ultraviolet air sterilizer (UVAS) on clinical outcomes of patients, who underwent to cardiac surgery, in the ICU.

Methods: We designed a prospective, comparative, randomized, and non-interventional study. 1097 patients underwent to cardiac surgery were included, 522 and 575 stayed in an ICU room with and without the UVAS, respectively.

Results: The mean age was 68.3±11.1 years and 67.4% was male. The principal comorbidities were hypertension (50.2% of total) and diabetes (21.3%). EuroSCORE was similar between groups, 6.90±6.1 points in patients with the UVAS and 7.02±3.8 points in those without it. Sepsis occurred in fewer patients with the UVAS (3.4% of total) than without it (6.7%; P = 0.02). VAP was slightly lower in patients with the UVAS but not statistically significant. The length of stay in the ICU and at the hospital was similar in both groups. The 30-day in-hospital mortality rate was significantly lower in patients with UVAS. Kaplan-Meier survival analysis revealed that the percentage of survival was different between patients with the UVAS without it (Log rank=3.880; P = 0.049)

Conclusión: Novel UV-C technology has demonstrated its effectiveness in reducing the incidence of sepsis in cardiac surgery patients during his period in the ICU and contributed to decrease the 30-day mortality rate. This technology, in concurrence with standard methods, should be included in the routine for the prevention of nosocomial infections.

P626

Can we use cardiac biomarker to predict low cardiac output syndrome after open heart surgery?

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Purpose: We aimed our study on prognostic significance of cardiac biomarker in prediction of development of low cardiac output syndrome after open heart surgery in patients with severe compromised ischemic and non-ischemic left ventricle (LV).

Methods: In prospective study were included 173 patients with severe depressed LV function (EF < 35%). Cardiomyopathy was confirmed as idiopathic in 42 patients (mean age 44,4±9,9 years) or developed due to coronary artery disease in 131 patients (mean age 62,2±4,9 years). Isolated mitral-valve repair or chordal-sparing mitral valve replacement (47 patients) or combined coronary artery bypass grafting with mitral valve procedure (126 patients) were performed. Blood samples for measurements of cardiac biomarkers (sST2, NT-proBNP, hs-cTnI and hs-CRP) were collected preoperatively, on 1st, 7th and 30th postoperative days. The primary end point was complicated postoperative period due to low cardiac output syndrome (duration of isotopes more than 24 h, intra-aortic balloon pump using, temporary VAD application or hospital mortality).

Results: Cardiac-related complications were observed in 64 patients (37 % of cases) during postoperative period. Before surgery only level of sST2 was significantly higher in patients with low cardiac output syndrome postoperatively (86,9 (49,4-113,1) vs. 25,3 (19,8-35,8) respectively, p = 0,001). While no difference were found in NT-proBNP (2000 (427-6577) vs. 1200 (870-2169), p = 0,422) and hs-cTnI (0,015 (0,005-0,035) vs. 0,01 (0,005-0,019), p = 0,522) between patients with complicated or not postoperative period. In ROC-analysis combined Echocardiographic dates and biomarker's profile AUC was also highest for preoperative sST2 level – 0,852 (95% CI 0,691-1,014, p = 0,02). The best cut-off value of the preoperative sST2 level was 45 ng/ml. That value showed a sensitivity of 81,81% and specificity of 93,75% in predicting the low cardiac output syndrome postoperatively. On logistic regression

analysis, a sST2 level higher 45 ng/ml was identified as independent predictors for cardiac-related complication after open heart surgery (OR = 5,345 (95% CI 3,6-9,78, $p = 0,01$).

Conclusions: Our results demonstrated that before surgery only level of sST2 compared with NT-proBNP and hs-cTnI can be used to identify patients with depressed LV function at increased risk of postoperative complicated period. It is necessary to perform combined prognostic scale of risk for more accurate prediction of cardiac complication after open heart surgery.

P627

Combination of biomarkers, a useful tool to predict infections in cardiac surgery patients

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Background: Sepsis is a well known complication associated with increased risk of postoperative mortality in cardiac surgery patients, longer length of hospital stay, and elevated health-care costs. Early clinical symptoms overlap with those of systemic inflammatory response syndromes, common responses occurring after cardiac surgery with cardiopulmonary bypass. The combination of biomarkers has been demonstrated to improve the prediction of postoperative infection.

Purpose: The aim of this study was to test whether or not the combination of different biomarkers is able to predict postoperative infection in cardiac surgery patients in the immediate postoperative period.

Methods: We designed a prospective and observational cohort study involving 423 patients who underwent cardiac surgery with a cardiopulmonary bypass. Patients were classified into two groups depending on whether or not they developed severe sepsis or septic shock during the postoperative period. We analysed the combination of C-reactive protein (CRP), white blood cells (WBC), and procalcitonin (PCT) as the main biomarkers.

Results: WBC and PCT median values were significantly higher in patients with infection than without during the first 10 postoperative days. Exceeding ≤ 3 times (OR 4.058; 95%CI 2.206–7.463; $p=0.001$), and >3 times (OR 10.274, 95%CI 3.690–28.604; $p<0.001$) the median value of PCT (1.7 ng/mL) and/or WBC (13,000 cells/mm³) at

the 2nd postoperative day during the first 3 postoperative days was significantly associated with development of infection.

Conclusions: The combination of PCT and WBC levels over the first 3 postoperative days is able to predict postoperative infection at least within the 30 days following cardiac surgery. We used a large cohort of cardiac surgery patients making these findings more representative in this profile of patients.

P628

Effect of body weight on the outcome of ventricular septal defect repair

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Background and aim: Low body weight and failure to thrive (FTT) often are considered limiting factors for open heart surgery. The purpose of our study is to assess the impact of FTT on ICU outcome of children undergoing Ventricular septal defect repair.

Methods: We conducted a retrospective chart review analysis of all children less than 2 years who had VSD closure by open heart surgery during the period 2002-2010. Children were divided into 2 groups based on their weight for age using standard growth charts. Those with normal or mild failure to thrive (Z score > -3) are labeled as group A. group B included all children with severe failure to thrive (Z score ≤ -3). Both groups were compared in term of bypass time, cross clamp time, ventilation hours, duration/number of inotropes needed, major ICU complications, length of ICU stay and mortality.

Results: 145 patients underwent open heart surgery for VSD closure during the study period. There were 58 cases in group A and 87 patients in group B. The age and weight in group A was (8 ± 5.16 months) and (6.31 ± 1.75 kg) respectively. The age and weight in group B was (7.6 ± 3.9 months) and (4.84 ± 1.12) kg respectively. There were no significant differences between the 2 groups in term of bypass time, cross clamp time, ventilation hours, ICU length of stay, and major complications, there was no mortality in either group.

Conclusion: Failure to thrive can complicate congenital heart diseases (CHD) associated with significant left to right shunt and heart failure. We found that presence of FTT was not associated with increase in ICU morbidity or mortality in children undergoing VSD closure. Attempt to optimize the body weight for age in children with CHD may not add any beneficial advantages in term of surgical risk or postoperative ICU outcome.

P630

Levosimendan and hypothermia on fibrillating heart for re-redo mitral valve surgery in patients with severe left ventricular dysfunction

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Background: Mitral valve (MV) surgery in patients with previous cardiac surgery and severe impaired left ventricular function carries a high risk. This subset of patient represents a challenge for every surgical team because of cardiopericardial adhesions, the surgical related difficulties and more advanced pathology, especially with regard to postoperative low cardiac output syndrome. Preserving heart function during cardiac surgery and reduce the operative risk is a major goal. Optimal surgical treatment and perioperative use of inotropes and vasopressors remains controversial. Neither is the use of an IABP or left ventricular assist device risk-free. Our cardiac surgery team proposed this strategy: perioperative treatment with levosimendan, right thoracotomy approach on hypothermic fibrillating heart.

Methods: Fifteen consecutive patients with previous multiple surgical heart procedures underwent MV operations through right anterolateral thoracotomy. In two patients the native MV regurgitation was ischemic and in four infective, in three patients there was a deterioration of previous prostheses, in six patients there was a paravalvular leak, of which three for endocarditis.

A total of 6 patients had functioning internal mammary artery graft and 5 vein graft. Mean age was 70 years \pm 9 (range 41 to 83 years). All had severe mitral regurgitation and severe left ventricle impairment (mean preoperative EF \leq 25%), NYHA function was III or IV and pulmonary capillary wedge pressure was more than 18 mm Hg, while median logistic Euroscore was 37. Patients were admitted to the cardiovascular intensive care unit 12 h before surgery and started levosimendan 0.5 μ g/kg followed by a continuous 24h infusion after surgery

Results: Patients underwent femoro-femoral cardiopulmonary bypass when feasible. If the right femoral artery was not suitable, the ascending aorta and a femoral vein, in adjunct to superior vena cava when useful, cannulation was used. After deep hypothermia to 25°C rectal temperature and without aortic clamping, the MV was approached in the usual fashion. The cardiopulmonary flow was reduced to 1.6 l/min/m², with short period of circulatory arrest to obtain better surgical exposure. MV

replacement was required in 13 patients, while 2 had repair of paravalvular leak. There was one hospital death while the other were discharged to a rehabilitation facility. Two patients suffered respiratory failure requiring tracheotomy and one dialysis.

Conclusions: Re-redo MV surgery represents a very challenge for decision making, especially in the setting of depressed myocardial function. Patient-related factors still contribute to the added relative risk compared to first-time operations. With an organized approach that involves refinements in surgical technique, perfusion strategies, anesthetic and perioperative management these operations have been made faster and safer, despite a much higher patient risk profile.

P631

Prediction of the acute kidney injury in cardiac surgery patients

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Introduction: Acute kidney injury (AKI) is a frequent and severe complication after cardiac surgery and is associated with increased mortality and morbidity, intensive care unit and in-hospital stay, risk of infection and hospitalization cost.

Purpose: The aim of this study was to analyse AKI risk factors from the preoperative and intraoperative period and adding organ function assessment variables obtained in the early postoperative period in the intensive care unit for predicting AKI risk.

Methods: We designed a prospective open cohort study carried out in a level III health care medical center. All patients (\geq 18 years) with normal renal function, scheduled for CABG and/or valve surgery were included. Transplant patients, patients with any degree of renal insufficiency, those who died in the first 24 hours after the surgery, and patients undergoing off-pump cardiac procedures were excluded. Patients were classified as having AKI based on the RIFLE criteria. Patients who met the RIFLE criteria for AKI (Risk, Injury and Failure) were classified as 'AKI,' whereas those who did not were classified as 'NON-AKI.'

Results: We studied a total of 1024 patients, developing AKI 137 (16.9%). The AKI group more frequently showed a medical history of atrial fibrillation, diabetes, pulmonary hypertension, poor mobility, recent myocardial infarction,

endocarditis, arteriopathy, lower left ventricular ejection fraction and had longer cardiopulmonary by-pass (CPB) and aortic cross-clamping time. An ROC analysis was performed for each one of these variables identified in the univariate analyses, with estimation of the AUC and 95% CI. AKI risk was directly correlated with ICU creatinine (odds ratio [OR], 9.66; 95% CI, 4.77-19.56), EuroSCORE I (OR, 1.40; CI, 1.29-1.52), ICU lactate (OR, 1.03; CI, 1.01-1.04), and CPB time (OR, 1.01; CI, 1.01-1.02).

Conclusion: Strategies for the prevention of AKI in cardiac surgery patients must consider identification of high-risk patients, because the early postoperative period is the best time to apply a cardiac surgery-specific risk due to the influence of intraoperative variables in the clinical course of these patients.

Circulatory support

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Activated Clotting Time versus antiXa activity for anticoagulation monitoring during ECMO support: a concordance study

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Background: In refractory cardiorespiratory emergencies, ECMO appears a good alternative to conventional treatment. Its extracorporeal circuit justifies curative anticoagulation explaining haemorrhagic and thrombotic complications. ACT (Activated Clotting Time) is empirically used to assess anticoagulation but seems subject to large inter and intra-individual variability. In practice, antiXa activity dosage is available, to approach anticoagulant effect of heparin and is less expensive, but data under ECMO are missing.

Purpose: We sought to demonstrate the lack of correlation between antiXa and ACT in patients under ECMO support.

Methods: We prospectively include patients supported by ECMO in our institution (CHU, France) between 01/2014 and 04/2015 for circulatory or respiratory support. Anticoagulation was achieved by unfractionated heparin: initial bolus then continuous intravenous infusion (800 to 1200 IU/h), for antiXa target of 0.2-0.4. Concomitant dosing of antiXa (laboratory) and ACT (Hemocron®) was conducted two times a day (8 am and 6pm) on the same sample for all patients Under ECMO.

Relationship between ACT and antiXa was analyzed by Spearman correlation (Rho). After transformation into categorical variables (obtained target=1; outside the target=0) analyzes were completed by a concordance study (Kappa). As recognized on literature ACT's targets were between 180-220.

Results: 65 patients were included: 46 men (72%), median age 55 yo (53-57). Indications were shared between veno-arterial (65%) and veno-venous ECMO (35%). Median duration of ECMO was 5 days (hours-30 days). Spearman correlation test found a low and inconsistent correlation between antiXa and ACT (Rho<0.4) which worsens over time. Kappa analyzed showed no discrepancy between the areas 'targets' of ACT and antiXa confirming the results.

Conclusion: Use of ACT for anticoagulation monitoring during ECMO support doesn't seem appropriate and high price probably justifies the preferential use of antiXa in clinical practice.

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Deep vein thrombosis after venoarterial ECMO, an underdiagnosed complication

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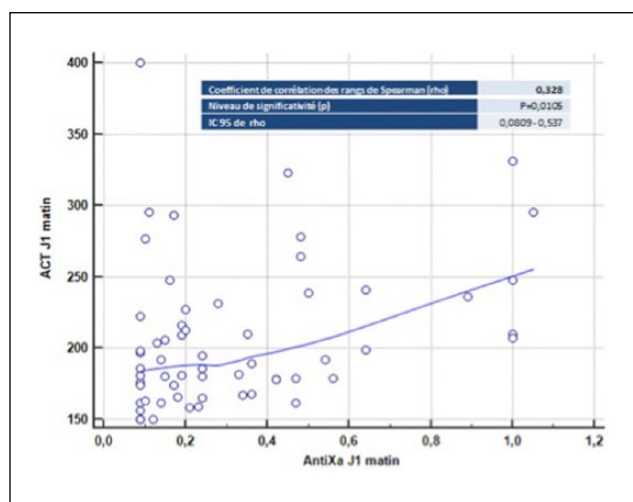
Introduction: Venoarterial ECMO (VA-ECMO) is a circulatory support device used in the treatment of cardiogenic shock. However, this therapy is not without complications. Deep vein thrombosis (DVT) is among them, this is a complication with an unknown incidence and frequently underdiagnosed.

Methods: We collected all patients supported with peripheral VA-ECMO (surgical or percutaneously inserted) in our institution, from 2012 to 2016, that could be decannulated after recovery or after heart transplantation. Then we identified all the cases with clinical or incidental diagnosis of DVT after VA-ECMO therapy.

Results: During the study period we found 17 patients that could be decannulated, 12 of them due to improvement and 5 after heart transplantation. Among them we identified 3 cases of DVT (17.6%) diagnosed clinically or incidentally in an imaging test. Characteristics of these 3 cases were: Age 54±2.8 years-old, Male sex 100% (3), Etiology of the cardiogenic shock was Acute myocardial infarction 66% (2) and Primary graft failure after heart transplantation (1), duration of support 8.6±4.5 days, size of venous cannula was 23F in 66% (2) and 25F in the other case.

Table 1. ACT - antiXa concordance analysis

| Morning | J1 | J2 | J3 | J4 | J5 |
|----------------|----------------------|----------------------|----------------------|-----------------------|----------------------|
| ACT | 192 | 196 | 194 | 196 | 194 |
| Median [IC95%] | [181-200] | [191-204] | [186-201] | [183-210] | [187-207] |
| Anti Xa | 0,21 | 0,25 | 0,18 | 0,21 | 0,21 |
| Median [IC95%] | [0,17-0,34] | [0,20-0,32] | [0,14-0,23] | [0,17-0,25] | [0,16-0,24] |
| Kappa [IC95%] | 0,085 [-0,149-0,320] | 0,082 [-0,150-0,315] | 0,069 [0,172-0,310] | -0,238 [-0,530-0,054] | 0,115 [-0,189-0,419] |
| Evening | | | | | |
| ACT | 195 | 193 | 195 | 196 | 195 |
| Median [IC95%] | [190-205] | [188-200] | [189-197] | [185-204] | [180-199] |
| Anti Xa | 0,23 | 0,19 | 0,17 | 0,22 | 0,19 |
| Median [IC95%] | [0,21-0,30] | [0,13-0,26] | [0,13-0,21] | [0,19-0,26] | [0,14-0,25] |
| Kappa [IC95%] | 0,034 [-0,198-0,267] | 0,093 [-0,113-0,301] | 0,154 [-0,075-0,383] | 0,208 [-0,093-0,509] | 0,062 [-0,283-0,408] |



Conclusion: DVT after peripheral VA-ECMO decannulation in our brief experience had a high incidence (17.6%), though an exhaustive searching was not performed. After these findings we consider very recommendable to carry out a systematic screening of DVT after decannulation.

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Early prediction of 30-days mortality for refractory cardiogenic emergencies supported by ECLS

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Introduction: Extracorporeal life support (ECLS) has taken an important place in the treatment of cardiogenic shock (CS) or refractory cardiac arrest (CA). However, this technique has important consequences and it seems primordial to help our decision with clinical and biological markers with strong prognostic value to identify the best candidates and to improve our management efficiency. The aim of our study was to evaluate prognostic factors of 30-days mortality just before ECLS implantation for CS or CA.

Methods: All patients undergoing ECLS in our tertiary center during a 2-year period (26/12/2013 – 31/12/2015) were prospectively included. Clinico-biological data were collected just before the ECMO implantation. Data were compared between survivors and deceased at one month. Research of 30-days mortality prognostic factors was made by univariate then multivariate analysis with the Cox model. This protocol has been approved by our ethical and institutional research committee (n°11-0214).

Results: 94 patients were included with predominance of males (n=62; 66%) with a mean age of 50 years (17-78). ECMO was implanted for CA in 29.8% of cases (n=28) and for CS in 63.8% of cases (n=60): acute coronary syndrome 33,0% (n=31); myocarditis 10.6% (n=10); acute intoxications 7.5% (n=7). The 30-days mortality was 56.4% (n=53). pH, base excess and a bilateral mydriasis before implantation and the acute coronary syndrome indication are associated with a 30-days mortality in the univariate analysis. Multivariate analysis retains bilateral mydriasis (p=0.0087), arterial lactates rate (p=0.0122) as well as acute coronary syndrome with cardiogenic shock indication (p=0.0039) as significant prognostic markers.

Conclusion: CA and CS are associated with high morbimortality even if invasive support like ECLS are used. In these complex cases, some simple clinico-biological parameters like the presence of bilateral mydriasis and arterial lactates rate before ECLS implantation should call into question the support indication.

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Extracorporeal membrane oxygenation in a cardiac intensive care unit

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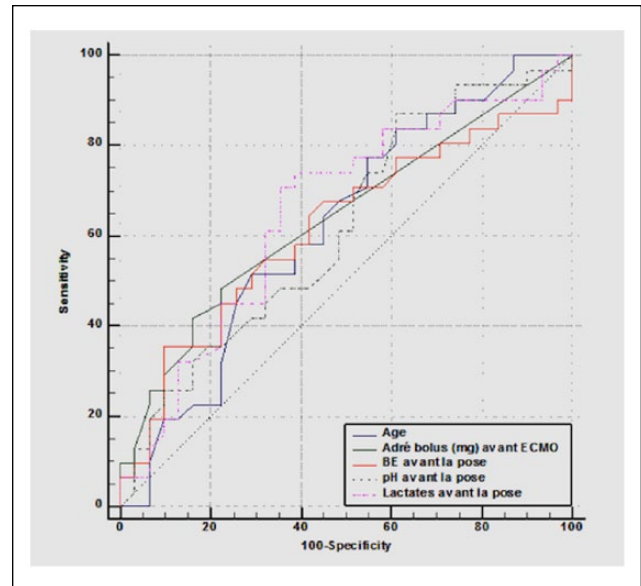
Introduction: Extracorporeal membrane oxygenation (ECMO) has emerged as a useful rescue therapy for the temporary stabilization of patients in refractory cardiogenic shock and circulatory failure. It is a portable and rapidly deployable support method for single or biventricular heart failure, regardless of cause, as a bridge to recovery, definitive intervention, or a more permanent mechanical support solution. In this study, baseline patient characteristics, indications for ECMO support, complications and patient outcomes were analysed.

Methods: We conducted a retrospective, observational cohort study of all consecutive patients supported with ECMO in a cardiac intensive care unit (CICU) of a tertiary hospital, since the first cannulated patient in April 2011 up to April 2016.

Results: Overall 22 patients underwent peripheral ECMO in the CICU: 2 venovenous ECMO (VV ECMO) and 20 venoarterial ECMO (VA ECMO). Average age was 48,8±13,3 years, 54,5% males, 50% were hypertensive, 9,1% diabetic and 54,5% smokers. History of coronary artery disease was present in 13,6% and previous stroke in 9,1%. Nine patients (40,9%) were transferred from another hospital. Eight patients had a cardiac arrest before ECMO support, with an average time of 7,8±6,2 minutes to return of spontaneous circulation (ROSC). Indications for support were: acute myocarditis (31,8%), acute myocardial infarction (22,7%), electrical storm (9,1%), decompensate

Table 1. Significant prognostic markers

| Covariate | P | Risk-ratio | 95%CI |
|------------------------------|--------|------------|------------------|
| Lactates_avant_la_pose | 0,0122 | 1,0967 | 1,0203 to 1,1788 |
| IDM | 0,0039 | 3,0628 | 1,4307 to 6,5569 |
| mydriase_bilat_avant_la_pose | 0,0087 | 2,8715 | 1,3055 to 6,3162 |



ROC curves

terminal heart failure (9,1%), acute respiratory distress syndrome (9,1%), stress cardiomyopathy (4,5%) and miscellaneous aetiologies (13,6%). Median support time was 4,5 days (IQR 2-8,3) and median length of stay in hospital was 12 days (IQR 5,5-17). Six patients had another mechanical support for left ventricular venting: 2 Impella and 4 intraaortic balloon pump. ECMO related complications were seen in 7 patients: 1 major haemorrhage in an arterial cannulation site, 1 subclavian artery stenosis and 5 patients with leg related ischaemia. None of these complications were fatal. Overall, 18 patients (81,8%) were weaned from ECMO, with 3 patients bridged to transplant (just one surviving to discharge), 2 patients to Berlin Heart Excor (not surviving to discharge) and 8 patients (36,4%) surviving to discharge. Survivors had lower creatinine level at CICU admission (1,1 vs 1,6 mg/dL, p=0,036), no use of continuous venovenous hemofiltration (CVVH) (0 vs 38,5%, p=0,034), ECMO not in context of acute myocardial infarction (47,1 vs 100% of mortality, p=0,034) and a faster ROSC after cardiac arrest (2,0 vs 9,7 minutes, p=0,026). At a median follow-up of 30,5 months (IQR 10,0-51,8), 8 of 9 patients that were discharged, were still alive.

Conclusion: ECMO support proved to be safe and effective in this critical group of patients with cardiogenic shock. Creatinine elevation upon admission, renal failure requiring CVVH, ECMO use due to acute myocardial infarction and prolonged cardiac arrest were associated with a worse outcome.

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Extracorporeal membrane oxygenation in circulatory and pulmonary failure: single centre experience

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Introduction: Extracorporeal membrane oxygenation (ECMO) may provide mechanical pulmonary and circulatory support for patients with shock refractory to conventional medical therapy. Advancing ECMO technology and increasing experience with ECMO techniques have improved patient outcomes, reduced complication rates and expanded its potential applications. In this study we intend to describe indications, clinical characteristics, complications and mortality associated with ECMO use in a single tertiary hospital centre.

Methods: We conducted a retrospective, observational cohort study of all patients supported with ECMO in 2 different intensive care units (general and cardiac), since the first cannulated patient in April 2011 up to April 2016.

Results: Overall 40 patients underwent ECMO: 18 venovenous ECMO (VV ECMO) and 22 venoarterial ECMO (VA ECMO). Average age was 49,3±12,5 years, 52,5% males, 35% were hypertensive, 15% diabetic and 45% smokers. Nine patients (22,5%) had a cardiac arrest before ECMO, with a mean time to return of spontaneous circulation, 7,6±5,8 min. The three main reasons for ECMO use were: acute respiratory distress syndrome (ARDS), acute myocardial infarction (AMI) and myocarditis. All patients had peripheral cannulation, and concomitant mechanical support devices were used in a small fraction of patients (4 intra-aortic balloon pump and 2 Impella). During ECMO support, 5 patients had minor cannula site bleeding and 5 patients had leg ischemia, promptly resolved without permanent lesions. On average, 3,6±3,8 units of packed red blood cells were transfused during support. Median support time was 7 days (IQR 3-11) and median length of stay in hospital was 17 days (IQR 9-39). Thirty two patients (80%) were weaned from ECMO; 6 patients were bridged from ECMO to another form of mechanical support (2 patients Berlin Heart Excor) or transplant (4 patients). Twenty patients (50%) survived to discharge. At a median follow-up of 26 months (IQR 10-39,5), 19 of 20 patients that were discharged were still alive.

Conclusion: In this heterogeneous population ECMO was shown to be a safe and effective support to recovery or as a bridge to other strategy.

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Post-heart transplantation outcomes of recipients bridged with the Berlin Heart EXCOR ventricular assist device

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Purpose: The aim of this study was to estimate the outcomes of recipients bridged to transplant with the Berlin Heart EXCOR biventricular mechanical circulatory support.

Methods: From 2010 to May 2016 we heart transplanted 71 recipients (mean age 45±14 yrs, 48 - male, 23 - female). Biventricular assist devices (BIVAD) EXCOR prior HT were implanted in 11 % of them (n=8; mean age – 27±9 yrs; 5 – male, 3 – female; duration on support - 234±80 days). Causes of heart failure (HF) of patients who were bridged to transplant were dilated cardiomyopathy (50 %, n=4), non-compacted myocardium (38 %, n=3) and arrhythmogenic right ventricular dysplasia (12 %, n=1). Mean LVEF was 14,8±4,9 %, TAPSE < 10 mm. Also they had severe tricuspid regurgitation. Pulmonary artery systolic pressure (PASP) was significantly increased (49,5±5,5 mm Hg), the same as pulmonary vascular resistance (PVR) (4,2±0,7 WU). Before HT the presence of anti-HLA antibodies was diagnosed by ELISA test in 37,5 % cases (n=3) with the level of PRA > 30 %. Desensitization treatment was successfully performed. The induction therapy after HT was: basiliximab (75%, n=6), thymoglobulin (25 %, n=2). Also they managed with triple-drug therapy – calcineurin inhibitors, mycophenolic acid and steroids. We estimated results of transthoracic echocardiography (TTE), endomyocardial biopsies (EMB), frequency of rejection, level of PRA and post-transplant complications during their follow-up.

Results: Patients with EXCOR prior HT spent more time in ICU (11,4±3,0 vs. 9,9±0,8; p>0,05) but they were on inotropic therapy the same as others. Right heart failure occurred in 1 case, extracorporeal membrane oxygenation (ECMO) was implanted. Two patients (25 %) died: 1 – in 5 days due to pulmonary embolism, 1 – in 3 months due to infectious complications. According to EMB results during 1st yr significant rejection (R2) was diagnosed in 11% (n=5) cases. All recipients were successfully treated

by IV pulse methylprednisolone therapy. We had 1 incident of AMR1 with no symptoms, anti-HLA antibodies were not detected. After 1 yr of follow-up we did not see the difference of PASP (34,3±4,7 mm Hg vs. 37,5±4,9 mm Hg; $p>0,05$) in both groups of recipients, PVR was normal (2,5±0,8 WU vs. 1,6±0,4 WU; $p>0,05$). One year following HT physical activity and exercise performance improved and returned to normal values (VO₂peak – 18,5±4,5 ml/min/kg; Ve/VCO₂ – 33,0±5,4).

Conclusion: Using VAD is an effective treatment of end-stage HF as a ‘bridge’ to HT. Post-transplant results in group with EXCOR prior HT is comparable with overall recipients.

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Regional tissue oximetry reflects changes in arterial flow in porcine chronic heart failure treated with venoarterial extracorporeal membrane oxygenation

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Introduction: Venoarterial extracorporeal membrane oxygenation (VA ECMO) is widely used in treatment of decompensated heart failure. Excessive flow of VA ECMO is known to increase demands and has negative effects on the work of left ventricle. Our aim was to investigate its

effects on regional perfusion and tissue oxygenation with respect to extracorporeal blood flow (EBF).

Methods: In five swine, decompensated low-output chronic heart failure was induced by long-term rapid ventricular pacing. Subsequently, VA ECMO was introduced and left ventricular (LV) volume, aortic blood pressure, regional arterial flow and tissue oxygenation were continuously recorded at different levels of EBF.

Results: With increasing EBF from minimal to 5 l/min, mean arterial pressure increased from 47 ± 22 to 84 ± 12 mmHg ($P < 0.001$) and arterial blood flow increased in carotid artery from 211 ± 72 to 479 ± 58 ml/min ($P < 0.01$) and in subclavian artery from 103 ± 49 to 296 ± 54 ml/min ($P < 0.001$). Corresponding brain and brachial tissue oxygenation increased promptly from 57 ± 6 to 74 ± 3 % and from 37 ± 6 to 77 ± 6 %, respectively (both $P < 0.01$).

Conclusion: Presented results confirm that VA ECMO is a capable form of heart support. Regional arterial flow and tissue oxygenation suggest that partial circulatory support may be sufficient to supply brain and peripheral tissue by oxygen. Thus, the left ventricle could be spared from excessive afterload.

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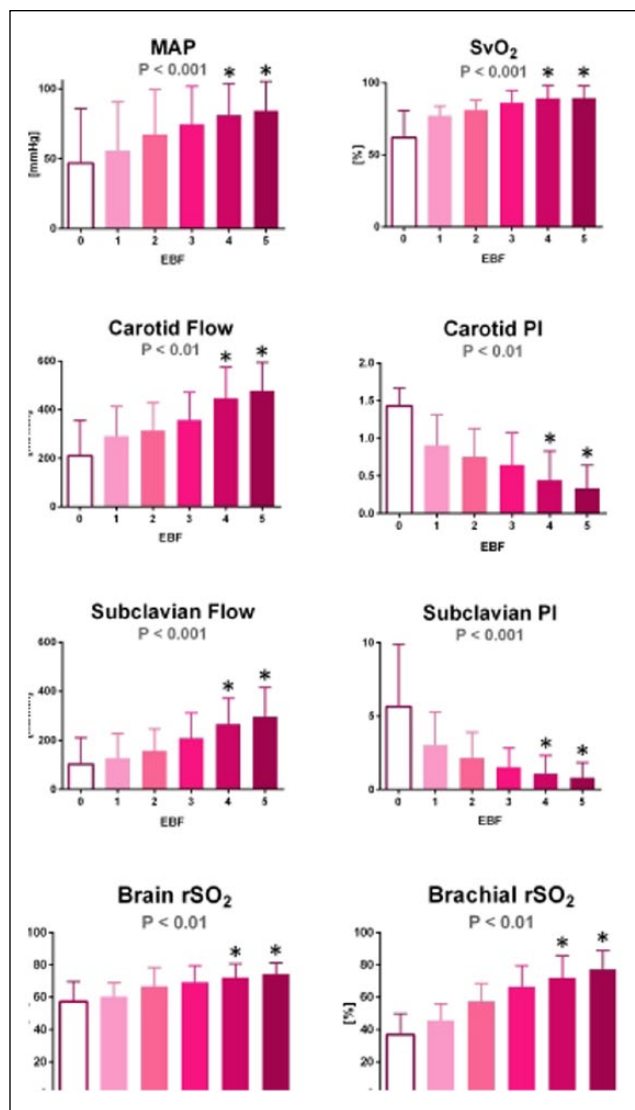
Residual lesions in postoperative paediatric cardiac surgery receiving extracorporeal membrane oxygenation support: the role of percutaneous intervention

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Table 1. Hemodynamic parameters and oximetry data

| Parameter | Units | EBF 0 | EBF 1 | EBF 2 | EBF 3 | EBF 4 | EBF 5 | Relative change |
|--------------------------------|-----------|-------------|-------------|-------------|-------------|---------------|---------------|-----------------|
| MAP | mmHg | 47 ± 22 | 56 ± 20 | 67 ± 19 | 75 ± 16 | 81 ± 13 * | 84 ± 12 * | 79% |
| Carotid flow | ml/min | 211 ± 72 | 291 ± 62 | 314 ± 57 | 356 ± 57 | 447 ± 64 * | 479 ± 58 * | 127% |
| Carotidpulsatility index | | 1.43 ± 0.12 | 0.91 ± 0.20 | 0.75 ± 0.19 | 0.64 ± 0.21 | 0.44 ± 0.19 * | 0.34 ± 0.15 * | -76% |
| Subclavian flow | ml/min | 103 ± 49 | 128 ± 44 | 158 ± 40 | 208 ± 47 | 266 ± 47 * | 296 ± 54 * | 187% |
| Subclavianpulsatility index | | 5.7 ± 1.9 | 3.0 ± 1.0 | 2.2 ± 0.8 | 1.5 ± 0.6 | 1.1 ± 0.5 * | 0.8 ± 0.5 * | -86% |
| HR | beats/min | 101±22 | 96±19 | 93±17 | 90±13 | 90±14 | 86±14 | -15% |
| SW | mmHg*ml | 1434±941 | 1595±987 | 1867±1102 | 2014±1062 | 2105±1060* | 1892±1036 | 32% |
| SvO ₂ | % | 62±8 | 77±3 | 81±3 | 86±4 | 89±4* | 89±4* | 44% |
| CVP | mmHg | 14±2 | 11±2 | 10±2 | 8±2* | 9±2* | 8±2* | -43% |
| rSO ₂ head | % | 57±6 | 60±4 | 67±5 | 69±5 | 72±4* | 74±3* | 30% |
| rSO ₂ right forearm | % | 37±6 | 46±5 | 58±5 | 67±6 | 72±7* | 77±6* | 108% |

Values expressed as mean ± SEM. Values significantly different from EBF 0 marked with *. MAP – mean aortic pressure, HR – heart rate, SW – left ventricular stroke work, SvO₂ – mixed venous blood oxygenation, CVP – central venous pressure, rSO₂ – regional tissue oxygenation.



The effect of VA ECMO

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Introduction: Residual lesions after cardiac surgery in patients receiving ECMO support may result in incomplete recovery of cardiac function.

Objective: The aim of this study was to examine the incidence and clinical outcomes of postoperative residual lesions of neonatal cardiac surgery patients who received ECMO support.

Methods: A retrospective observational study was undertaken to collect the neonatal cardiac surgery patients who received ECMO support within 14 days of surgery between 2003-2013. A hemodynamically significant cardiac lesion that required intervention for successful decannulation was defined as a residual lesion. Demographic data, complexity of the disease,

surgical data, indications for ECMO assistance, echocardiographic findings, and outcomes of cardiac catheterization were studied. Evaluation of residual lesions based on the duration of ECMO support, interventions performed, and clinical outcomes were also examined.

Results: Residual lesions were evaluated in 64 of 88 postoperative neonates placed on ECMO. The indications for ECMO were: off CBP (41%), low cardiac output (29%), and cardiac arrest requiring cardiopulmonary resuscitation (28%). Residual lesions were detected in 44 patients (68%), namely in branch pulmonary arteries (n=15), aortic arch (n=12), shunts (n=8) and coronary arteries (n=5). Echocardiography detected 14 residual lesions (31,8%) and cardiac catheterization detected 30 residual lesions (68,2%). Percutaneous intervention was performed in 34 patients (77%), and in 14 patients the procedure was done within the first 3 days of ECMO support. There was a statistically significant improvement in rate of decannulation and ECMO duration, compared with later intervention (71% versus 35%; $p=0.037$; and 6 days versus 9 days, $p=0.001$). In those who received surgical reintervention, 11 patients, the rate of successful decannulation was 36%.

Conclusions: In our experience residual lesions are present in about 50% of patients requiring ECMO support after paediatric cardiac surgery, and less than half of those residual lesions are detected by echocardiography. With these findings, our recommendation is that all patients unable to wean off ECMO, should be actively evaluated in the cath-lab. Earlier detection of residual lesions and percutaneous intervention are associated with better clinical outcome.

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Temporary ventricular assisting devices and cardiogenic shock. Indications and outcomes of Impella assist in a 79 patient bicentric retrospective study

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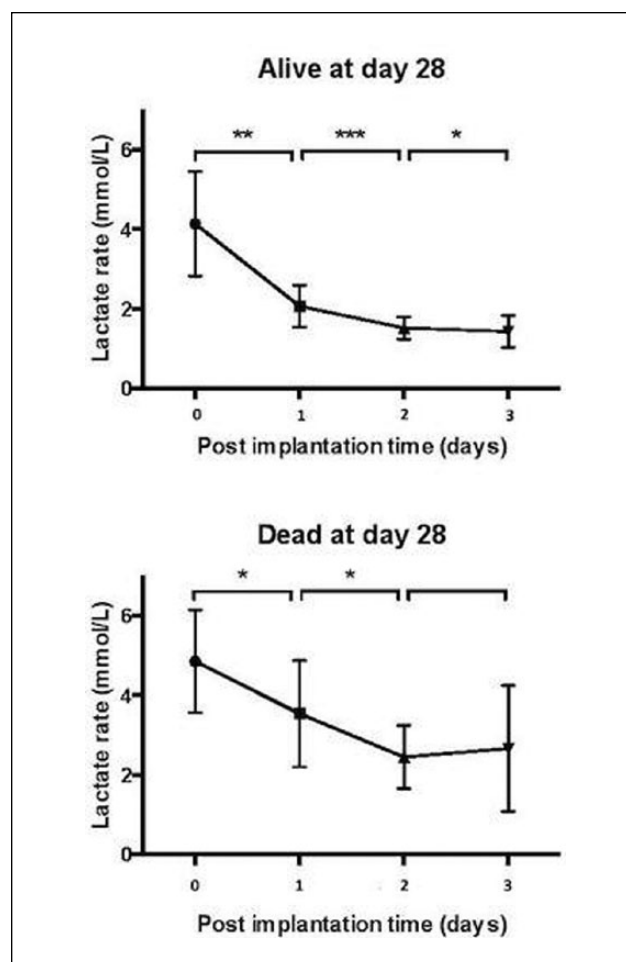
Background: There is a growing interest in short-term ventricular assist devices such as IMPELLA for treatment of cardiogenic shock.

Purpose: The aim of this study was to evaluate indications, effects, outcomes and complications rates of Impella devices (both 5L and CP).

Methods: All patients implanted with an Impella device (CP or 5L) within our centres (Montpellier University Hospital, Nimes University Hospital) for treatment of cardiogenic shock, were included retrospectively, from January 2010 to December 2015. Demographics, indications of implantation, outcomes, biological and hemodynamic parameters were obtained.

Results: 79 patients (87% male) were included and 59 patients were naïve from ECMO. Mean age was 54.5 ± 12.5 years. 46.8% had known heart disease (59.5% of ischemic cardiomyopathy, 29.7% of dilated cardiomyopathy). Myocardial necrosis was the main etiology of shock (54.4%) with 39.2% in cardiac arrest. Pre-implantation mean SOFA score was 11.3 ± 3.2 and pre-implantation mean LVEF was $26 \pm 18\%$. The mean duration of Impella support was 8.7 ± 6.2 days and was associated in 39.2% with ECMO support. Survival rate was respectively 83.5%, 57% and 45.6% at 7, 28 and 180 days. Platelet rate significantly decreased at day 3, resulting in a mean platelet loss of 75.5 ± 10.2 G/L ($p < 0.0001$). Lactate rate loss was $2,1 \pm 0,4$ mmol/L at day 3 ($p < 0.0001$). The factors negatively influencing survival were day 1 ($p = 0.017$) and 2 ($p = 0.008$) post implantation high lactate rate, the occurrence of lower or upper limb ischemia ($p = 0.047$), and an other etiology than myocardial infarction ($p = 0.02$) for cardiogenic shock.

Conclusion: The impella device improved hemodynamic parameters in this population of cardiogenic shock. Specific sub population analysis is needed.



Hypertension

P641

The impact of obesity and hypertension on the longitudinal left ventricular systolic function

National research project

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Introduction: Hypertension and obesity are well known Each one result in heart failure with preserved ejection fraction. Indeed, there is ample evidence that the accumulation of adipose tissue in obese subjects adversely affects the left ventricular structure and diastolic and systolic function. Factors predisposing to heart failure with preserved LVEF are older age, hypertension, diabetes, dyslipidemia and obesity.

2D strain development has enabled an early diagnosis of ventricular dysfunction in patients with cardiovascular risk factors.

Methods: This work is to achieve in a series of 128 hypertensive patients (aged 25-75 years) divided into two groups: 58 obese patients (BMI > 30 g / m²) and 70 patients with normal BMI. A study echo cardiographic complete, was conducted in the two sub groups, including LVEF biplane Simpson method, calculation of left ventricular mass indexed and relative parietal thickness, the analysis of diastolic function and the study of longitudinal strain of the LV (calculation of GLS). Were excluded patients with secondary hypertension, valvular stenosis or fleeting, arrhythmia, coronary heart disease history.

Results: We note as dyslipidemia and diabetes were significantly more prevalent in the HTA + obesity arms. The average blood pressure was slightly higher in the hypertension + obesity arms.

LVH was clearly predominant in the hypertension arm + obesity with a consequent decrease in longitudinal contraction index. In obese hypertensive patients, LVH was generally concentric (53.4%). Elevated filling pressures was

found in 11 patients obese hypertensive against only 4 patients ($p = 0.0001$) hypertensive non-obese, with a good correlation with the decline in the GLS.

conclusion: These results suggest that increased BMI is closely associated with atrial ventricular interaction in patients with hypertension, with a perfect correlation with the achievement of the longitudinal systolic function and diastolic function compared to the group control.

P642

Prevalence of prehypertension in young adults students technical high school and college. Related variables

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Background: Worldwide, several studies have been conducted about the association between hypertension in childhood and adolescence and socio-demographic factors: lifestyle, family history and anthropometry. Objective: This study aims to identify the prevalence of prehypertension and related variables in young adults.

Methods: Cohort study. The variables were collected by questionnaire or measures. Univariate analysis was performed using the chi square and it was performed five multiple logistic regression models for the variables with $p < 0.10$ in the univariate analysis. The students were from three courses, either college as vocational school, were evaluated: gender, age, course, skin color, income,

education, lifestyle, history of hypertension, weight, waist circumference and prehypertension defined as VII Joint National Committee: systolic 120-139 and diastolic 80-89 mmHg.

Results: A total of 394 students were evaluated. There were 309 (78,43%) in the normal group (NG) and 85 (21,57%) in prehypertension group (PH) of students. It was found in NG and PG, respectively: females 254 (82.2%) and 44 (51.8%) ($p < 0.001$); age (three age ranges: until 19 years, 20-25 and 25-30) more frequent in older ($p = 0.001$); ethnicity (self declared) black 16 (5.2%) and 11 (12.9%) ($p < 0.001$); 62 mother's hypertension (20.1%) and 28 (32.9%) ($p = 0.024$); overweight 34 (11.0%) and 17 (20.0%) ($p = 0.045$); obese 3 (1.0%) and 10 (11.8%) ($p < 0.001$); increased abdominal circumference 37 (12.0%) and 19 (22.3%) ($p = 0.024$). At least one of five multiple logistic regression models were associated with absence or presence of prehypertension (OR, 95% CI): females (4,026, 2.373 to 6.828), age (1.081, 1.004 to 1.164), hypertensive mother (1.838, 1.027 to 3.289) and greater waist circumference (1.067, 1.035 to 1.100).

Conclusion: About a fifth of the students were considered to be in prehypertension group. Factors associated with prehypertension this study: male, older, mother with hypertension and increased waist circumference.

P643

The influence of gender on prognosis in Gypsy patients with hypertension and acute myocardial infarction; 10-year experience

| TOTAL OF STUDANTS 394 (100%) | NORMAL GROUP 309 (78,43%) | PREHYPERTENSION GROUP 85 (21,57%) | P |
|--|------------------------------|---|---------------------|
| FEMALE GENDER | 254 (82,2%) | 44 (51,8%) | P < 0.001 |
| ETHNICITY (SELF DECLARED) BLACK | 16 (5,2%) | 11 (12,9%) | P < 0,001 |
| MOTHER'S HYPERTENSION | 62 (20,1%) | 28 (32,9%) | P = 0.024 |
| OVERWEIGHT | 34 (11,0%) | 17 (20,0%) | P = 0.045 |
| OBESE | 3 (1,0%) | 10 (11,8%) | P < 0.001 |
| INCREASED ABDOMINAL CIRCUMFERENCE | 37 (12,0%) | 19 (22,3%) | P = 0.024 |
| AGE (THREE AGE RANGES: UNTIL 19 YEARS, 20-25 AND 25-30) | LOWER RANGER | OLDER RANGER | P = 0,001 |

Related variables in univariate analysis

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It is well known that acute coronary syndromes present differently in men and women. It is well known, too, that coronary artery disease is the leading cause of morbidity and mortality in women over the age of 50 years. There is a lack of data which analyzed prognosis of Gypsy patients with acute myocardial infarction (AMI). Gypsy (or Roma), an ethnic minority of northern Indian origin, live in many countries throughout the world and are well known for preserved tradition and resistance to assimilation. They are most often marginalized economically, spatially, politically and in terms of culture. The aim of this study was to analyze influence of gender on in-hospital and long-term prognosis in Gypsy patients with hypertension (HT) and AMI.

Methods: From January 2006 to January 2016 we analyzed 198 Gypsy pts with HT and AMI. There were 169 (42.5%) female (Women group) and 229 (57.5%) male (Men group).

Results: Men were significantly older than women, and more men were diabetic or smoker but with lower body mass index. Lipid status was better in man, especially total cholesterol level ($p=0.0016$). There were more men with angina pectoris ($p=0.0001$). Although statistically significant, men had more previous infarction ($p=0.0001$). All enzymatic and ECG indexes of infarct size were higher in men. Anterior acute myocardial infarction was more common in men. Non-STEMI wave infarction was more often in women. Men had higher in-hospital mortality ($p=0.0001$).

Conclusions: This study suggests that Gypsy male with HT and AMI had worse prognosis compared with female with HT and AMI, specially in in-hospital period. The predictors of that prognosis were previous angina pectoris and previous myocardial infarction.

Interventional cardiology, Coronary

P644

Adverse cardiac events in patients with drug-eluting intracoronary stents and value of standard invasive follow-up after complex pci

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Purpose: There is a continuing debate concerning postinterventional care after implantation of drug-eluting intracoronary stents (DES). Various previous studies used overall rate of major cardiac events (MACE) to compare different intracoronary stents. The aim of this retrospective study is to evaluate and compare patient outcome after DES-implantation and to analyse, if major cardiac events (MACE) after implantation of intracoronary stents are caused by a restenosis or thrombosis in the intervened coronary lesion or an event in another coronary artery. Beyond, the benefit of invasive follow-up after complex coronary intervention is evaluated. The following study includes 418 coronary interventions.

Methods: A retrospective analysis of patients (pts) with coronary artery disease (CAD) that were treated with drug-eluting intracoronary stents in a 5,5 year period (01/2009 – 08/2014) was carried out at our university hospital, that treats more than 25,000 pts per year. Patient characteristics and (peri-)procedural parameters were evaluated by reviewing heart catheter reports and patient charts. Target lesion failure (TLF) as composite endpoint including clinically-driven target lesion revascularization, target-vessel myocardial infarction and cardiac death was chosen as primary outcome. For each implanted stent the invasive follow-up was analysed separately and results were compared according to stage of angina pectoris (graded in CCS) at admission.

Results: 158 patients (male $n=118$ (74.7%), Age 66.8 years, SD ± 10.9) with 324 DES-implantations (first generation, 175 (54.0%); second generation 149 (46.0%)) were included in this study. The most common peri-interventional complication was coronary dissection with $n=11$ (3.4%) and $n=6$ (1.9%) in first and second generation DES, respectively. The median duration of invasive follow-up was 293 days (IQR 311 (356-45)). 30 (17.1%) patients with first generation DES and 17 (11.4%) patients with second generation DES suffered from MACE. Only 17 of 47 (36.2%) events occurred in the intervened coronary lesion. There was a small difference in the rate of TLF for first ($n=11$ (6.2%)) and second ($n=6$ (4.0%)) generation DES. In patients presenting with CCS stage 1 at the time of invasive follow-up no TLF or significant restenosis was seen.

Conclusions: At this point of the study the rate of TLF after DES-implantation is low and no significant difference is seen between first and second generation DES regarding the chosen endpoint. In the majority of cases, MACE after stent-implantation was not caused by a restenosis or thrombosis in the intervened coronary

lesion, but in an event in another coronary artery. Thus, this distinction seems to be relevant for future studies that compare different stent types. Furthermore, a standard invasive follow-up in patients after complex PCI presenting with angina pectoris graded as CCS 1 should be carefully indicated.

P645

Electrical effects of percutaneous coronary intervention in ischaemic diabetic patients

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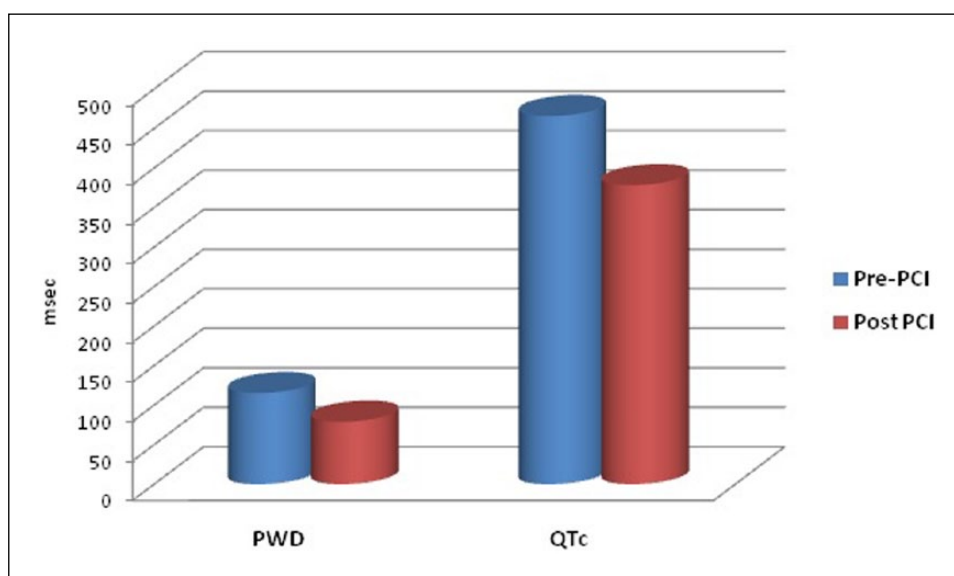
Introduction: Diabetes is a major risk factor for adverse outcomes in patients with coronary artery disease. Cardiac autonomic neuropathy is an important complication of diabetes mellitus and confers an increased cardiovascular risk. The last two decades have witnessed the recognition of a significant relationship between the autonomic nervous system and cardiovascular mortality, including sudden cardiac death. Experimental evidence for an association between a propensity for lethal arrhythmias and signs of autonomic nervous system disturbance has encouraged the development of quantitative markers of autonomic activity. Among the most promising markers, three important markers were recognized; heart rate variability, corrected QT interval and dispersion and P wave duration and dispersion. A lot has been written about the morbidity and mortality benefits of PCI due

to improved haemodynamics, however, little has been investigated about the electrical value of PCI.

Aim of the work: To assess the effect of revascularization by percutaneous coronary artery intervention on the electrical parameters in ischemic diabetic patients.

Patients and methods: The study included 85 ischemic diabetic patients who were referred to cath. lab. for elective PCI. All patients were essentially in sinus rhythm with normal left ventricular systolic function. All study participants were subjected to history taking, clinical examination, routine laboratory investigations, Echocardiography, standard 12-lead ECG and a 24-hours Holter monitoring. Holter was carried out immediately the day before intervention and another one three months after PCI to evaluate measures of HRV, QT dispersion, P-wave dispersion and arrhythmic events.

Results: There were 51.8% males, 68.2% hypertensives, 40% smokers with mean age 59.1 ± 8.8 years. Nearly one half had LAD procedure, less than one third had LCX intervention, 16.1% had RCA revascularization and 5.4% had other small branches revascularization. HRV indices mainly SDNN was found to improve after PCI (66.5 ± 13.9 vs 111.4 ± 23.5 , P value < 0.05). The QTc interval QT dispersion were found to shorten after PCI (466 ± 14.5 vs 378 ± 20.6 and 120.1 ± 30.8 vs 61.5 ± 18.3 msec., respectively, P value < 0.05). Measured P-wave duration and dispersion as well have shortened after PCI (115.4 ± 10.5 vs 79.1 ± 11.5 and 65.1 ± 13.2 vs 28.4 ± 11.7 msec., respectively, P value < 0.05). The number of arrhythmic events including tachycardia and ectopic activities decreased in these patients after PCI (P value < 0.05). Moreover, we couldn't find any relationship



P dispersion and QT interval changes.

between specific vessel revascularization and the improvement in cardiac stability parameters (P value > 0.05).

Conclusions: Heart rate variability, P wave indices and QT interval parameters reflect the cardiac electrical status. These parameters are affected greatly by myocardial ischaemia and diabetes as well. Coronary revascularization through PCI improves these indices leading better cardiac electrical stability.

P646

Heart team: impact in a hospital without cardiothoracic surgery

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Introduction: Multidisciplinary decision-making has gained emphasis in recent years, being the creation of the Heart Team recommended by the European Society of Cardiology and Cardiothoracic Surgery.

In the context of cardiac surgery, the reduction of waiting time is extremely important and recommendations about surgery waiting time according to the pathology have been developed in recent years.

Aim: To evaluate the waiting time and the mortality of patients with indication for cardiac surgery, one year before and one year after the implementation of Heart Team and the compliance with current recommended surgical times.

To compare the therapeutic strategy defined in a multidisciplinary team with the procedure performed;

Methods: We evaluated patients followed in cardiology consultation with indication for heart surgery. The population was characterized according to their baseline characteristics, main diagnosis and divided into two groups - Group A: patients referred for surgery during the year prior to the implementation of the Heart Team (September 2013 - September 2014) and Group B: patients discussed at Heart Team. These were compared according to the surgery waiting time and the mortality. In patients discussed at Heart Team, the defined therapeutic strategy was compared with the procedure performed.

Patients were excluded if they had to be urgently referred.

Results: We studied 136 patients (73% male, mean age 69 ± 10 years): 65 patients (48%) had only coronary heart disease, 23 (17%) coronary disease associated with valvular disease and 41 (30%) had only significant valvular disease. Patients in Group B showed a trend to less waiting time to surgery (115.21 ± 70 days vs 90.23 ± 65 days, p = 0.06).

The percentage of patients who fulfilled the currently recommended time was low (aortic stenosis - 4% vs 10%, p = ns, coronary disease 34% vs 35% p = ns; coronary heart disease + aortic stenosis 0% vs 19%, p = ns), despite the slight reduction of time in group B, but without statistical significance.

In 78% patients of group B with indication for surgical revascularization (n = 46), the procedure performed coincided with the decision in Heart Team.

Total mortality and post-surgery mortality were significantly lower in group B (56% vs 43% p = 0.04; 75% vs 25%, p = 0.011), however there was no statistical difference in the pre-procedure mortality.

Conclusion: The creation of the Heart Team contributed to improve the medical decision and therapeutic as well as to a trend in reducing waiting times. However, additional measures are needed to achieve the recommended waiting times.

P647

Impact of thromboaspiration on short and long-term prognosis in patients treated with primary percutaneous coronary intervention

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Introduction: The clinical effect of routine intracoronary thrombus aspiration (TA) before primary PCI in patients with ST-segment elevation myocardial infarction is uncertain (STEMI). This study aimed to assess the impact of thrombus aspiration on prognostic in a cohort of patients treated with primary percutaneous coronary intervention (PPCI) from 2002 to 2015.

Methods: We compare the presentation of stroke and bleeding events during hospitalization, all-cause mortality and cardiovascular mortality in-hospital at 1 and 3 years in patients with and without TA. The decision of TA was at the discretion of the operator and it was performed more frequently in the anterior AMI (43.5%).

Results: In our cohort, 984 patients were treated with PPCI, 495 of them (50,3%) underwent TA during primary PCI. No significant differences in baseline characteristics between the two groups were observed, the average age was of 65 ± 14 years. Angiographically reported more frequently coronary ectasia in the TA group (4.6% vs. 1.8% p = 0.013). Respect to the group without TA, it performed significantly more direct stenting (22% vs. 16.6%, p = 0.03) and there was a significantly higher percentage of distal embolization (7.9% vs. 4, 5%, p

= 0.028). There were no significant differences in in-hospital major adverse bleeding event rates, ACV, all-cause mortality (TA 12,1% vs. 16,7% p= 0,12) and cardiovascular mortality (TA 7,8% vs. 9,6% p=0,46).

Conclusion: According with recent studies, selected thrombus aspiration was not associated with any improve of in-hospital and 1 year prognosis in patients with STEMI undergoing primary PCI.

P648

Percutaneous coronary intervention outcomes in the very elderly: beneficial or intrusive?

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Background: Ischaemic heart disease is responsible for a significant health care burden in the elderly. The benefit from coronary revascularization with percutaneous coronary intervention (PCI) in very elderly patients (VEP) remains unclear.

Purpose: We sought to assess the morbidity and mortality of VEP (age ≥ 80 years) undergoing PCI, and compare their outcomes to elderly patients (EP, 70-79 years).

Methods: 820 consecutive patients (age ≥ 70 years) undergoing PCI in our regional centre over a three year period were included (January 2012 to January 2015). Baseline characteristics, procedural details and clinical outcomes at three points of follow up (in-hospital, 30-day and 1-year) were recorded and patients were classified in to two groups, EP (70-79 years) and VEP (age ≥ 80 years).

Results: 875 PCI procedures were evaluated, 553 (62%) in the EP group (n=508, 65% males) and 322 (38%) performed in VEP group (n=312, 67% males). Baseline characteristics were similar in both groups. All comparative data are expressed as VEP vs. EP unless otherwise stated.

VEP were more likely than EP to undergo PCI for ACS [STEMI (35.3% vs. 22.0%, p<0.001) NSTEMI (47.9% vs. 44.7%, p=0.024)]. EP were more likely to have PCI for stable angina. VEP were more likely to receive three or more stents than EP (19.6% vs. 13.1%, p=0.002). Uni-variable relative risk analyses of mortality and post-procedural complications are plotted in the figure below.

Global unadjusted in-hospital mortality was higher in the VEP group (9.1% vs 4.9%, p=0.01). Global mortality was also higher in the VEP group at 30-day follow up (10.3% vs. 7.5%, p<0.05) and 1-year end point (18.6% vs. 8.7%, p<0.0001). Relative risk analysis of comparative mortality and complications between groups (VEP vs. EP) is presented in figure 1. Among the post procedure complications, major bleeding requiring transfusion and renal failure

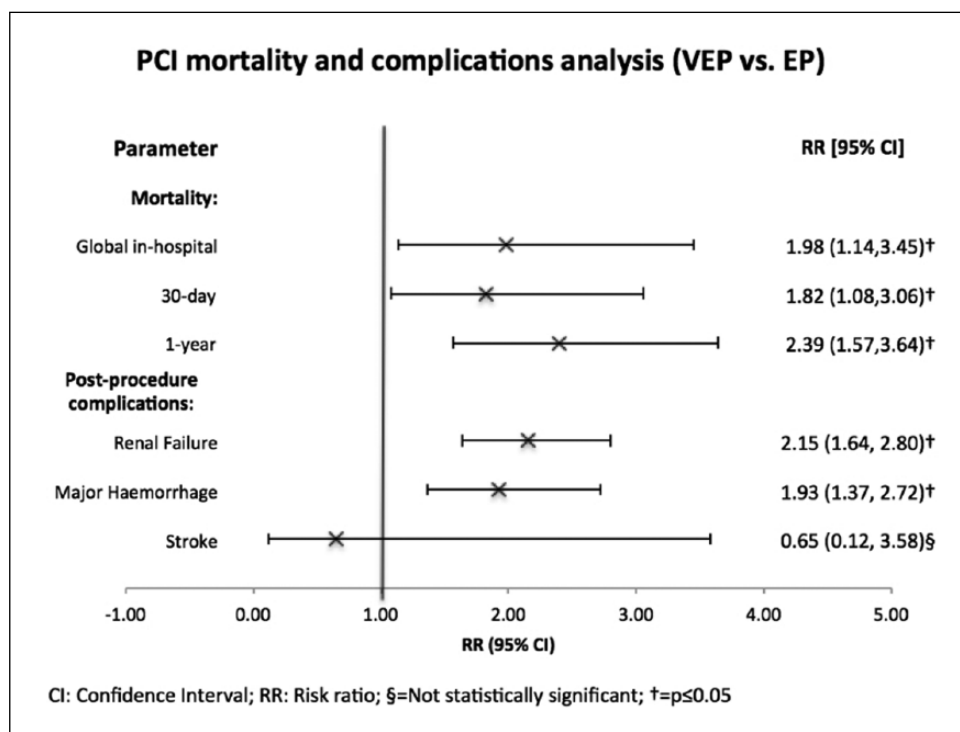


Figure 1.

were higher in the VEP, whilst stroke rates were not statistically different.

Conclusions: Very elderly patients (≥ 80 years) undergoing PCI have higher mortality and complication rate compared to elderly patients (70-79 years). The higher risk of complications may in part be explained by their higher likelihood to present with an ACS and more complex anatomy as evidenced by need for more stents.

P649

Results of percutaneous coronary intervention with crush stenting technique in left main coronary artery disease at very long-term follow-up

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Percutaneous coronary intervention (PCI) for coronary bifurcation lesions is complex, especially when it's affected the left main coronary artery (LMCA). The most commonly used technique is the 'provisional stenting'. Sometimes, if the side branch is large and has disease extended beyond the vessel ostium may be necessary double stent techniques as the 'crush stenting'.

Purpose: The main objective of this study was to evaluate the efficacy and safety of 'crush stenting' technique in LMCA disease at 10 years follow-up.

Methods: We prospectively included 34 consecutive patients (68.21 ± 15.5 years, 67.6% male) with distal LMCA disease treated with 'crush stenting' bifurcation technique between June 2006 and April 2015. We evaluated the occurrence of major adverse cardiovascular events (MACE) defined as cardiac death, nonfatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis after 10 years clinical follow-up (median 37.9 months)

Results: 58.8% of patients had stable coronary disease and 41.2% acute coronary syndrome (30.3% Non-STEMI). 75.8% were hypertension patients, 55.3% had moderate-severe left ventricular systolic dysfunction and 14.3% had Killip class 3-4 at presentation. Medium logistic EuroSCORE was 6.38% and Syntax score was ≥ 23 in 52.9% of patients. We implanted zotarolimus-eluting stent in the 97% of cases and final 'kissing-balloon' was performed in 97.1%. Angiographic success was 100% with a complication procedure rate of 2.9%. During follow-

up, MACE rate at 10 years was 16.1% (5.9% cardiac death, 5.9% nonfatal myocardial infarction, 5.9% TLR and thrombosis rate 0%). Patients with PCI without final kissing-balloon had significantly more TLR rate ($p=0.03$).

Conclusions: Percutaneous treatment of distal LMCA lesions with 'crush stenting' is safe and effective with low rate of long-term cardiac events. Omission of final 'kissing balloon' was significantly associated with a higher rate of in-stent restenosis.

P650

Safety and efficacy of very long newer-generation drug-eluting stent: is stent length still important?

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Introduction: Stent length is known to be a predictor of adverse events after percutaneous coronary intervention (PCI). However, its impact in the era of new-generation drug-eluting stents (n-g DES) is not well established.

Our objective was to evaluate the rate of major cardiac events (MACEs) after the implantation of a very long n-g DES in a real-world practice.

Methods: This study was a nonrandomized, prospective, single center study. From a total of 643 consecutive patients who underwent PCI using a long (>30 mm) n-g DES from April 2014 to September 2015, 88 patients (63 ± 13 years, 79,2% male), with 94 very long-stents (>48 mm) were included. 5 patients were lost during the follow-up.

Results: Baseline patient characteristics are shown in Table 1. Angiographic success was obtained in 98,8%. During

Table 1.

| | N (%) |
|------------------------|------------|
| Hypertension | 52 (62,6%) |
| Diabetes | 27 (32,5%) |
| Dyslipidemia | 39 (47%) |
| Active smoker | 28 (33,7%) |
| Ex-smoker | 18 (21,7%) |
| Previous PCI | 25 (30%) |
| Previous CABG | 5 (6%) |
| Chronic kidney disease | 8 (9,8%) |

the clinical follow-up period (mean duration 13,3 months), the incidence of overall MACEs was low: cardiovascular death (3), nonfatal myocardial infarction (0), target lesion revascularization (TLR) (1) and stent thrombosis (probable 1 and possible 1).

Conclusions: According to our data, very long n-g DES implantation is a feasibility and safe procedure with low rates of MACEs.

Interventional cardiology, Structural heart disease

P651

Short term incidence of conduction abnormalities and arrhythmias after TAVI implantation

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Background: Transcatheter aortic valve implantation (TAVI) has become an alternative therapy in patients with high surgical risk. Among the major drawbacks of this procedure is the potential need for postprocedural permanent pacemaker implantation (PPM) due to bradyarrhythmias.

Methods: A total of 41 consecutive patients underwent TAVI in a one year period between November 2014 and November 2015. 1 patient had a previous permanent pacemaker and is excluded of this analysis. All patients were implanted with the self-expandable TAVI system. Temporary pacemaker was implanted in all patients during the TAVI procedure and was to be removed after 48 hours, unless there was a medical need to remain for a longer time. If used chronically, beta-blockers were temporarily stopped until rhythm stabilization. Patients were continuously monitored with ECG telemetry and a 12 lead ECG at 30 days in outpatient clinic.

Results: 40 patients (23 females) with mean age 80±7.4 years were included. Before the procedure 33 patients (82,5%) were in sinus rhythm (SR), 8 of whom had 1st degree atrioventricular-block (AVB). The remaining were in atrial fibrillation/flutter.

Intraventricular conduction abnormalities were present in 32,5% of patients (3 patients with RBBB, 3 with LBBB, 6 with nonspecific intraventricular delay and 1 with LAFB). Both PR interval and QRS width were significantly increased after the procedure (178 vs 199ms; p=0,037 and 105 vs 133ms; p<0,001, respectively).

A total of 20 patients (50%) developed LBBB after the procedure, most frequently in the first 24-48 hours, although 2 'late' cases occurred after the first week. The LBBB was persistent in the majority, but normalized in 5 patients. The recovery occurred during the hospitalization in 3 patients, but was only evident after 1 month in the remaining 2.

Permanent pacemaker implantation was necessary in a total 11 patients (27,5%) after a median of 6,5 days post TAVI. 3 (7,5%) patients developed persistent complete AVB during the procedure and remained PM dependent. The remaining indications for PPM were intermittent advanced AV block in 4 patients (10%), new onset LBBB associated with very large PR interval in 2 (5%), alternating bundle branch block and slow AF in one case each.

During hospitalization, 3 patients (7,5%) developed new onset atrial fibrillation, and additional 2 (5%) with pre-existing paroxysmal AF had episodes in the acute phase.

Conclusions: Patients who are submitted to TAVI, particularly the self-expandable system, are at risk for new onset conduction abnormalities. Our experience shows a rate of pacemaker implantation around 30%, which is in line with worldwide experience. New onset LBBB, particularly if associated with PR prolongation poses a difficult challenge as the risk of progression for complete AVB is high, even though late recovery is also seen.

P652

Comparison of outcomes in patients undergoing primary PCI for STEMI; Radial versus femoral approach

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Objectives: The purpose of this study was to evaluate and compare outcomes in two groups of patients undergoing primary PCI for the treatment of STEMI; those using radial artery access and those using femoral artery access.

Background: There has been much discussion regarding superiority of the radial versus femoral approach for PCI in the management of ACS. We aimed to assess whether a relationship exists between either approach and the outcomes of in hospital mortality, length of stay and median positive ECG to balloon inflation time in a 24/7 Irish Primary PCI centre.

Methods: This was a single centre retrospective cohort study. A pre-existing STEMI database consisting of patients who underwent Primary PCI between 05/01/2014

and 30/12/2014 was accessed which included demographic data and also length of stay, in hospital mortality and mean positive ECG to balloon inflation time. Route of access was determined using McKesson Horizon cardiology information system. Statistical analysis was performed using STATA.

Results: A total of 167 patients were included in the study. Of these, 95 were treated through radial approach and 72 were treated via femoral approach. The mean length of stay was 4.3 days in the radial group versus 4.8 days in the femoral group ($P < 0.0005$) (median = 3 vs 4 days). In hospital mortality in the radial group was 7% ($n=4$) and 11.6% in the femoral group ($P > 0.05$). The median positive ECG to balloon inflation time was 90 minutes in both groups.

The mean age in radial group was 64.8 vs 65.4 in the femoral group ($P < 0.05$)

Conclusions: In our centre in a single calendar year, patients undergoing Primary PCI for the treatment of STEMI via the radial approach had a shorter length of stay and lower mortality. However those treated using the femoral approach had a faster mean positive ECG to balloon inflation time.

P653

Percutaneous mitral balloon valvuloplasty, echocardiographic score influence, risk factors for death and major events in long-term follow-up

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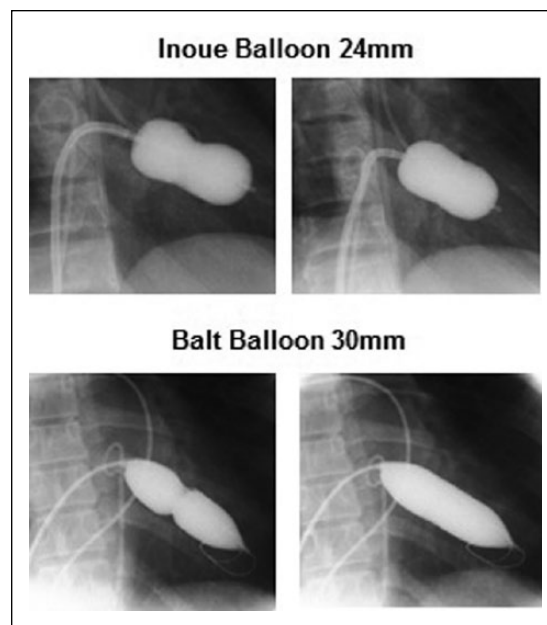
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Percutaneous mitral balloon valvotomy (PMBV) has emerged as an alternative to surgical treatment of mitral stenosis over 25 years, and now it is a class I indication for this treatment.

Objective: To identify the independent predictors of death and combined events (death, new mitral balloon valvotomy, or mitral valve surgery) in long-term follow-up of patients undergoing PMBV.

Methods: From 1987 to 2013 a total of 317 patients were followed-up 156 ± 144 (1987 e 2013) months. The techniques were the single-balloon (84.4%), Inoue-balloon (13.8%), and double-balloon techniques (1.7%). The total group was divided in two: echocardiographic score > 8 and ≤ 8 points groups. Multivariate Cox regression analysis were performed to identify independent risk factors of long-term survival and event free survival.

Results: The mean age were 38.0 ± 12.6 years old (range, 13 to 83). Before the procedure, 84,42% patients had echo



INOUE AND BALT SINGLE BALLOON

score ≤ 8 , and 15.57% score > 8 . Females comprised 85%, and 84% patients were in sinus rhythm. During follow-up, survival of the total group was 95.5%, echo score group ≤ 8 was 98.0% and echo score > 8 was 82.2% ($p < 0.0001$), whereas combined event-free survival was 83.4%, 86.1%, and 68.9%, respectively ($p < 0.05$ and the presence of severe mitral valve regurgitation during the procedure. The predictors of combined events were a previous history of mitral valvular commissurotomy, atrial fibrillation, the presence of severe mitral valve regurgitation during the procedure and post procedure mitral valve area $< 1.5 \text{ m}^2$).

Conclusion: PMBV is an effective procedure. Survival was high, even higher in the group with lower echocardiographic scores. Over 2/3 of the patients were event-free at the end of follow-up. Independent predictors of survival were pre procedure echo score ≤ 8 and the absence of severe mitral valve regurgitation during the procedure

P654

Prior surgical mitral commissurotomy and echocardiographic score influence after percutaneous mitral balloon valvuloplasty

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Percutaneous mitral balloon valvuloplasty (PMBV) has emerged as an alternative to surgical treatment for mitral

stenosis. Currently, it is a class I indication for the treatment of mitral stenosis.

Objective: to evaluate prior mitral surgical commissurotomy (PMC) and echocardiographic score (ES) in the results and complications of mitral balloon valvuloplasty (MBV).

Methods: From 1987 to 2013, 526 procedures with Inoue balloon, double or single Balt balloon technique; 480 without PMC named primary MBV group (PMBVG) and 46 that have been submitted to PMC, the PMC group. The PMCG was older than PMBVG (42.7 ± 12.4 vs 36.9 ± 12.5 years, $p=0.0030$). Gender, atrial fibrillation and NYHA functional class were similar. In PMBVG and PMCG, respectively, ES were 7.2 ± 1.4 and 7.7 ± 1.5 points ($p=0.0158$) and mitral valve area (MVA) 0.94 ± 0.21 and 1.00 ± 0.22 cm² ($p=0.0699$).

Results: - Pre-MBV: mean pulmonary artery pressures (MPAP) were 37.8 ± 14.2 and 37.6 ± 14.4 mmHg, $p=0.9515$; mean gradient (MG) 19.6 ± 6.9 and 18.3 ± 6.9 mmHg, $p=0.2342$; MVA 0.90 ± 0.21 and 0.93 ± 0.19 cm², $p=0.4092$, respectively, when compare PMBVG and PMCG. Post-MBV: MPAP were 26.8 ± 10.2 and 26.6 ± 10.9 mmHg, $p=0.9062$; MG 5.4 ± 3.5 and 6.3 ± 4.2 mmHg, $p=0.1492$; MVA 2.04 ± 0.42 and 1.92 ± 0.41 cm², $p=0.0801$, respectively. Mitral regurgitation (MR) were similar pre and post-MBV. Severe MR post-MBV in 10 patients: 8 in PMBVG and 2 in PMCG, $p=0.2048$. As there were not found significant differences, the total group were divided in ES ≤ 8 and >8 groups: Pre-MBV: MPAP 37.5 ± 13.9 and 39.3 ± 16.6 mmHg, $p=0.4041$; MG 19.7 ± 6.8 and 18.3 ± 7.3 mmHg, $p=0.1753$; MVA 0.90 ± 0.21 and 0.94 ± 0.20 cm², $p=0.0090$ respectively. Post-MBV: MPAP 26.7 ± 10.1 and 28.0 ± 10.6 mmHg, $p=0.3730$, MG 5.5 ± 3.6 and 5.5 ± 3.3 mmHg, MVA 2.06 ± 0.42 and 1.90 ± 0.40 cm², $p=0.0090$.

Conclusions: The groups with and without prior mitral commissurotomy in MBV were compare and no differences were found in pre- and post-procedure, as mean pulmonary artery pressure, mean mitral gradient, mitral valve area, and mitral regurgitation. Although PMCG was older, with higher ES, its hemodynamics datas were similar. When the entire group was divided based on echo scores, those with echo scores >8 had highse MV ($p=0.0090$), and smaler mitral valve areas post-valvuloplasty. The valve anatomy were more important than prior commissurotomy

P655

Percutaneous transarterial renal angioplasty in renovascular hypertension. immediate results and in-hospital assessment

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Background: Worldwire, it's not defined the use of stents in all renal vascular hypertension etiologies and the independent variables to predict technical and clinical success.

Objectives: To evaluate percutaneous renal artery intervention outcomes and in-hospital evolution. To identify the independent variables to predict technical and clinical success.

Methods: Eighty eight procedures were analyzed and subdivided into: Group A (n=25), between 1981 and 1992, when the stent was not available; and Group N (n=63), between 1993 and 2006, using balloon and/or stent. The procedures were also grouped by the two principal etiologies: atherosclerosis (n=68) and fibromuscular dysplasia (n=11).

Results: Age and osteal lesion were higher in Group N; Technical success of 98.4% versus 84.0% in N and A group, respectively ($p=0.0216$), with similar and favorable in-hospital evolution. Pre and post procedure systolic arterial pressures were similar in both groups. Diastolic arterial pressure lower in group N. When the atherosclerotic and fibromuscular dysplasia groups were compared: age and osteal lesion were higher in former with similar technical success, in-hospital evolution and pre and post procedure systolic and diastolic arterial pressure in both groups. The systolic and diastolic arterial pressures dropped significantly between pre-procedure and hospital discharge period both etiology, atherosclerotic and fibromuscular dysplasia groups.

Conclusion: Technical success was higher in percutaneous renal artery interventions after the introduction of stents. A balloon angioplasty for fibromuscular dysplasia and, the possibility of implanting a stent for atherosclerotic etiology, constitute efficient renal vascular hypertension treatment.

P656

Transcatheter pulmonary valvulation in children under 30kg; short and medium-term outcomes

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Introduction: Although largely accepted, indications for percutaneous pulmonary valve implantation (PPVI) are in most cases limited to prosthetic conduits in the right ventricle outflow tract (RVOT) in patients ≥ 30 kg.

Purpose: With this study the authors aim to assess the short and medium-term outcomes of Melody valve implantation in patients <30 Kg.

Methods: We analysed procedural and outcome data from 25 patients <30 kg (10 patients ≤ 20 kg), who underwent Melody valve percutaneous implantation for a native/

system and major events in the postoperative period. Are registered minor events such as dislodgment during the procedure and / or raising the threshold post-procedure to be comparable in the two groups (Eco: 2.2% vs 6.7% Subclavian).

The proposed technique appears to be effective and safe as the classical technique for subclavian, also presents the advantage of being free from risk of pneumothorax and breaking of leads. Ratings on a follow-up in the medium and long term are in place to assess their reliability. Studies with an adequate number of patients would be desirable to confirm our preliminary results.

P658

Radiation exposure in emergency and elective procedures in cath-lab

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Purposes: Awareness-raising about side effects of repeated radiation exposure in cath-lab is emerging.

We aimed to determine techniques and practices that are associated with higher radiation exposure, in our cath-lab.

Methods: Data on the radiation exposure of patients were prospectively collected and analyzed from 196 catheterization procedures performed between April 24 and June 27, 2014.

Radiation exposure was estimated by DAP (Dose Area Product), AK (Air Kerma) and FT (Fluoroscopy Time). Appropriate tests have been applied to compare the role of number of cine sequences, the angle projection (LAO or Left Anterior Oblique and Lateral) and collimation in increasing radiation exposure. We also compared radiation exposure according to the artery access route and the setting of the catheterization procedure.

Results: 196 procedures (131CAG and 65 PCI) were performed during the defined period. The framerate in all procedures was set as 7,5images/s. Number of sequences of cine was significantly associated with radiation exposure attested on DAP ($p<0,001$, $\rho=0,59$), AK ($p<0,001$, $\rho=0,68$) and FT ($p<0,001$, $\rho=0,64$). LAO projections were correlated to higher DAP ($p<0,001$; $\rho=0,59$), FT ($p<0,001$; $\rho=0,64$) and Air Kerma ($p<0,001$; $\rho=0,64$). This association was not verified in Lateral projections. Procedures with higher number of collimated sequences were associated with Lower radiation exposure attested on AK ($p<0,001$, $\rho=0,31$) and FT ($p<0,01$; $\rho=0,28$). There was not a statistically significant difference between radial artery access (174 procedures) than femoral route access (22 cases) concerning DAP (66,81 Vs 74,46 Gy.cm²,

$p=0,28$), FT (10,14 Vs 12 s, $p=0,35$) and Air Kerma (1504, Vs 1711 mGy, $p=0,49$). However, a higher exposure has been attested in emergency procedures compared with the elective ones, with FT (16, 13 Vs 9,36; $p<0,001$), DAP (69,42 Vs 67,01 Gy.cm², $p<0,001$) and Air Kerma (1728 Vs 1466 mGy, $p<0,001$).

Conclusion: Reducing radiation exposure is crucial. Thus, identifying techniques associated with higher X-ray doses help customizing practices in cath-lab. Reducing number of total cine sequences, number of sequences with LAO projection, and using collimation technique may be useful to reduce this harm to both patient and physician.

Myocardial and pericardial diseases

P659

Left ventricular dysfunction and heart failure manifestations in patients with Duchenne muscular dystrophy

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Purpose: The purpose of this study was to evaluate the relation between heart failure manifestations and left ventricular (LV) dysfunction in a group of patients with DMD and to look for early signs of LV impairment.

Material: We evaluated 53 male patients with DMD, genetically verified, aged 5 to 38 years followed in consultation. A clinical examination, 12-channel ECG, standard 2D, Doppler and tissue Doppler echocardiography were performed.

Results: Twenty nine patients (54%) were disabled, restricted to wheelchair. Dyspnea consistent with symptoms of heart failure was found in 4 patients (7,5%). The most common complaint was from palpitations. In all of the patients, sinus tachycardia was registered in one patient (HR>100 beats per minute), average heart rate 85 ± 11.5 beats per minute. Average LV systolic function is 55%. 7 patients (10%) had LV diastolic dysfunction with elevated filing pressure. 5 of them have dilated cardiomyopathy and systolic dysfunction with apical thrombus in one patient and one had severed mitral regurgitation. 5 of them were treated by b-blockers and spironolactone and conversion enzym inhibitors (CEI) and tow receiving furosemide 40 mg, the other with just CEI. The earliest signs of cardiac involvement were reduced early diastolic myocardial velocities at mitral valve annulus (s'), found in 62.2% of the patients.

Conclusion: In boys with Duchenne muscular dystrophy there is a progressive decline in left ventricular systolic function. Heart failure manifestations are not so obvious. In our study,

the earliest signs of LV impairment were reduced early diastolic myocardial velocities. This finding may raise the attention for regular screening and early initiation of available treatment for slowing down the progression of LV dysfunction.

P660

**Patients with recurrence of takotsubo syndrome may have higher mortality in follow up - a portuguese multicenter study
Shire, Pfizer, Bristol-Myers Squibb, Bial, MSD, Trigénus**

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Introduction: Takotsubo syndrome (TS) is characterized by a transient left ventricular dysfunction. The occurrence of recurrence of TS has been described in several studies, however the risk factors for recurrence of TS are unknown.

Aim: To identify the risk factors for TS recurrence.

Methods: A multicenter study involving 11 hospitals with inclusion of all patients diagnosed with TS in the last 10 years. Demographic, clinical, electrocardiographic and echocardiographic data were analyzed to determine the risk factors for TS recurrence by univariate analysis. Multivariate analysis was performed to determine the independent predictors of TS recurrence.

Results: We included 205 patients with TS, predominantly women (89.8%), with a mean age of 66 ± 15 years.

In the follow-up of 45 ± 33 months, recurrent TS was diagnosed in 4.9% of the cases.

The only factor associated with TS recurrence was the in-hospital occurrence of heart failure (50.0% vs 22.1%, p=0.042). Patients with TS recurrence had higher mortality in follow-up (20.0% vs 3.6%, p=0.013).

Conclusion: Recurrence of TS was only 4.9% in a mean follow-up of 4 years. In-hospital heart failure was the only factor associated with TS recurrence. In our study, patients with TS recurrence had a higher rate of death in the follow-up.

P661

Decline in cardiovascular death from acute myocardial infarction and stroke in autonomous regions in Spain in the XXI century

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Cardiovascular (CV) mortality has declined in Spain from 2001 to 2015. Our goal was to compare the rate of decrease of CV death among the different Spanish autonomous regions and to evaluate its relationship with different variables.

Methods: Acute myocardial infarction (AMI) and stroke are leading causes of CV death. Differences among regions were evaluated. Correlations between rate of decrease of CV death and GDP per capita were assessed. Correlations of rate of decrease of CV death with population size, area of the region and baseline mortality (from AMI and stroke) were calculated.

Results: There were differences between Spanish regions regarding the rate of decrease of death from AMI and stroke (table1), that did not correlate with the population size nor with the GDP per capita. Neither there was a correlation with baseline mortality nor with the area of the region.

Conclusions: CV death has declined in Spain in the XXI Century, due to a decrease in death from AMI and stroke. There are differences between autonomous regions, although not related with the analyzed variables. Further economic and epidemiological investigation should be made in order to help to further reduce cardiovascular mortality, particularly for those regions with lower rates of decrease.

| | Rate of decline death from AMI | Rate of decline death from stroke | GDP per capita |
|--------------------|--------------------------------|-----------------------------------|----------------|
| Andalucía | 1,36 | 1,20 | 16577 |
| Aragón | 1,53 | 1,35 | 24713 |
| Asturias | 1,25 | 1,15 | 19727 |
| Baleares | 1,34 | 1,26 | 23498 |
| Cantabria | 1,52 | 1,11 | 20237 |
| Castilla y León | 1,32 | 1,14 | 17636 |
| Castilla-La Mancha | 1,42 | 1,20 | 21063 |
| Cataluña | 1,42 | 1,18 | 26624 |
| Extremadura | 1,29 | 1,04 | 15457 |
| Galicia | 1,63 | 1,23 | 19661 |
| Madrid | 1,20 | 1,11 | 30755 |
| Murcia | 1,41 | 1,32 | 18325 |
| Navarra | 1,71 | 1,25 | 27709 |
| País Vasco | 1,39 | 1,23 | 29277 |
| Rioja | 1,34 | 1,22 | 24601 |
| Valencia | 1,64 | 1,24 | 19693 |
| Global | 1,42 | 1,20 | 22222 |

P662

Impact of obstruction in asymmetric hypertrophic cardiomyopathy

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Introduction: The obstruction at rest is described in about 25% of cases of asymmetric hypertrophic cardiomyopathy (HCM), conditioning the natural history of the disease.

Purpose: To characterize a Portuguese population of patients with asymmetric HCM and compare patients with and without obstruction at rest.

Methods: Portuguese multicenter study including all patients diagnosed with asymmetric HCM in 10 hospital centers. We evaluated the clinical and genetic data, ECG, echocardiography and cardiac MRI and compared these parameters between patients with obstructive HCM and non-obstructive HCM.

Results: We included 344 patients with asymmetric HCM (59% male, mean age 62 ± 15 years). About 73% of patients were symptomatic. Dyspnea (58%), angina (17%) and syncope (13%) were the most frequent symptoms. The average thickness of interventricular septum (IVS) was 18 ± 5 mm and posterior wall 11 ± 3 mm. The resting obstruction existed in 29% of cases and during effort more 11% of cases. Mitral insufficiency was detected in 54% of cases. The delayed enhancement was found in 61% of patients. Most patients were in sinus rhythm (87%). About 21% of patients had history of atrial fibrillation and 25% had non-sustained ventricular tachycardia (VT). About 7% of patients had a pacemaker and 17% had ICD. 2.6% of cases died of cardiac cause (mean follow up period of 6 years). Family history of HCM was identified in 16% and sudden death in 15% of cases. The genetic study was conducted in 174 patients (51%) and revealed genetic mutations in 74 cases (43%).

Patients with obstructive HCM were predominantly female ($p = 0.045$). This group of patients experienced symptoms more frequently ($p = 0.011$), namely dyspnea ($p = 0.012$) and angina ($p = 0.015$). Mitral insufficiency was more frequent ($p = 0.001$), the deceleration time is longer ($p = 0.044$) and E' of the lateral wall was lower ($p = 0.001$). The bifascicular block was more frequent ($p = 0.001$) and ventricular overload changes as well ($p = 0.025$). Non-sustained VT was less frequent in the group with obstructive HCM ($p = 0.039$), however supraventricular arrhythmias ($p = 0.034$) were more frequent in this group of patients. Mortality in the follow-up was similar in both groups.

Conclusion: Asymmetric HCM was symptomatic in the majority of the population of our study. The obstruction was present at rest in 29% of cases. Patients with obstructive

HCM were most often female, more symptomatic and with higher incidence of mitral valve disease. This group of patients had more changes in echocardiographic diastolic parameters and overload pattern on ECG. Supraventricular arrhythmias were more frequent while non-sustained VT was less frequent in patients with obstructive HCM.

P663

Trends in cumulative incidence of malignant cardiac tamponade in a single tertiary cardiology center

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Purpose: Malignant diseases remain an important cause of pericardial effusions and its life-threatening complication: cardiac tamponade (CT). The aim of the study is to evaluate cumulative incidence of the different causes of cardiac tamponade in the intensive cardiac care unit (ICCU); evaluate possible trends in neoplastic pericardial tamponade frequencies through two distinct periods of time and focus on their specific relapsing patterns and mortality.

Methods: This is an observational prospective cohort study, analyzing the clinical records of all the patients (pts) who underwent therapeutic pericardiocentesis for CT during two periods: (I) from 2006 to 2010, and (II) from 2011 to 2015 in ICCU of a single tertiary cardiology center. Cumulative incidences of different etiologies of CT and their relapsing patterns were identified; trends in malignant pericardial tamponade were compared between two periods. A survival analysis was performed investigating mortality during one year after their index hospitalization.

Results: The study included: in period (I) a total of 216 pts (105 males), mean age was 53.7 ± 16.03 . The cause of pericarditis was: 'benign' (viral/idiopathic) in 101 pts (46.8%), 45 lung cancer (20.8%), 34 breast cancer (15.8%), 7 gynecologic cancer (3.2%), 2 thymoma (0.9%), 7 hematologic malignancies (3.2%), 5 autoimmune (2.3%), 6 uremic (2.8%), 9 tubercular (4.2%). Relapses occurred in 30 cases of which 93.3% were neoplastic (13 breast cancer, 14 lung cancer, 1 ovarian cancer,) and 6.7% non-neoplastic (1 uremic, 1 autoimmune). The most frequent causes of relapsing community were lung cancer 47% and breast cancer 43%;. Period (II) included 178 pts (89 males), mean age 57 ± 15.4 . Identified etiologies: 'benign' 72 pts (40.4%), 51 lung cancer (29.2%), 39 breast cancer (21.9%), 11 gynecologic cancer (6.2%). Relapses were present in 37 pts of which 91.9% were neoplastic (16 breast cancer, 14 lung cancer, 4 gynecologic).

Among the composite malignant pericarditis population, time interval to first relapse was on average 34.1 days (19.7 to 48.4) for lung cancer and 175.5 days (119.2 to 231.8) for breast cancer; number of relapses expressed as median 1 (1 to 2) and 2 (1 to 3) respectively. During one-year follow-up, comparing the two most important malignant subgroups, 68 lung cancer vs 31 breast cancer patients died, HR 3.25 (95%CI: 1.12-5.4).

Conclusions: In our daily practice, malignant pericardial disease seems to be an important cause of cardiac tamponade, with lung and breast cancers being the major contributors. In recent years the cumulative incidence of malignant pericardial involvement has increased, in accordance with similar trends in the national neoplastic disorders registries. Among different malignancies, cardiac tamponade from lung cancer denotes a more advanced stage coupled with higher one-year mortality.

Non invasive imaging, CMR, CT and Nuclear techniques

P664

Transthoracic echocardiogram versus cardiac magnetic resonance: which one is the best in patients with acute myocarditis?

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Background: Comparison between transthoracic echocardiogram (TTE) and cardiac magnetic resonance (CMR) in patients with acute myocarditis is uncertain.

Objective: The aim of this study was to compare the global and/or regional left ventricle dysfunction estimated by TTE versus CMR in patients with acute myocarditis.

Methods: Thirty-six patients with acute myocarditis were selected and prospectively submitted to CMR exam in a 1.5T Philips scanner between May 2013 and December 2015. Ventricular function by cine MR with SSFP technique, and myocardial tissue characterization using late gadolinium enhancement (LGE) were evaluated in patients. LGE patterns were analyzed visually by 2 observers and classified as ischemic (involving subendocardial layer) and nonischemic (multifocal, not involving subendocardial layer, non-coronary distribution). All patients were included in the absence of significant coronary artery stenosis (normal or stenosis < 50% of the vessel diameter on angiography, computed tomography or both). Exclusion criteria were: hemodynamic instability and clearance of creatinine < 30 ml/min. Left ventricle ejection fraction was

measured by Simpsons mode in TTE. Statistical analysis was presented as percentages and absolute values.

Results: Median age was 52 years and 61% were male. About 89% were in Killip I classification and 50% had typical chest pain. The medium value of C-reactive protein and troponin were, respectively, 36 mg/dL and 11.9 ng/dL. CMR showed mesocardic LGE in 30 (83.3%) patients, with pericardial effusion in 38.9%. TTE showed left ventricle ejection fraction medium of 47.3% versus 45.8% by CMR. Global left ventricle dysfunction was observed in 36.1% by TTE and 47.2% in CMR. Regional left ventricle dysfunction was observed in 22.2% by TTE and 50% by CMR, being more common in anterior wall (30.6% of patients).

Conclusions: In the study, CMR showed superiority compared with TTE in evaluate global and/or regional left ventricle dysfunction in patients with acute myocarditis.

P665

Normal stress-only gated SPECT myocardial perfusion imaging (G-SPECT MPI) in Diabetics

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Introduction: It is known that normal stress-only images are associated with a low event rate of less than 1% per year. The purpose of this study was to assess the outcome of a group of diabetic patients with normal stress-only gated SPECT myocardial perfusion imaging (G-SPECT MPI).

Methods: From January 1st of 2007 to December 31st of 2008, there were 175 normal G-SPECT MPI on diabetic patients. The follow up was completed in 31st January of 2012 or until the occurrence of a established endpoint (Cardiovascular death, myocardial infarction or revascularization).

Results: The mean follow up was of 42,8 ± 13,3 months. During this period there were fifteen (8,6%) events, twelve (6,9%) of which in the first year of follow up. Seven revascularization, five myocardial infarction and three death. Comparing the groups with and without events regarding gender (male: with events 53.3%; without events 50.6%; p=0.9), age (with events 64,7 ± 10,2; without events 61,2 ± 2,1; p=0.3), the ability to perform exercise (with events 20%; without events 31.3%; p=0.6) and he presence of previous coronary artery disease (CAD) (with events 46.7%; without events 21.9%; p=0.05), only the presence of CAD was different between them. The presence of previous CAD was predictor of events in this group HR 2,8; CI 1,0-7,8; p=0,04.

Conclusion: Even with normal stress images, according to our study, diabetics had a higher risk of events than the rest of the population with normal stress images, and risk are related with the presence of CAD and independent of gender, age or exercise capacity.

P666

Takotsubo syndrome: new diagnostic criteria versus Cardiac Magnetic Resonance to confirm the diagnosis

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Introduction: Takotsubo Syndrome (STK) is an acute reversible heart failure syndrome distinct from acute coronary syndrome (ACS), although the initial presentation has similar features. Many patients (P) are discharge from the hospital with uncertain diagnosis until, recovery of ventricular function in the follow-up, confirm the diagnosis. Given the new evidence, new diagnostic criteria have been proposed by the European Society of Cardiology Heart Failure Association (HFA).

Methods: The objective was to compare the degree of accuracy of new HFA diagnostic criteria versus findings in Cardiac Magnetic Resonance (CMR) to confirm the diagnosis in P with suspected diagnosis of STK. We collect all P with suspected diagnosis of STK admitted to our hospital from January 2009 to April 2016.

Results: We included 63 P with suspected diagnosis of STK. The average age was 69 years, 87% women and 56% presented some stressful trigger (emotional most frequently). The 71% was HTA, 19% diabetics, 38% had dislipemy, 6,3% presented a history of ischemic heart disease. Killip class III or IV were observed in 20,6% of P, but only 13% needed administration of vasoactive amines. 24% of these patients identified as STEMI underwent urgent PCI, 91% of them had normal coronary arteries. ECG showed ST segment elevation in 65% and 92% evolved to T wave inversion. 90% of P presented apical dyskinesia, 8% mid-ventricular and the remaining 2% presented basal dyskinesia. At discharge, 96% were prescribed beatbloqueantes, ACE inhibitors/ARBs, statins or ASA. Regarding follow-up, STK diagnosis was confirmed by HFA criteria in 92% of P. However, it would be confirmed in 82% using the CMR (13% AMI and 5% myocarditis). Three P died (7.3%) of non-cardiac causes during follow-up, and other four had a CV event (ACS, an episode of IC and two STK recurrences).

Conclusions: In our series, STK diagnosis was confirmed by HFA criteria in more than 90% of P. Notwithstanding, CMR findings would reclassify up to 20% of P in other diagnoses. CMR would be of significant utility for the

correct diagnosis of these P, because even with the new HFA criteria, some P with other pathologies would be included as STK. CMR should be considered as a new diagnostic criterion in future classifications.

P667

The role of systolic wall thickening in myocardial stunning evaluated by stress-rest gated perfusion SPECT

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Introduction: Gated-SPECT images acquired after the injection of ^{99m}Tc-tetrofosmin provide accurate assessments of both regional myocardial perfusion and function with a single evaluation. Several studies have demonstrated the impact and clinical role of this technique in the diagnosis, prognosis and risk stratification of patients with suspected or known coronary artery disease. Left ventricular function, one of the most important prognostic variables, can be accurately measured with gated-SPECT, which provides incremental prognostic information to the extent of the perfusion abnormality. Evaluation of LV function and volumes both post-stress and at rest can depict transient post-ischemic LV dysfunction or myocardial 'stunning', which has worse prognostic implications.

Purpose: This study was performed to assess how different clinical and scintigraphic variables, such as LV volumes, systolic wall thickening and wall motion, influence the post-stress/rest variation of left ventricular ejection fraction (LVEF), as measured by gated-SPECT, in a population of ischemic patients.

Methods: In a population of 2064 patients who underwent stress/rest gated-SPECT studies, we selected 408 ischemic patients. Ischemia was defined as a difference between Summed Stress Score (SSS) and Summed Rest Score (SRS) >4. The 29% of patients (119/408) underwent pharmacological stress test. Segmental perfusion, wall motion, systolic wall thickening, LVEF, LV end-systolic (ESV) and end-diastolic volumes (EDV) were calculated, both in post-stress and at rest, using QGS software. Our population was divided in 2 groups: 'stunning' (183/408, 45%) and 'non-stunning' (225/408, 55%), using as a cut-off a decrease of post-stress LVEF \geq 5%. All clinical, perfusional and functional parameters were compared between the 2 groups.

Results: The SSS, the SRS and the Summed Difference Score (SDS) were significantly higher in the stunning group compared to the non-stunning (16.02 ± 8.08 vs 13.66 ± 7.23 , $p = 0.002$; 7.37 ± 7.33 vs 5.73 ± 6.53 , $p = 0.017$; 8.65 ± 3.83 vs 7.92 ± 3.34 , $p = 0.042$, respectively). As regards functional parameters, the post-stress LVEF was significantly lower in

the stunning group ($47.59\% \pm 11.57$ vs $54.37\% \pm 11.90$; $p = 0.0001$); while the post-stress ESV was significantly higher in the stunning group ($65.98 \text{ ml} \pm 41.84$ vs $53.14 \text{ ml} \pm 37.18$; $p = 0.001$). The post-stress systolic wall thickening was more compromised in the stunning group (12.30 ± 8.60 vs 10.11 ± 7.92 , $p = 0.039$). The most striking result was the difference of systolic wall thickening between post-stress and rest test, which was significantly higher in the stunning group (5.10 ± 4.22 vs 3.16 ± 3.99 , $p = 0.0001$).

Conclusions: In ischemic patients with myocardial stunning a decrease of post-stress LVEF may be due to an increment of post-stress ESV, which in turn is probably a consequence of the reduction of post-stress systolic wall thickening in the endocardial layer.

P668

Prevalence of non-coronary incidental findings on multidetector CT coronary angiography

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Background: Coronary multidetector computed tomography (MDCT) is increasingly used as an important noninvasive diagnostic tool to detect the coronary artery disease. Comparable to other radiologic imaging modalities, the field of view includes both the coronary arteries and other surrounding anatomic structures including the chest, mediastinum, and upper abdomen. The objective of the present study was to evaluate the prevalence of non-coronary incidental findings undergoing coronary MDCT.

Methods: We retrospectively review the pictorial data of 5,461 patients undergoing 64- or 640-slice MDCT for the evaluation of coronary artery disease from September 2007 to November 2011.

Results: Two hundred thirteen patients (3.9%) were found to have non-coronary incidental findings on coronary MDCT angiography. Of these, a total of 73 (34%) had clinically significant findings and was recommended for further evaluations.

Conclusion: There were not a few clinically significant findings in coronary MDCT. Therefore it is essential that cardiologists and radiologists should review the scans rigorously to avoid missing clinically significant findings.

P669

Association of hdl-c with unstable phenotype markers of coronary atherosclerotic plaques in very elderly individuals in primary prevention setting

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Backgrounds and Aims: In the very elderly, the inverse association between HDL-C and coronary calcium score (CCS) has suggested a gain in the predictive value of this plasma biomarker with aging. This study aims to evaluate whether this association stands for the presence of coronary plaques with unstable phenotype, as estimated by Coronary Computed Tomography Angiography (CCTA).

Methods: Asymptomatic individuals older than 80 years who have never expressed cardiovascular disease ($n=208$) were recruited from clinical evaluation, blood test and CCTA. All coronary segments ($> 3,000$) were evaluated for the presence of atherosclerotic plaques with positive remodeling (PR), not calcified plaques (NCP) or spotty calcification (SC). Individuals were categorized as above or below the last quartile of lipid profile parameters (HDL-C=63mg/dL, LDL-C=138mg/dL, triglycerides=156mg/dL).

Results: In analysis adjusted for age, sex, body fat, blood pressure, creatinine, C-reactive protein, diabetes mellitus,

Table 1. plaques unstable phenotype vs Lipids

| | Positive Remodeling | Not Calcified Plaques | Spotty Calcification |
|------------|---------------------|-----------------------|----------------------|
| HDL | | | |
| Model I | 3.2(1.4-7.4);0.005 | 2.0(0.9-4.3)0.065 | 2.2(1.4-4.7);0.04 |
| Model II | 3.1(1.3-7.2);0.008 | 1.9(0.8-4.1);0.09 | 2.1(0.9-4.6);0.6 |
| Model III | 2.5(1.1-6.3);0.040 | 1.4(0.6-3.4);0.3 | 1.6(0.6-3.8);0.2 |
| Model IV | 3.2(1.1-10.1);0.034 | 0.68(0.25-1.85);0.45 | 0.62(0.22-1.7)0.33 |
| LDL | | | |
| Model I | 0.6(0.2-1.3);0.2 | 0.6(0.3-1.3)0.2 | 0.6(0.2-1.3);0.1 |
| Model II | 0.6(0.2-1.3);0.2 | 0.6(0.2-1.3)0.2 | 0.6(0.2-1.3);0.2 |
| Model III | 0.7(0.2-1.7)0.4 | 0.7(0.2-1.8);0.4 | 0.6(0.2-1.6);0.3 |
| Model IV | 1.1(0.3-3.4)0.8 | 1.2(0.4-3.9);0.65 | 1.06(0.3-3.2);0.91 |

Model I: Unadjusted (Model I)Model II: Adjusted by age and gender-Model III: Adjusted by age, gender, body fat, hypertension, creatinine, CRP, diabetes mellitus, smoking, physical activity and use of statinModel IV: Adjusted by age, gender, body fat, hypertension, creatinine, CRP, diabetes mellitus, smoking, physical activity and use of statin and CCS

smoking, physical activity, statin use and CCS, all radiological features of plaque instability were associated with age. PR was associated with low HDL-C even in the fully adjusted model. No association was found between LDL-C or TRG and atherosclerotic plaques.

Conclusion: Low levels of HDL-C predict plaques with radiologic features indicating vulnerability in very elderly individuals in primary prevention setting.

Renal replacement therapy (Dialysis, Hemofiltration)

P670

Is cardiac resynchronisation therapy able to improve renal function?

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Introduction: Chronic kidney disease is very prevalent in patients with heart failure, even in candidates to Cardiac Resynchronization Therapy (CRT). Previous studies have found that CRT can indirectly improve renal function but these findings remain controversial.

Objective: The aim of this study was to evaluate the effect of CRT on clinical parameters, reverse ventricular remodeling and renal function in patients with moderate to severe kidney disease.

Methods: We evaluated 155 patients who underwent CRT in a single centre between 2006-2012. Patients were divided in 2 groups according to basal renal function: A) patients with creatinine clearance < 60 ml/min and B) patients with creatinine clearance \geq 60 ml/min. Clinical, laboratorial and echocardiographic parameters were examined before CRT and 6 months after the procedure. Patients were considered responders if left ventricular end-systolic volume (LVESV) decreased > 15% post-implantation (after 6 months).

Results: 55 patients (33.5%) presented basal creatinine clearance < 60 ml/min. In this group, there was no difference between basal and 6 month's seric creatinine values (mean value 1.62 vs 1.64 mg/dl, respectively, $p = 0.745$). In the responders subgroup we also haven't found any significant difference.

Regarding the clinical characteristics, there was an improvement of NHYA class after CRT, not only in group A (2.2 vs 3.0, $p < 0.001$) but also in group B (2.1 vs 3.0, $p < 0.001$).

Left ventricular ejection fraction (LVEF) and LVESV were significantly better 6 months after CRT than before implantation (30.6% vs 23.1% and 151.1 ml vs 178.5 ml respectively, $p < 0.001$). The magnitude of this improvement was

similar to that found in the group of patients with $\text{ClCr} \geq 60$ ml/min. There was no significant differences in the proportion of responders between patients with $\text{ClCr} < 60$ ml/min and patients with $\text{ClCr} \geq 60$ ml/min (53.7% vs 52.6%, $p=0-900$).

Conclusion: Moderate to severe chronic kidney disease doesn't affect clinical or echocardiography response to CRT. Nevertheless, we cannot expect CRT to improve renal function in patients with chronic kidney disease.

P671

The association between left ventricular mass and degree of abdominal aortic calcification in hemodialysis patients

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Introduction: Left ventricular hypertrophy (LVH) is an important cardiovascular risk factor. In this study, we examined the associations of abdominal aortic calcification (AAC) with echocardiographic measurements of cardiac function in hemodialysis (HD) patients.

Methods: Thirty nine HD patients participated in this cross-sectional study, 20 men and 19 women, with a mean age of 64.1 years. All patients underwent AAC and echocardiography assessment. The AAC was evaluated by Leena Kauppilla score (range 0-24) in lateral abdominal x/ rays. The LVM was calculated using the Devereux formula: $0.8 \times \{1.04[(\text{LVEDD} + \text{IVSd} + \text{PWd}]^3 - \text{LVEDD}^3)\} + 0.6$ where LVEDD, IVSd, and PWd represent LV, interventricular septal, and posterior wall thickness in

Table 1. Characteristics and results by AAC score

| | Degree of AAC ≤ 4 | Degree of AAC > 4 | SS(p) |
|-----------------------|------------------------|---------------------|-------|
| Patients(n) | 21 | 18 | |
| Age (y) | 55 \pm 15 | 74 \pm 9 | 0.000 |
| Time on HD (m) | 28 (16-75) | 74 (26-164) | 0.010 |
| Ca²(mg/dl) | 8.72 \pm 0.86 | 9.29 \pm 0.84 | 0.044 |
| SAP (mmHg) | 121 \pm 16 | 130 \pm 19 | 0.122 |
| MAP (mmHg) | 91 \pm 7 | 92 \pm 11 | 0.750 |
| Pulse Pressure (mmHg) | 46 \pm 17 | 58 \pm 16 | 0.032 |
| IVST (mm) | 10.6 \pm 2.2 | 11.21.9 | 0.356 |
| PWT (mm) | 8.8 \pm 1.5 | 9.8 \pm 1.8 | 0.072 |
| LVM (g) | 160 \pm 42 | 195 \pm 51 | 0.024 |

MAP, Mean Arterial Pressure

diastole, respectively. Univariate and multivariate linear analysis were used to determine the best predictors of LVM.

Results: Mean LVM was 176 ± 49 gr. LVM was positively correlated with the degree of AAC ($r=0.35$; $p<0.01$), systolic blood pressure ($r=0.34$; $p<0.05$), Pulse Pressure ($r=0.35$; $p \leq 0.05$) and age ($r = 0.38$; $p < 0.05$). In multiple linear regression analysis (backward model) ($R^2=0.22$; $p=0.012$), both AAC score ($B=2.6$; $p=0.036$) and Systolic Blood Pressure ($B=0.89$; $p=0.037$) emerged as major independent determinants of LVM, explaining 22% of LVM variability. Patients with $AAC > \text{median} = 4$ and ≤ 4 had a LVM value of 195 ± 51 and 160 ± 42 gr respectively, ($p = 0.024$). Finally, AAC score correlated positively with serum calcium ($r=0.32$; $p<0.05$) and hemodialysis vintage ($r=0.38$; $p<0.05$).

Conclusion: AAC is strongly associated with LVM, independent of other conventional cardiovascular risk factors. Prevention of vessel calcification by avoiding calcium overload, could have beneficial effects on clinical outcomes in HD patients.

P672

Predictors and outcomes of acute kidney injury requiring renal replacement therapy early after heart transplantation

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Background: Studies in non-transplant cardiac surgery have identified important predictors of postoperative acute kidney injury (AKI). Heart transplant (HT) recipients frequently develop AKI and it is associated with higher mortality. Predisposing factors are not completely understood. Such information could direct the use of less nephrotoxic drugs in vulnerable patients during the immediate post-transplant period.

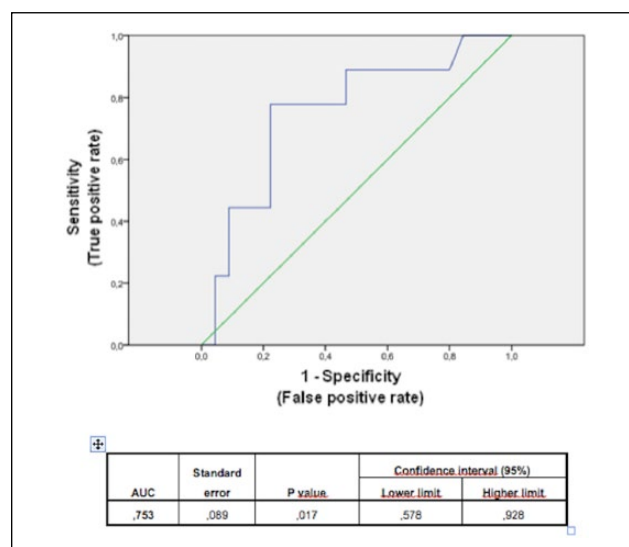
Purpose: To describe early AKI predictors after HT. Additionally, we propose to evaluate the relationship between AKI and other postoperative morbidities occurring in the ICU.

Methods: We collected perioperative data of all HT patients from January 2010-April 2016 in our center. Severe AKI was defined by the need for renal replacement therapy (RRT) early after HT. Two groups were created, those requiring RRT or those who did not.

Results: A total of 80 patients underwent HT: 50 (62.5%) elective HT and 30 (37.5%) high-urgency HT (17 (57%) short-term ventricular assist devices (VAD), 9 (30%)

Table 1.

| | No RRT | RRT | p value |
|---|---------------|----------------|---------|
| Age, yrs | 55.7 \pm 12 | 54.9 \pm 12 | 0,78 |
| Male | 75% | 70% | 0,66 |
| Diabetes mellitus (DM) | 21.1% | 25.9% | 0,63 |
| Chronic kidney disease (CKD) | 10% | 7% | 0,74 |
| Pulmonary artery systolic pressure (PASP) | 50.7 \pm 16 | 51,45 \pm 12 | 0,87 |
| Extracorporeal circulation (EC) time | 99.2 \pm 27 | 100.8 \pm 19 | 0,82 |
| VAD (Levitronix/ECMO) vs noVAD | 47% vs 73% | 53% vs 27% | 0,04 |
| Initial postoperative lactate (elective transplant) | 44.9 \pm 29 | 77.8 \pm 40 | 0,017 |



intra-aortic balloon pumps, 4 (13%) arrhythmic storms). No RRT was required in 53 patients (66%) and 27 (34%) used RRT. There were no significant differences between both groups with respect to age, sex, DM, CKD, PASP and EC time (table). Patients requiring VAD prior to HT needed RRT more frequently than patients without VAD. In patients who elective HT was performed, the initial postoperative lactate predicted the need for subsequent RRT (AUC 0,753, figure). The use of RRT is associated with increased mortality (27% vs 2%, $p = 0,002$) and morbidity: major bleeding (22 vs 2%, $p = 0,002$), neurological complications (18,5% vs 2%, $p = 0,007$) and respiratory infections (48 vs 19%, $p = 0,006$).

Conclusions: Severe AKI requiring RRT is an important contributor to morbidity and mortality after HT. VAD prior to HT and high postoperative lactate levels could identify patients at a high risk for sustaining renal injury during the immediate post-transplant period.

Reperfusion therapy

P673

The effects of pharmacy-invasive reperfusion strategy on TIMI myocardial perfusion grades and clinical outcome among adults with acute ST segment elevation myocardial infarction

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Background: Acute ST-segment-elevation myocardial infarction (STEMI) comprises 7% to 18% 1-year mortality rates. Current practice guidelines recommend primary percutaneous coronary intervention (PCI) within 90 minutes and 120 minutes of initial presentation to a PCI-capable and non-PCI capable hospital, respectively among acute STEMI patients. However, 68% of hospitals do not have access to timely primary PCI, which is associated with poorer outcomes. The proponent of the study aimed to compare TIMI myocardial perfusion grades (TMPG) and clinical outcome among acute STEMI subjects who underwent pharmacy-invasive reperfusion strategy with primary PCI.

Methods: Acute STEMI subjects presenting within 3 hours after onset of myocardial ischemia symptom and unable to undergo primary PCI within 120 minutes admitted at The Medical City from January 2013 to December 2015 were identified. The subjects treated with pharmaco-invasive reperfusion strategy were compared to subjects treated with primary PCI on TMPG and their in-hospital clinical outcome. Independent sample t-test, Wilcoxon rank sum test and Chi square/Fisher's Exact test were used to determine the difference of mean, median and frequency between groups, respectively.

Results: There were 72 acute STEMI subjects included in the study. Thirty one out of 72 (44%) and 41 out of 72 (56%) subjects were treated with pharmaco-invasive reperfusion and primary PCI, respectively. TMPG in the pharmaco-invasive reperfusion group was associated with a higher proportion of

TMPG Grade 3 (87.10% vs 73.17%), and a lower prevalence of reperfusion no-reflow (12.90% vs 26.83%), but were not statistically significant. Multivariable analysis found no in-hospital clinical outcome advantage for pharmaco-invasive reperfusion strategy over primary PCI.

Conclusion: TIMI myocardial perfusion grades in the pharmaco-invasive reperfusion and primary PCI arms were similar among acute STEMI subjects presenting within 3 hours after onset of myocardial ischemia symptom and unable to undergo primary PCI within 120 minutes.

Risk Stratification

P674

Can we predict long term events with ischemic and hemorrhagic risk scores at admission of patients with acute coronary syndrome?

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Introduction and purpose: Ischemic and hemorrhagic risk assessment is recommended in all patients admitted with acute coronary syndrome (ACS). GRACE and CRUSADE risk score have been proposed to evaluate ischemic risk (IR) and major hemorrhagic event risk (HR). Our aim was to validate the use of GRACE and CRUSADE risk score in the prediction of events in patients admitted with ACS in our hospital.

Methods: We analyzed 913 patients admitted to our hospital with ACS. At admission, GRACE and CRUSADE risk score were calculated and major ischemic events (MIE – death, myocardial infarction, stroke, stent thrombosis

Table 1. Events beyond 12 months of follow-up.

| Follow up >12 m | All N=466 | Low IR N=44 | Intermediate IR N=192 | High IR N=230 | p |
|------------------|-------------|-------------|-----------------------|---------------|--------|
| Death | 39 (8.4%) | 1 (2.3%) | 7 (3.6%) | 31 (13.5%) | <0.001 |
| MI | 15 (3.2%) | 1 (2.3%) | 4 (2.1%) | 10 (4.3%) | 0.394 |
| Stroke | 12 (2.6%) | 0 | 4 (2.1%) | 8 (3.5%) | 0.351 |
| Stent thrombosis | 3 (0.6%) | 0 | 1 (0.5%) | 2 (0.9%) | 0.773 |
| New PCI | 17 (3.6%) | 1 (2.3%) | 6 (3.1%) | 10 (4.3%) | 0.702 |
| MIE | 75 (16.1%) | 2 (4.5%) | 20 (10.4%) | 53 (23.0%) | <0.001 |
| DAPT >12 m | 393 (84.3%) | 34 (77.2%) | 172 (89.6%) | 188 (81.7%) | 0.038 |

MI: Myocardial infarction; PCI: Percutaneous coronary intervention; MIE: Major ischaemic events; DAPT: Dual antiplatelet therapy.

and new PCI) during short and long-term follow-up (< 12 months or \geq 12 months) were analyzed according to basal risk score (GRACE \leq 108: low risk; 109-140: intermediate risk; \geq 140: high risk).

Results: During the first year of follow up, high risk GRACE patients (51.6%) had higher rate of MIE than those with low or intermediate risk (14.6% vs. 8.2% vs. 9.2%; $p=0.007$). 466 patients (51%) that completed the first year without cardiovascular events were followed (median: 22.0 months). The incidence of MIE was higher in patients with higher IR (high GRACE: 23%; intermediate: 10.4%; low: 4.5%; $p<0.001$). High HR patients (CRUSADE >40) had higher incidence of major haemorrhages during hospitalization (16.9% vs 0.9%), first year follow up (5.6% vs 0.5%; $p<0.001$) and beyond first year (4.2% vs 0.6%; $p=0.025$), compared to those with low risk. GRACE score (HR 1.02; $p<0.001$) and duration of dual antiplatelet treatment (DAPT) for more than 12 months (HR: 0.57; $p=0.002$) were independently associated with the rate of MIE.

Conclusions: After ACS, rates of ischaemic events remains high beyond one year of recommended DAPT. GRACE and CRUSADE risk scores calculated at admission are useful to identify patients with higher risk of MIE at short and long-term follow-up. These patients could benefit of longer duration of DAPT.

P675

Fifteen year nuclear scan strategy to implement diagnosis in special populations of chest pain patients submitted to the propensity score matching for cardiovascular risk factors

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Background: Costly nuclear scan strategy implements diagnosis in chest pain (CP) patients, however its use need to be updated in special subsets of patients with baseline nondiagnostic ECG, on the basis of the last fifteen years clinical experience.

Methods: Patients with CP at intermediate-risk of cardiac event were enrolled and underwent maximal exercise-ECG (ex-ECG) and Single-Photon Emission Computed-Tomography (ex-SPECT). Baseline characteristics were adjusted with the propensity score for possible confounders specifying nearest-neighbor matching. Patients with perfusion defects underwent angiography, others were discharged and followed up. The endpoint was the composite of coronary stenosis \geq 70% or acute coronary syndrome, revascularization and cardiovascular death.

Results: During 2000-2014 years, out of 1225 patients enrolled (mean age 65 ± 12 years, 43% female, range 30-92 years) 37% showed hypertension, 22% dysglycaemia (diabetes mellitus or glycaemia >140 mg/dl on presentation), and 13% nondiagnostic ECG or echocardiographic alterations at baseline (ECG/Echo-alterations). On multivariate analysis, positive ex-SPECT, ex-ECG, ECG/Echo-alterations and CHA2DS2Vasc-score >1 were predictors of the endpoint. Sensitivity, specificity, negative predictive value, positive predictive value and accuracy of ex-SPECT were 86%, 85%, 97%, 50% and 85%, respectively, compared to 27% ($p=0.001$), 91%, 87%, 34% ($p=0.09$), and 81%, respectively, of ex-ECG. Specificity of ex-SPECT was very high in women with hypertension and dysglycaemia (91% and 90%, respectively). Receiver Operator Characteristic analysis of ex-SPECT showed an area [0.85, 95% Confidence Interval, (CI), 0.82-0.89] significantly larger than ex-ECG (0.59, CI 0.54-0.64), Grace-score (0.64, CI 0.60-0.68) and ECG/Echo-alterations (0.66, CI 0.61-0.71); $p<0.001$ for all comparisons. Changes over time in diagnostics and outcomes of CP patients stratified by clinical characteristics and baseline ECG/Echo-alterations are shown in the table.

Conclusions: In patients with CP, costly ex-SPECT strategy adds incremental prognostic value over ex-ECG, especially in the presence of ECG/Echo-alterations or high clinical risk scores.

Table 1.

| Total n=1233 | +SPECT | Dysglycaemia | Female | ECG/Echo-alt | Hypertension | Endpoint |
|-------------------|----------|--------------|-----------|--------------|--------------|----------|
| 2000-2006 (n=663) | 166(29%) | 53(9%) | 237(42%) | 103(18%) | 143(25%) | 113(17%) |
| 2007-2014 (n=570) | 139(24%) | 183(33%) | 256(45%) | 35(6%) | 272(48%) | 75(13%) |
| Odds Ratio | 1.04 | 0.27 | 0.60 | 2.81 | 0.30 | 1.36 |
| p | 0.06 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.058 |

P676

Iron deficiency independently and strongly predicts risk of cardiovascular death and myocardial infarction in patients with acute coronary syndrome

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Objective: The clinical relevance of iron deficiency (ID) in acute coronary syndrome (ACS) remains unclear. We aimed to evaluate the prognostic value of ID in ACS.

Methods: In the prospective AtheroGene study (n=836), levels of ferritin, iron and transferrin were measured. ID was defined as ferritin <100µg/L, or as ferritin between 100-299µg/L, if the transferrin saturation was <20%. The main outcomes were nonfatal myocardial infarction (MI) and cardiovascular (CV) death.

Results: 29.3 % of the subjects were categorized as iron deficient. ID prevalence was higher in women (41.0 %), and in patients with anaemia (45.7 %). During a median follow-up of 4.0 years, 13.3 % suffered an endpoint. ID strongly predicted MI and CV death in multivariate Cox regression adjusted for sex, age, BMI, smoking, hypertension, diabetes, and dyslipidemia (HR 1.52 [95%CI 1.03 – 2.26; p=0.037]) and remained significant (HR 1.73 [95%CI 1.07 – 2.81; p=0.026]) after additional adjustment for NT-proBNP, troponin and hemoglobin. Survival analyses for CV death/MI provided further prognostic relevance of ID (HR 1.50 [95%CI 1.02-2.20]).

Conclusion: ID has a high prevalence and is strongly associated with adverse outcome in ACS patients. These data might pave the way for a first controlled clinical trial.

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Mid-term clinical outcome of patients treated for acute coronary syndrome-data from the registry

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Purpose: What are the prognosticators of mid-term outcome in patients treated because of acute coronary syndrome(ACS).

Methods: Longitudinal retrospective-prospective single center study that analysis type of ACS (APNS/NSTEMI/STEMI),hemodynamic parameters (HR and SBP), type of treatment(PCI vs medical),LV EF,extend and severity of CAD,medications used,medications post discharge,type and time to event. Statistical analyzis:descriptive and comparative analysis,uni and multivariate regression analysis,Caplan-Meier event free survival analysis.

Results: 364 patients treated for ACS,mean age 63.1±11.1y, 246(67.4%) males and 119(32.6%) females were followed up for mean 18.6±10.4 months.A total of 95 cardiac events (CE) in 94(25.8%) pts during the 364pts/563.7y follow up were registered(17.6% annually). 8(2.2%) cardiac deaths(CD) were registered. Ischemic events were most frequent-59(15.7%):angina 14(3.9%), scheduled revascularization because of multivessel CAD-31(8.5%) and acute ischemic event leading to re-revascularization-12(3.3%)pts. Symptomatic HF-20(5.5%)pts. leading to cardiac death(CD) in 5, 7(1.4%)ischemic CVI with one fatal event,atrial arrhythmias in 8(2.2%), and ventricular arrhythmias in 4(1.1%)pts. one fatal ending and one sudden CD. 58 out of 94 events occurred during the first 6 months.

Univariate predictors :medications used:DAPT:beta -2.147, p=0.000, expB 0.117; beta blockers: beta -.952, p=0.004, exp(B) 0.386; BB+RAAS inhibitors: beta -.765, p=0.015, exp(B) 0.465, diuretics: beta 1.189, p=0.007, exp(B) 3.284, ASA prior the first event:beta -1.055, p=0.000, exp(B) 0.345; DM: beta .788, p=0.006, exp(B) 2.199; anemia: beta 1.090, p=0.006, exp(B) 2.975;age: beta .155, t 2.198, p=0.029, HR : beta .155, t 3.274, p=0.001; number of lesions: beta .105, t 2.009, p=0.045. In a backward conditional logistic regression model six independent predictors were identified: ASA prior the first event exp(B) .537, p=0.049; DAPT exp(B) 2.245, p=0.000; BB+RAAS exp(B) .492, p=0.046, diuretics exp(B) 3.087, p=0.18, DM exp(B), p=0.014.

Table 1. Means and Medians for survival time

| Mean | | | | Median | | | |
|----------|-----------|------------------------|-------------|----------|-----------|------------------------|-------------|
| Estimate | Std.Error | 95%confidence interval | | Estimate | Std.Error | 95%confidence interval | |
| | | lower bound | upper bound | | | lower bound | upper bound |
| 8.431 | .884 | 6.698 | 10.164 | 5,000 | .685 | 3,657 | 6,343 |

Estimation is limited to the largest survival time if it is censored.

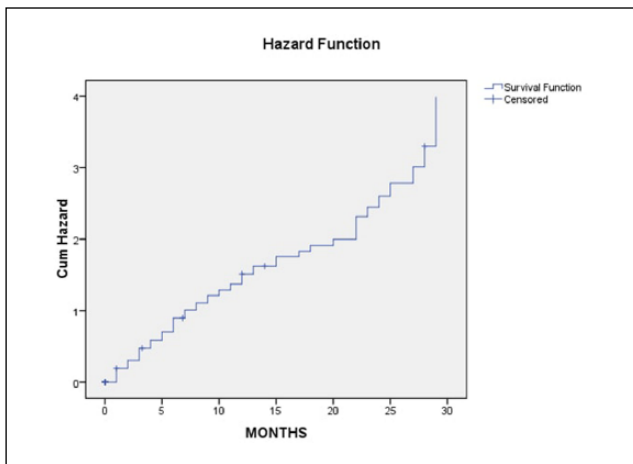


Figure 1. Kaplan-Meier cumulative hazard

Conclusion: The prevalence of CE during the mid-term follow up in ACS patients was 17.6% with 1.5% death rate annually.

DM is a powerful independent predictor of mid-term outcome, but ASA therapy prior the event, DAPT, combined BB+RAAS inhibitors after treatment are significant positive prognosticators, as opposite diuretic therapy is a negative prognosticator of mid-term outcome.

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Plasma cardiac biomarkers in acutely decompensated heart failure - a five-year follow-up

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Purpose: In recently published data of this prospective study we could show that NT-proBNP, MR-proANP, MR-proADM are helpful for prognosis in patients with acutely decompensated heart failure (ADHF). After completion of a five-year follow-up, the objective of this study was to compare the value of established plasma cardiac biomarkers for diagnosis and long-term prognosis in acutely decompensated heart failure (ADHF).

Methods: NT-proBNP, MR-proANP, MR-proADM, Copeptin and Troponin I were assessed simultaneously in plasma from 58 patients with ADHF at different timepoints of therapy. Admission marker values were compared to 54 healthy controls. Outcome parameters were all-cause mortality (n=34) and a combined endpoint of all-cause-mortality and rehospitalisation due to ADHF (n=40). Patients were followed for a maximum duration of five years with a median duration of 1042 days (IQR 415, 1458).

Results: Levels of all five studied biomarkers were significantly (each $p < 0.001$) elevated in patients with ADHF compared to healthy controls. Admission values of NT-proBNP and MR-proADM showed the best correlation with clinical and echocardiographic parameters (including NYHA stage, LV ejection fraction, systolic pulmonary artery pressure, estimated right atrial pressure, each $p < 0.05$). NT-proBNP, MR-proANP and MR-proADM showed a significant decrease during recompensation therapy (each $p < 0.05$). Values of the studied markers were dichotomized using the median and introduced in Kaplan-Meier analyses. Regarding mortality, patients with values above the median showed significantly elevated event rates for all markers (each $p < 0.05$) with the highest event-rates for NT-proBNP [22/29 patients (75.9%), $p = 0.001$], MR-proANP [23/29 patients (79.3%), $p = 0.001$] and MR-proADM [22/29 patients (75.9%), $p = 0.006$]. Regarding the combined endpoint, only NT-proBNP and MR-proANP were significant predictors (each $p < 0.01$). In Cox-regression analyses, all markers were independent and strong predictors for mortality. Regarding the combined endpoint, the highest hazard ratios were found for NT-proBNP [HR 1.53; 95%CI 1.14 – 2.06; $p = 0.005$] and MR-proANP [HR 1.67; 95%CI 1.24 – 2.24; $p = 0.001$].

Conclusions: NT-proBNP showed as significant and independent variable the best capability for both diagnosis and long-term prognosis. Among the other studied biomarkers, MR-proADM was superior for diagnosis and MR-proANP for establishment of long-term prognosis in patients with ADHF.

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Prognostic value of the GRACE score in elderly patients

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Introduction: Coronary heart disease is associated with high mortality and morbidity. There are prognostic scores validated in patients with acute coronary syndrome (ACS).

Table 1.

| | Global Mean | Death Mean | Non-Death Mean | T-Student test | AUC of ROC curve |
|-----------------|--------------|--------------|----------------|----------------|------------------|
| GRACE (Group 1) | 152,7 ± 36,5 | 187,7 ± 39,3 | 150,6 ± 35,2 | 0,000 | 0,770 |
| GRACE (Group 2) | 200,2 ± 35,2 | 229,2 ± 42,3 | 196,2 ± 32,3 | 0,000 | 0,728 |
| GRACE (Group 3) | 207,7 ± 29,6 | 224,1 ± 17,0 | 204,6 ± 31,0 | 0,032 | 0,729 |

Means and areas under the curve of GRACE score

Purpose: To assess if GRACE mortality score keeps its prognostic value in elderly patient.

Methods: We included all patients admitted for ACS in a single center in the temporal range of 01/01/2007 to 31/12/2014. The patients were divided into 3 groups according to the age: Group 1 (<80 years) Group 2 (80-89 years) and group 3 (≥ 90 years). We calculated the GRACE score for all patients and compared the in-hospital mortality using t-student test and the area under the curve (AUC) of the respective ROC curves.

Results: In the period under review, 1383 cases met the inclusion criteria, 70.1% were male. In-hospital mortality was 7.6%. In Group 1 the mortality was 5.8%, compared to 12.1% and 18.2% in Groups 2 and 3, respectively.

The means and areas under the curve of GRACE score in the respective groups are in the table 1.

Conclusion: GRACE score is a good predictor of mortality in all age groups evaluated. However, despite maintaining statistical significance, the GRACE score loses sensitivity as the population ages. This evidence can be proven by the decrease in area under the curve of the respective ROC curve. The decreased sensitivity with age can be explained by the fact that older patients have a highest GRACE score value.

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Risk stratification of sudden cardiac death among patients with myocardial infarction and ventricular arrhythmias

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Sudden cardiac death (SCD) is the important reason of cardiovascular mortality, especially for patient after myocardial infarction (MI).

The study included patients with MI and ventricular arrhythmias (VA) up to 1 month after MI. Patient's follow-up was carried out in the period from 1 to 5 years.

VA was separated by severity into 3 groups: I - sustained ventricular tachycardia (VT) and ventricular fibrillation (VF), II - frequent (> 10 / h), ventricular premature beats (PVCs), III - rare (< 10 / h) PVCs. By stepwise multivariate Cox regression analysis 4 risk factors of SCD: late ventricular potentials, left ventricular aneurysm, left ventricular ejection fraction $< 40\%$, reinfarction were found. The prognostic significance of the mentioned factors were assessed using the Kaplan-Meier method, showed that the survival curves significantly differ in patients with absence or presence of each of these factors. Based on theory that the arrhythmogenesis mechanism is a combination of structural and trigger factors risk stratification was created.

These 4 factors regarded as structural features, VA - as a trigger factor. According to the developed stratification patients with MI were distributed to 5 SCD-risk groups: I (very high risk) - the person with the VT or VF, II (high risk) - patients with 1 or $>$ structural feature and 'frequent' VE, III (moderate risk) - patients with 1 or $>$ structural feature and 'rare' PVCs, IV (mild risk) - the person with 'frequent' PVCs in the absence of structural signs, V (low risk) - patients with 'rare' PVCs without structural factors. To assess the competence of the stratification patients retrospectively were divided into mentioned risk groups and sudden cardiac mortality was assessed in each group. It was found, that only for those patients with very high risk, who actively carry out preventive measures (implantation of cardioverter-defibrillator and radiofrequency ablation), fatal VA could be prevent. However, more than 1/2 of this group of patients treated by medication (53.3%) died suddenly during the first year after MI. 1/3 patients from high-risk group died suddenly in the first years after MI. SCD among patients with rare PVCs and structural factors (moderate risk) also remained high - 17.6%. Finally, in patients with both frequent and rare PVCs with without structural factors SCD cases were not observed, which once again confirms that for the implementation of PVCs to dangerous VA arrhythmogenic substrate is essential point. Thus, we conducted a retrospective analysis of approaches to the prevention of the SCD in different risk groups that showed that a combination of structural and trigger factors is competent and necessary in assessing the risk of the SCD. The proposed stratification, based on a combination of structural features (LVP, left ventricular ejection fraction $< 40\%$, left ventricular aneurysm and recurrent MI) and VA as a trigger factor allows us to define patients at high risk of the SCD.

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Usefulness of GRACE and CRUSADE risk scores in patients with chronic obstructive pulmonary disease and acute coronary syndrome

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Background: Chronic obstructive pulmonary disease (COPD) is a common comorbid condition among patients with acute coronary syndrome (ACS). Previous studies has suggested worse outcomes (including higher mortality and bleeding complications) in patients with COPD vs. non-COPD in the

setting of ACS. Current clinical guidelines recommend the use of the GRACE and CRUSADE risk scores to assess in-hospital mortality and bleeding risk.

Purpose: to assess the performance of GRACE and CRUSADE risk scores in COPD patients in a contemporary cohort of patients admitted for ACS.

Methods: A retrospective analysis of a prospective registry was performed. Patients with previous diagnosis of COPD were identified and baseline clinical characteristic, results of complementary test and data about the management were recorded in detail. The GRACE and CRUSADE risk scores were calculated for each patient. In-hospital all-cause death and major bleeding events according CRUSADE criteria were collected. Discrimination performance of both risk scores were evaluated with the area under the receiver operating characteristic curve (AUC)

Results: From January 2011 to September 2015, a total of 2,146 patients with ACS were included. We identified 235 (11%) with previous diagnosis of COPD. COPD patients had higher GRACE and CRUSADE risk score punctuations than non-COPD patients. There were no statically differences in the rate of major bleedings (4% vs. 3%, $p=0.604$) and in-hospital deaths (5% vs. 4%, $p=0.564$) between both groups of patients. Both risk scores showed good discrimination performance (AUC 0,782 (0,723-0,833), $p<0,001$ for the GRACE risk score, and AUC 0,736 (0,674-0,791), $p=0,030$ for the CRUSADE risk score) among COPD patients (Figure 1).

Conclusions: In patients with COPD admitted for ACS, both GRACE and CRUSADE risk score showed a good discrimination performance. Our results support the use of these scores in risk stratification of COPD patients with ACS.

Secondary prevention

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Assessment of the family functioning in the families of women with acute myocardial infarction

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Introduction: Ischemic heart disease(IHD) are the leading cause of death and disability worldwide. Etiologic agents can be classified as: genetic, social, psychological, certain patterns of behavior, diet,nonspecific illness, thrombotic tendency, disorders of metabolism. Recent studies have shown that the characteristics of IHD and acute myocardial

infarctiona (AMI), risk factors, clinical course and prognosis, and therapeutic procedures of these diseases in women differs from the same in a man. Also recently clinical research shifted towards the impact and importance of the family that may have on patients with IHD and AMI

Goal: This study was to determine whether the families of women with AMI differ in the degree of functionality compared to families of men with AMI with the hypothesis that there is a differenceand that the families of women with ANI less functional scale measured FACES IV.

Matherial and methods: We observed 137 patients who were divided into two groups. The first were women with a diagnosis of AMI (68), while the second group consisted of men with AMI (69). Respondents to the questionnaires FACES IV, designed by Olson

Results: Winning the differences between the men and women on the following dimensions: the level of cohesiveness, level of flexibility, connectivity, rigidity, family communication and family satisfaction.

Conclusion:The families of women with AMI characterized by excessive looseness relationship among family members, communication problem sand low levels of satisfaction with in the family in relation to the men studied, thus undermining the very disease prognosis and outcome.

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Current management of hyperlipidemia in patients discharged after an acute coronary syndrome

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Introduction and objectives: Both European and American guidelines agree in the intensive therapy of LDL cholesterol (LDLc) in patients with acute coronary syndrome (ACS), but whereas the European guidelines aim for a LDLc<70 mg/dl or a LDLc reduction> 50%, American guidelines propose statin therapy (S) classified according to their theoretical percentage in LDLc reduction. ACS patients under 75 years of age (<75) should be treated with high-intensity S, while those over 75 years (>75), with moderate-intensity S. Our objective was to evaluate the lipid-lowering therapy at discharge in patients with ACS.

Methods: We studied 1235 consecutive patients discharged from our hospital with a diagnosis of ACS: 453 (36.7%) with ST elevation and 782 (63.3%) without ST elevation but with some objective myocardial ischemia sign. We analyzed baseline variables, lipid profile during hospitalization

Table 1.

| | High intensity S (N= 781) | Medium intensity S (N=334) | Low intensity S (N=18) | p |
|--------------------|---------------------------|----------------------------|------------------------|-------|
| HDLc increase (%) | 3.52 ± 17.84 | 5.07 ± 10.70 | 1.71 ± 9.79 | 0.401 |
| TAG reduction (%) | 17.87 ± 75.88 | 13.79 ± 89.34 | -5.2 ± 18.42 | 0.444 |
| LDLc reduction (%) | 27.47 ± 36.52 | 19.05 ± 34.43 | 7.19 ± 30.02 | 0.002 |
| Target LDLc | 313 (52.08%) | 102 (41.98%) | 4 (28.57%) | 0.009 |
| ACS | 37 (4.74%) | 15 (4.49%) | 2 (11.11%) | 0.437 |
| Stroke | 18 (2.30%) | 5 (1.50%) | 2 (11.11%) | 0.024 |

and after discharge, and cardiovascular events in clinical follow-up (for 24.6 months after discharge).

Results: In 1133 patients (99.5%), S was indicated (13 patients in combination with ezetimibe and 27 in combination with fenofibrate), in 2 patients (0.2%) ezetimibe, and in 4 (0.4%) fenofibrate. The utilization rate of high-intensity S between >75 and <75 years old patients were 66.9% and 69.5%, respectively.

The variables independently associated to the incidence of MI or stroke were: diabetes (OR: 1.9; p = 0.018), dyslipidemia (OR: 1.8; p = 0.030) and the use of low-intensity S (OR: 3.5; p = 0.047). There was a linear trend between the increase in the intensity of the S and the achievement of the therapeutic targets (p = 0.002) and the decrease in the incidence of combined events such as death, MI, ischemic stroke, stent thrombosis and new revascularization (p = 0.05).

Conclusions: According to actual American guidelines we found underutilization of high-intensity S in patients discharged from SCA. High intensity S therapy is associated to a greater reduction in LDLc and the achievement of therapeutic goals. The use of low-intensity S is associated with a higher incidence of cardiovascular events during follow-up.

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LDL-C, HDL-C levels and newly diagnosed diabetes in a coronary unit: can they affect outcomes?

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Background: Risk factor modification is of paramount importance in secondary prevention after an acute myocardial infarction (AMI). High cholesterol levels, diabetes and new-onset diabetes are known to have higher cardiac morbidity and are usually assessed in coronary intensive care units.

Purpose: We aim to characterize and estimate survival of AMI patients admitted in a coronary intensive care unit, regarding cardiovascular (CV) risk factors.

Methods: We retrospectively enrolled 276 patients diagnosed with AMI between January 2014 and July 2014 and followed up for a median of 20 months [interquartile range (IQR) 17-21]. New-onset diabetes patients were identified based either on hemoglobin A1c (HbA1c) levels, fasting glucose levels or by oral glucose tolerance testing. A low high-density lipoprotein cholesterol (HDL-C) level was defined below 50mg.dl-1 and a high low-density lipoprotein cholesterol (LDL-C) level as above 90mg.dl-1. Baseline clinical data, and clinical outcomes (combined endpoint of all-cause death and AMI) were collected and analysed.

Results: Mean age was 64 (±12) years and 75.4% were male. Prevalence of CV risk factors was 36.6% (n=93) for diabetes mellitus type 2, 87.9% (n=197) for dyslipidemia, 80.9% (n=207) for arterial hypertension. About thirty percent of patients (27.3%, n= 66) had a previous AMI and 17.8% (n= 49) had been submitted to a previous revascularization procedure. The prevalence of ST-elevation myocardial infarct (STEMI) was 39.1% and 60.9% for non-STEMI. Mean HbA1c was 6.2±1.2%. Mean total cholesterol (TC) was 172.6±46.2 mg.dL-1, LDL-C was 119.1±39.4 mg.dL-1 and HDL-C was 39.9±9.6 mg.dL-1. About one third (n=91) of the patients was newly diagnosed with diabetes. For the combined end-point of all-cause death and AMI, previously diagnosed diabetes had worse outcomes compared to newly diagnosed diabetes (28.1% vs 10.9%, p = 0.003). There was no statistically significant difference between new-onset diabetic patients and non-diabetic patients (10.9% vs 19.1%, p= 0.13) for this endpoint. Moreover, lower HDL-C was not associated with higher mortality or AMI rates (17.5% vs 20.2%, p=0.63), nor was higher LDL-C (23.4% vs 14.9%, p = 0.17). In a multivariate regression model, including CT, LDL-C, HDL-C, troponin and left ventricular ejection fraction, only creatinine clearance was found to be predictor of poor prognosis (odds ratio [OR] 0.98, 95% CI 0.97- 0.99).

Conclusions: Newly diagnosed diabetes represented a significant fraction of AMI patients admitted in our coronary unit. However, it was not associated with poorer outcomes, which can be explained by a more restricted control of cardiovascular risk factors. Lower levels of HDL-C were not associated with higher mortality or AMI rates. Creatinine clearance remained the most significant predictor of mortality and AMI recurrence.

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Longitudinal trajectories of depression and lifestyle behaviours in acute coronary syndrome patients

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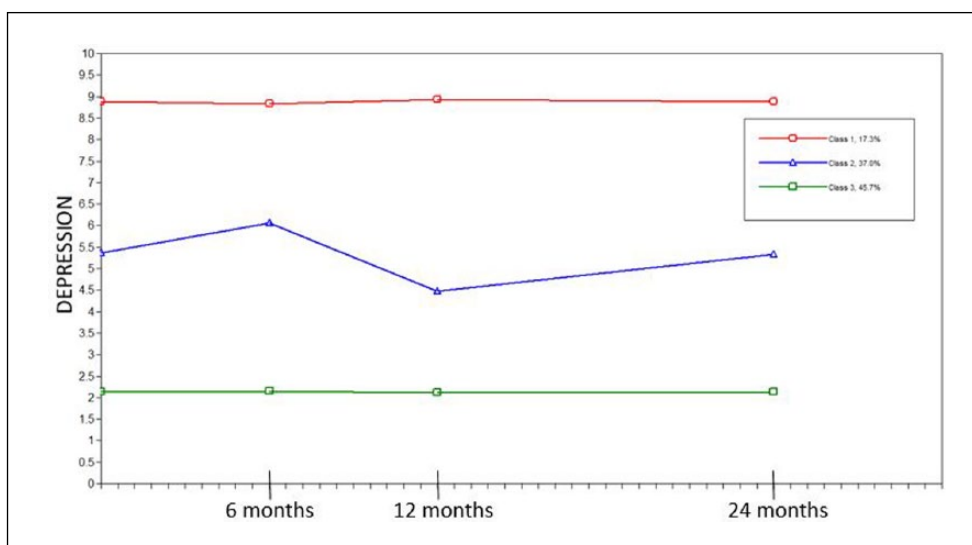
Background: Cardiovascular diseases (CVD) are associated with a range of psychosocial factors; among these, depression has been the most investigated factor in recent years. Several studies have demonstrated the relationship between depression and the clinical progression of established CVDs. Indeed, patients' depression predicts different outcomes, such as recurrent cardiac events, but less is known about the impact on lifestyle behaviours. Moreover, to the best of our knowledge, no studies have explored the development trajectories of depression and lifestyle in Acute Coronary Syndrome (ACS).

Purpose: The aim of this study, across two years in a cohort of patients newly diagnosed with ACS, was (1) to investigate the development of longitudinal trajectories of depression and lifestyle behaviours (in terms of diet, physical activity, and smoking), and (2) to identify unknown (i.e., latent) subgroups with distinct trajectories of depression, examining whether and how the latent subgroups identified differ in terms of lifestyle behaviour.

Methods: A cohort of 275 patients newly diagnosed with ACS from three hospitals in northern Italy was recruited for this prospective study with four measurement points (baseline, 6-month, 12-month, and 24-month follow-ups). Questionnaires were administered by trained researchers for measuring depression and lifestyle behaviours. Also anamnestic and clinical data were collected. Latent growth curve modeling (LGCM) was used to determine the trajectories of depression and lifestyle behaviours. Latent class growth analysis (LCGA) was conducted to explore discrete developmental subtypes of patients based on depression scores; furthermore, LGCM was used to explore the trajectories of these subgroups in terms of lifestyle behaviours.

Results: Results of LGCM indicated that depression, diet, physical activity, and smoking behaviour show nonlinear growth trajectories, with a great improvement after the baseline and then a gradual decline for the rest of the observation period. Moreover, results of LGCA (Bayesian Information Criterion=4,640.0; Entropy=0.77) identified three course trajectories of depression (see fig. 1), ranging from no severity (class 1=45.7% of patients), to medium and fluctuating (class 2=37.0%), to chronic course trajectory (class 3=17.3%). This last class differed on diet, physical activities, and smoking behaviour from other classes, also controlling for socio-demographic characteristics and for clinical baseline functions.

Conclusions: The nonlinear trajectory of depression and lifestyle observed across all patients provides insight for secondary prevention in relation to the dynamics of recovery in ACS. Moreover, our findings of three growth patterns in depression over time illustrate a potentially powerful methodological approach in clinical research suggesting that a typological approach could provide highly relevant information for clinical practice and interventions in CVDs.



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Prevalence and number necessary to treat of classic cardiovascular risk factors in patients with acute coronary syndrome

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Introduction: Acute coronary syndrome (ACS) is a cardiovascular event with important morbimortality and whose classic risk factors are age, sex, obesity, arterial hypertension, smoking and diabetes. Except age and sex, the remaining classic risk factors are modifiable through lifestyle changes and/or medication. However, each risk factor presents a different weight in global risk and the impact of its control depends not only of its weight in global risk but also of its prevalence in the population.

Purpose: Authors pretend to evaluate the prevalence of classic risk factors in patients with ACS and to calculate the number necessary to treat (NNT) to avoid 1 cardiovascular event in 10 years of each classic modifiable risk factor.

Methods: Retrospective observational study of a sample of 2805 consecutive patients with ACS who were submitted to coronariography. For all patients, it was calculated the 10-year cardiovascular risk, using the simplified model from the Framingham Heart Study, which uses the body mass index instead of total and HDL cholesterol, and it was evaluated the prevalence of each classic risk factor. After hypothetical normalisation of each modifiable risk factor, the 10-year cardiovascular risk was recalculated and it was calculated the NNT of each modifiable risk factor to prevent 1 cardiovascular event in 10 years.

Results: 1935 (69%) male patients, with mean age 67 ± 12.7 years. Classic cardiovascular risk factors had the following prevalence: obesity 70.7%, arterial hypertension 62.9%, smoking 32% and diabetes 34%. The 10-year cardiovascular risk of the sample was 42% (95% CI 41.1 - 42.9). With the isolated normalisation of each modifiable risk factor, the 10-year cardiovascular risk factor decreased respectively as follows: obesity 39.8% (95% CI 39.0 - 40.7; $p < 0.0001$), arterial hypertension 34.2% (95% CI 33.5 - 35.0; $p < 0.0001$), smoking 37% (95% CI 36.2 - 37.9; $p < 0.0001$) and diabetes 36.1% (95% CI 35.3 - 36.9; $p < 0.0001$). Controlling all modifiable risk factors simultaneously, the 10-year cardiovascular risk reduced from 42% to 22.5% (95% CI 22.1 - 23.0; $p < 0.0001$). So, the NNT to prevent 1 cardiovascular event in 10 years of each modifiable risk factor would be: obesity 46 patients, arterial hypertension 12.8 patients, smoking 19.9 patients and diabetes 16.9 patients. Controlling all modifiable risk factors simultaneously, it would be necessary to treat only 5.1 patients to prevent 1 cardiovascular event in 10 years.

Conclusion: Classic cardiovascular risk factors present an elevated prevalence in patients with ACS. The most prevalent risk factors were obesity and arterial hypertension and those with the smallest NNT were arterial hypertension and diabetes. Efforts should be made to better control modifiable risk factors, through lifestyle changes and more effective therapeutic regimens.

Sudden death / resuscitation

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The impact of different ventilation strategies on the patient outcome after out-of-hospital cardiac arrest

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Background: Recently the guidelines for adult Advanced Life Support (ALS) of both, the American Heart Association and the European Resuscitation Council, recommended supraglottic airway management in case of out-of-hospital cardiac arrest (OHCA). While the endotracheal intubation (ET) still remains the golden standard in airway management, the use of Laryngeal Tube (LT) is postulated as the device of choice in case of in ET-untrained critical care providers. However the use of supraglottic airway devices has recently been discussed controversially and robust data on the effectiveness and patient outcome remains scarce and inconclusive. Thus the question arises whether the choice of different strategies of airway management – especially supraglottic devices – impact on survival and neurological outcome of patients suffering OHCA in a population based observational setting.

Methods: Therefore we prospectively enrolled 2224 patients suffering OHCA in Vienna (Austria) treated by the local Municipal Emergency Medical Service (EMS) within a 24-month period. To address the study goals patients were stratified in subgroups according to: 'Bag-Mask-Valve only Ventilation' (BM; n=816), 'Laryngeal Tube Ventilation' (LT; n=404), 'Primary Endotracheal Intubation' (ET; n=793) and 'Primary LT Ventilation followed by Endotracheal Intubation' (LT+ET; n=210).

Results: We found that the use of a supraglottic airway device (LT) showed the lowest 30-day survival rate among all tested device (BM: 21.9%; ET: 15.8%; LT: 8.9%; $p < 0.001$) – however in case of endotracheal intubation after primary LT ventilation, survival rates were comparable to the primary ET subgroup (15.7%). The use of a supraglottic airway device (LT) was independently and directly associated with all-cause mortality with an adjusted HR per 1-SD of 1.24

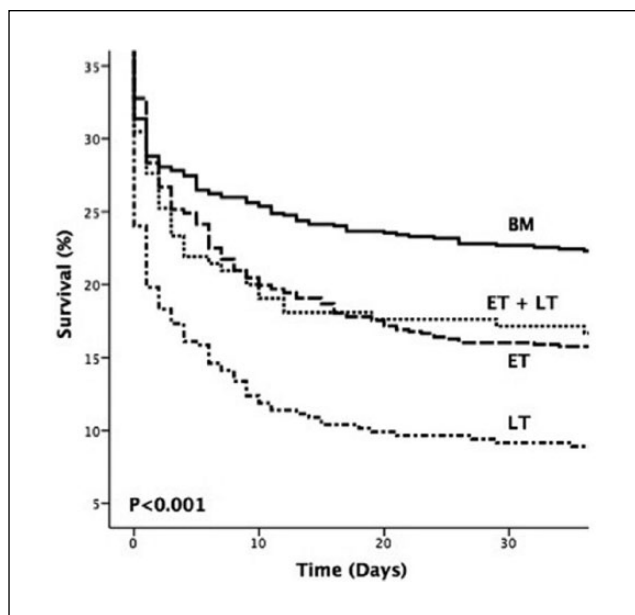


Figure 1

(CI: 1.02-1.51; $p=0.031$). We found the best neurological outcome – measured in favorable cerebral performance category (CPC) 1 and 2 – in patients receiving BM (18.4%) and ET (11.5%) ventilation, while patients receiving LT ventilation showed the worst neurological performance (5.9%). However if patients received endotracheal intubation after initial LT ventilation, the outcome significantly improved (9.8%; $p<0.001$). Moreover there was no difference detectable among subgroups comparing patient characteristics and the quality of cardio pulmonary resuscitation that might explain the worse outcome in the LT subgroup.

Conclusion: One a LT was assessed for airway management in OHCA, the prognosis of the patient significantly worsened. This gives the impression, that the use of supraglottic airway management is not beneficial for patients suffering OHCA. Potential factors that contribute and impact on a worse outcome in patients receiving LT ventilation need to be elucidated in detail further.

Figure 1: Survival curves of all-cause mortality according to ventilation strategy.

P688

Differences in clinical profile, management and prognosis of patients admitted with sudden cardiac death and non-shockable rhythms in comparison with those who presented with shockable rhythms

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Introduction and objectives: Sudden cardiac death (SCD) is the most common cause of death in patients with ischemic heart disease and it could be the first manifestation of it in around 20% of cases. Despite major advances in cardiopulmonary resuscitation and post-resuscitation care, survival to hospital discharge after cardiac arrest remains poor. Non-shockable rhythms have been associated with poorer prognosis in patients with sudden cardiac death. Our objective was to characterize the profile, management and prognosis of patients presented with non-shockable rhythms during hospitalization in a cohort of patients with SCD in a tertiary hospital.

Methods: We studied the 202 patients admitted to our hospital with a diagnosis of SCD from April 2011 to March 2016. We divided them into the subgroups ‘shockable’ or ‘non-shockable’ rhythms. Clinical, hemodynamic and analytical parameters at basis, management and neurological status at discharge using the Cerebral Performance Category scale: Glasgow-Pittsburgh (CPC) were determined. In patients treated with therapeutic hypothermia, this was performed with devices with a target temperature of 33°C during 24h.

Results: Overall, mean age was 63.4±14 years, 79.7% were male, 57.9% hypertensive, 27.7% diabetic, 49.5% had dyslipidemia, 15.8% were smokers and 24.3% had prior ischemic heart disease. SCD was witnessed in 92.1% of cases. In 71.6% of patients emergent cardiac catheterization was performed (angioplasty in 56.3% of them). Moderate therapeutic hypothermia was carried out in 66.8%. In-hospital mortality and poor neurologic outcome (CPC 3-5) were 47.1% and 42.9%, respectively. Patients with non-shockable rhythms were older (67.3±12.9 vs 61.3±14.1 years; $p=0.003$), presented more frequently cardiac arrest at home (47.1% vs 29.5%; $p=0.032$), suffered longer delay till resuscitation was started (4.46±5.08 vs 2.04±3.08min; $p=0.001$) and had less frequently an ischemic origin (61.4% vs 77.1%; $p=0.02$). At hospital admittance, non-shockable patients presented with lower pH (7.09±0.21 vs 7.24±0.15; $p<0.001$) and higher lactate and NSE (9.08±5.38 vs 4.93±4.13mmol/L; $p<0.001$ and 87.8±83.3 vs 36.3±32.9ng/L; $p<0.001$ respectively). Also, they had lower glomerular filtrate (50.3±24.3 vs 67.8±28.4ml/min/1.73m²; $p<0.001$). No differences between use of inotropes and intra-aortic balloon pump were found. In these patients, cardiac angiography and hypothermia were less carried out (61.4% vs 77.1%; $p=0.022$ and 52.9% vs 74.8%; $p=0.003$, respectively). Non-shockable rhythms were also associated with a higher mortality (78.6% vs 30.6%; $p<0.001$) and poorer neurologic outcome (76.9% vs 28.0%; $p<0.001$).

Conclusions: Non-shockable rhythms are risk markers in patients admitted with SCD. Differences in clinical profile, analytical parameters and management of these patients determine a higher mortality and a poorer neurologic outcome.

Table 1. Table 1. Outcomes

| Bleeding | No Gpi (n: 54) | Gpi (n: 17) | p: value |
|---|----------------|-------------|----------|
| Any, no. (%) | 8 (14.8) | 11 (64.7) | < 0.0001 |
| BARC type 3 or 5, no. (%) BARC (bleeding academic research consortium). | 2 (3.7) | 7 (41.1) | < 0.0001 |
| Thrombotic events | | | |
| Deep vein thrombosis, no. (%) | 2 (3.7) | 0 (0) | 0.421 |
| Pulmonary embolism, no(%) | 3 (5.5) | 0 (0) | 0.321 |
| Stent thrombosis, no. (%) | 3 (5.5) | 2 (11.7) | 0.315 |
| Total thrombotic events, no. (%) | 5 (9.25) | 2 (11.7) | 0.762 |
| Mortality, no. (%) | 13 (24.0) | 6 (35.2) | 0.385 |

P689

Mild hypothermia in acute coronary syndrome. Is safe to use glycoprotein IIb/IIIa inhibitors in these patients?

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Background: Mild therapeutic hypothermia (MTH) is associated with an increased risk of both thrombotic and bleeding events. Although little is known about the use of Glycoprotein IIb-IIIa inhibitors (GPI) in this setting, the early action and the intravenous administration of these agents in patients who cannot swallow might potentially translate into clinical benefits in patients with acute coronary syndromes (ACS).

Aims: To assess the incidence of bleeding/thrombotic events in patients with ACS under MTH after an Out-of-Hospital Cardiac Arrest (OHCA) who received GPI or not.

Methods and results: From January 2010 to September 2015, 110 patients were treated with MTH after an OHCA. Among them, 88 (80%) had an ACS and 71 patients (80.6%) were treated with percutaneous coronary intervention (PCI). In 17 (24%) GPI were administered in the cath-lab. During hospitalization follow up presented thrombotic events (stent thrombosis, deep vein thrombosis, pulmonary embolism), 11.7% in the Gpi group and 9.25% non Gpi group; p= 0.762, without any significant differences among groups. The incidence of any bleeding (64.7% vs. 14.8%; p<0.0001), and major bleeding (41.1% vs. 3.7; p<0.0001) was significantly higher in patient receiving GPI. The mortality rate was not significantly lower in the non Gpi group (24% vs. 35.2%; p= 0.385)

Conclusions: The use of GPI in patients with ACS under MTH was associated with an increased bleeding risk without any reduction of thrombotic events. According to these results, GPI should not be recommended in this setting.

P690

Gender specific differences in survivors after an out-of-hospital shockable rhythm cardiac arrest

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Background: Gender-specific differences have gained significance in cardiovascular disease. Sex differences in the clinical features of out-of-hospital cardiac arrest (OHCA) survivors is poorly understood.

Purpose: To analyze the differences between both genders in clinical characteristics, the aetiology of the cardiac arrest and the prognosis in OHCA survivors

Methods: Prospective registry of 141 consecutive patients admitted to the coronary care unit at two centres from October 2008 to October 2015 after OHCA from shockable rhythm treated with therapeutic hypothermia for persistent unconsciousness.

Results: During this period, 141 patients were included (83% male and 17% female). Females were younger than males (57.9 years vs 48.7 years, respectively; p=0.003). Cardiovascular risk factors were less prevalent in women [dyslipidaemia (25% vs 48.7%, p=0.033) and overweight measured with body mass index (BMI 25.21 vs 28.44; p=0.001)]. The majority of OHCA survivors did not have any known heart disease, but the female rate was lower (70% vs 80% respectively; p=0.001). The aetiology of the cardiac arrest in males was an acute coronary syndrome (ACS) in 69.5% but only 25% in female (p<0.001). No differences were observed in the duration of cardiopulmonary resuscitation or the time to ROSC. In our setting, there were neither statistically significant sex differences in mortality, nor in neurologic prognosis measured by CPC scale at discharge.

Conclusions: In OHCA by shockable rhythm, female survivors were younger with less cardiovascular risk factors, less previous heart disease and less coronary disease as the aetiology of OHCA as male. However, mortality and neurological outcome was the same in both sexes.

P691

Therapeutic hypothermia in post-cardiac arrest syndrome: role of neuron-specific enolase as early predictor of neurological status at discharge

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Background: Biomarkers of brain damage, particularly neuron-specific enolase (NSE), have been used to evaluate neurological outcome in out-of-hospital cardiac arrest (OHCA). In patients not undergoing therapeutic hypothermia (TH), previous studies have proposed a cutoff value of 33 ng/ml at 48 hours.

Purpose: To investigate the role of NSE as early neurological prognostic marker (within 72 hours after OHCA) in patients undergoing TH, compared to other methods (EEG, somatosensory evoked potentials (SSEPs)), as well as establish useful cut-off points in this set of patients.

Methods: Study involving 82 comatose patients (2011-16), treated with mild TH (33°C) after an OHCA. Neurological status at discharge was evaluated according to the Cerebral Performance Categories scale (CPC). 51 patients had good neurologic status (CPC 1-2), while 31 suffered serious sequelae (CPC 3-5). NSE levels were measured at 24, 48 and 72 hours. During the first 72 hours, EEG and SSEPs were also performed.

Results: There were no significant differences with respect to age, sex or etiology of OHCA between patients with good and poor neurological outcome. Nonshockable rhythms and higher lactate levels were predictors of poor neurological outcome (table). Absence of bilateral response was obtained in 15% of patients by SSEPs, consistent with poor prognosis (PPV 100%). However, the NPV was only 71%. The EEG was good predictor in patients with normal EEG (NPV 100%) and status epilepticus (PPV 91%). However, the EEG findings were conditioned by the use of sedation in early stages (PPV overall 41%). The area under the curve (AUC) determined a high predictive power of NSE peak (NSEp) with respect to CPC (figure). A NSEp <33 ng/ml (<4% FN) and a NSEp >58.5 ng/ml (<4% FP), allowed to classify 67% of patients, reliable and early, to good and poor prognosis respectively.

Table 1.

| | CPC scale 1-2 | CPC scale 3-5 | p value |
|---|---------------------------------------|---------------------------------------|---------|
| Age, yrs | 59 ± 12 | 54 ± 16 | 0,11 |
| Male | 80% | 87% | 0,43 |
| First monitored rhythm: VF-VT (Overall 79%) | 86,2% | 67,7% | 0,04 |
| Ischemic etiology | 80% | 70% | 0,29 |
| Initial lactate level (mg/dl) | 26,9 ± 21 | 51,9 ± 31 | < 0,001 |
| NSE peak (ng/ml) | 33,3 ± 13,5 (Q1 = 22, Q3 = 43). | 126,3 ± 109 (Q1 = 56, Q3 = 174) | < 0,001 |

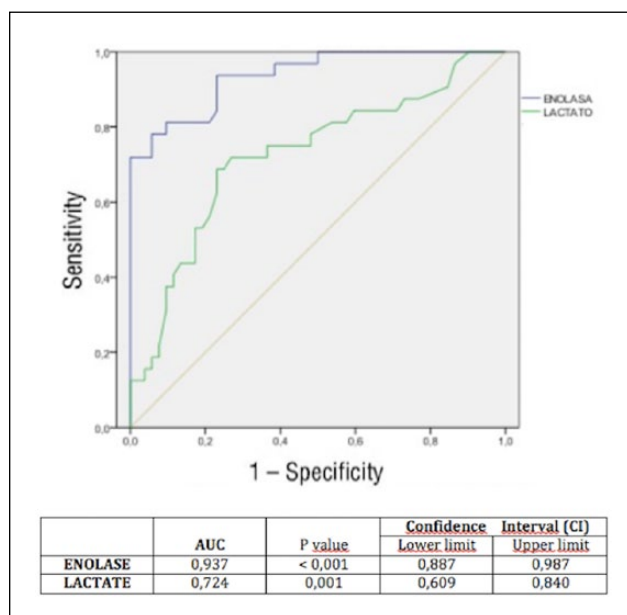


Figure 1

Conclusions: In patients undergoing TH, in post-cardiac arrest syndrome, NSE seems the best early predictor of neurological outcome. However, prior to the generalization of cutoff values, it is still needed the standardization of measurement methods between different centers.

P692

Recovery of left ventricular ejection fraction after cardiac arrest in patients treated by eCPR

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Background: The latest international guidelines included extracorporeal cardio-pulmonary resuscitation (eCPR) as a rescue therapy for patients with refractory cardiac arrest (CA). The majority of CA has an ischemic etiology.

Purpose: Aim of this study is to compare recovery of heart function in coronary artery disease (CAD) patients with CA and return of spontaneous circulation (ROSC) during conventional CPR (group CPR) vs. refractory CA patients needing eCPR (group eCPR).

Methods: We retrospectively collected data on 148 adult CA patients with a proved ischemic etiology (i.e., critical coronary plaque visualized during urgent angiography), admitted to our hospital between January 2011 and October 2015. We collected demographic and clinical baseline characteristics, CA data and echocardiography performed within 24 hours from ROSC and after one month.

Results: Patients were 61±9 year-old and 20% were female. Eighty-five patients (57%) had ROSC during conventional CPR, while 63 (43%) underwent eCPR for refractory CA. Patients in the eCPR group were older (63±8 vs 59±9 year-old, $p=0.02$) and presented higher incidence of hypertension, dyslipidemia, obesity and smoking. Forty-nine patients (58%) from the CPR group were discharged alive from hospital vs. 13 patients in the eCPR group (21%, $p<0.01$). Early echocardiography showed that patients in the CPR group had higher left ventricle ejection fraction (LVEF: 37±11 vs 19±16%, $p<0.01$). One month later, instead, LVEF was not different between the two groups (49±10 vs 46±8%, $p=0.3$).

Conclusions: This study shows that CA patients of ischemic etiology with refractory CA treated by eCPR are younger and have less comorbidities, in comparison to patients treated by conventional CPR and with early ROSC. Patients in eCPR group, at the same time, show worse survival and lower early LVEF. However, at one month, recovery of heart function in the eCPR group is much more relevant, yielding similar LVEF values in the two groups.

P693

Characteristics of emergency coronary angiogram results in patients with sudden death

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Aim: evaluate the indications and findings of emergency coronary angiogram (ECA) in patients with sudden cardiac death (SCD) and the prognostic implications.

Methods and Results: retrospective analysis of 111 patients admitted to our centre with diagnosis of (SCD), in which a 12-lead ECG was obtained, and the option of emergency coronary angiogram (ECA) was feasible.

From March 2013 to December 2015, 111 patients with SCD were admitted to our centre. Demographic data, cardiovascular risk factors and history of previous cardiovascular disease (CD) were collected.

Mean age was 61 years old, 27% were women, and 29% were Diabetic. Initial ECG showed ST elevation in 49 cases (44%). Other ECG findings were: ST depression in 26 cases (23%), complete AV block in 7 patients (6%), left bundle branch block (LBBB) in 15 patients (13%), miscellaneous in 13 patients (atrial fibrillation, monomorphic ventricular tachycardia, right bundle branch block) and no pathological findings in 14 patients (13%).

The ECA was indicated in 61 patients (55%), only 58 (52%) of them ECA was performed.

Of this, 47 presenting with ST elevation (77%); and in 39 (82%) of them, the angiographic diagnosis was an acute occlusion of a coronary artery, undergoing primary PCI.

There were five patients (8%) without ST elevation but with previous history of CD, who underwent an ECA; in three of them (37%), the angiographic diagnosis was acute atherosclerotic coronary disease and underwent ad-hoc PCI. There were six patients (10%), without ST elevation on the ECG and no history of CD, in which also an ECA was performed. Two of them (20%), had a severe stenosis or occlusion of at least one coronary artery and subsequently, a PCI was performed.

There were three cases (3% of all), without ischemic changes in ST segment, which also had an elective coronary angiogram during hospital stay, concluded normal coronary arteries.

Conclusions: ST elevation on the first ECG and previous history of CD in our centre, were the main indications for ECA. In the majority of these patients the diagnosis of ACS as the cause of the SCD was concluded. In patients with SCD without ST elevation on the initial ECG or history of CD, the diagnostic value of an ECA in absence of ST elevation in patients with sudden cardiac death, is to be established. Not performing ECA and subsequent poor outcome of patient may have prognostic implications for the lack of diagnostic certainty.

P694

Instruction of basic cardiopulmonary resuscitation in schools. Evaluation of a pilot experience

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Background: Sudden cardiac death is a major health problem in Western countries. The estimated incidence in our country is 9000 deaths annually, probably underestimated by the improper completion of death certificates and not

counting aborted cardiac arrest. Since early cardiopulmonary resuscitation (CPR) has demonstrated improving outcomes, proper training of the general population is essential. Our aim is to demonstrate that school students can learn basic CPR with a single intensive course.

Methods: Physicians and nurses of a tertiary hospital moved to a school to impart theoretical and practical courses of two hours for children 13 and 14 years old. Students filled out a satisfying survey and an exam of ten questions before and after the course. We compare the evolution of children and their degree of satisfaction with the activity.

Results: In this first experience, 166 children (55.4% male) with an average age of 13.28 years (SD: 0.5), received the course.

Before the course, 67.3% of students felt they had no or very little preparation to perform CPR, while 4.9% thought they had some preparation. 79.7% claimed not to know the basic CPR protocol versus 3.6% who knew him slightly. 79.5% believed it was necessary specific training to perform CPR but only 10.8% thought can only be administered by healthcare personnel.

A questionnaire of ten questions was conducted, the average score before the course of 2.53 / 10 and the average score at the end of test 7.7 / 10 (p: 0.01). Worst results were observed in questions concerning the use of semiautomatic defibrillators.

After the course, 81.9% of children thought they were prepared or very prepared to perform CPR and 90.4% considered to know the protocol for CPR.

89% of students thought that it was an interesting activity. 79.5% felt that was fun (against 9.6% who do not). 92.7% of students believe that this activity should be repeated in other schools.

Conclusions: The results of this pilot experience show the usefulness of CPR instruction in schools. Future interventions will provide more data demonstrating the effectiveness of this measure on a large scale.

Valvular heart disease

P695

Cardiac valve thrombosis: how far could medical treatment be effective?

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Introduction: Cardiac valve thrombosis is a rare but serious complication. The decision between medical and surgical treatment is always difficult, in lack of prospective studies with wide spectra. Besides all the guidelines of international societies are based on expert consensus.

Patients and methods: We retrospectively included all cases of prosthetic thrombosis collected in our department between 1991 up to 2015.

Results: We identified 53 episodes of thrombosis prostheses in 50 patients with 36 cases (67.9%) of non-obstructive thrombosis. The thrombosis occurred on mitral valve in 98% and aortic position in 2%. The time to onset of thrombosis was 112 ± 92 months. The reason for admission was especially thromboembolic complications in non-obstructive thrombosis (75% versus 11.8%; p < 0.001) and an array of acute pulmonary edema in obstructive cases (5.6% vs 52.9%; p < 0.001). Medical treatment was initiated in 37 patients (69.8%) with a success estimated at 89.2% and surgical treatment was indicated in 16 patients (30.2%) with success rate of 62.5%. Mortality was 10.8% in medical treatment group vs 37% in surgical treatment group (p=0.01). Indeed surgical treatment was indicated in 22 patients (41.5%), but declined by 6 patients including 3 cases of obstructive thrombosis with an array of pulmonary oedema and three cases of non-obstructive thrombosis complicated of stroke. All these patients were at very high surgical risk (EuroSCOREII > 15). So we decided to manage them medically; with antiplatelet and effective anticoagulation for 15 days. Five patients showed a clinical and echocardiographic betterment, while only one patient died.

Conclusion: The management of cardiac valve thrombosis should be discussed case by case. Redox surgery should be a last resort especially in high surgical risk patients. Medical treatment should be tried whenever possible.

P696

Infective endocarditis with cerebral complications in the ICU: what to expect at 1 year follow up?

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We present a prospective cohort endocarditis with cerebral complications admitted to tertiary cardiological ICU

65 patients were included during a 4 years period (2011-2015) All patients had neurological complications and signs of severity (Sepsis Organ related failure score >3): Intra hospital mortality was 39% and 1 year mortality was 49%. Only 40% were alive and with good neurological status (rankins < 3) at 1 year.

Patients had adapted antibiotic therapy (90%) and Cardiac surgery (60%).

Cerebral events were present at the IE diagnosis in 61%. Surgery was realized 7±13 days after diagnosis of stroke Clinical severity including coma was the best pronostic neurological marker

Rankins modified scale was identical before and 6 months after surgery. Only 2 cerebral hematoma with clinical significance worsening were detected after surgery

Table 1. Characteristics of endocarditis

| | |
|--|-----------|
| Age | 62 ± 13 |
| Sex(M/F) | 0/15 |
| Euroscore 2 | 15 ± 14 |
| SOFA | 8 ± 4,7 |
| EF (%) LV | 0 ± 8,8 |
| Killip score | 2 ± 1,1 |
| Ischémic stroke | 54 (86) |
| Hémorragic stroke | 19 (30) |
| Glasgow coma scale | 13 ± 3,5 |
| Staphylococcus Aureus | 30 (46,1) |
| Surgical indication | 59 (91) |
| Cardiac Surgery | 40 (62) |
| 'elective' | 13 (33) |
| 'urgent' | 22 (55) |
| 'emergency' | 5 (13) |
| Delay (median) between stroke diagnosis and cardiac surgery(days) | 7 [3-29] |
| 6 month Rankins modified scale for surgery survivors patients | 1 ± 1,6 |

Quantitative values are given with mean and ST deviation (except delay given as median) qualitative values are given as number and %

Heart failure patients had a high rate of surgery (72%). Surgery had better result when performed for heart failure caused by valvular lesions

P697

Is there a place for beta- 2 microglobulin for prediction and diagnosis of acute kidney injury (AKI) after transcatheter (TAVR) and surgical valve replacement (SAVR)?

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Background: Serum beta- 2 microglobulin (sβ2M) is a novel kidney biomarker. Recent studies have proved it

predicts kidney failure in the general population. No study has tested β2M in periprocedural AKI in adults.

Purpose: To compare power of sβ2M, plasma NGAL (pNGAL), serum cystatin C (sCysC) and creatinine (sCr) in AKI prediction after TAVR vs SAVR.

Methods: Eighty over 70-year-old consecutive patients with severe aortic stenosis underwent SAVR (n=40) or TAVR (n=40) in prospective, observational single-centre study. All biomarkers were tested before AVR and 6, 12, 18, 24, 36 and 48 hours afterwards. Thirty-five pts in each group attended 6-month follow-up. AKI was defined based on sCr change and urine output as recommended by VARC-2.

Results: AKI was more prevalent after SAVR vs TAVR (72.5% vs 47.5%; p=0.022) despite higher baseline eGFR (p=0.01), younger age (p<0.001) and lower logEuroSCORE (p=0.001).

Baseline values of all biomarkers were similar in AKI vs nonAKI SAVR subgroups, but in TAVR sβ2M and sCysC were higher in AKI subgroup (p= 0.002; p=0.041, respectively). In fact, in multivariate log. reg. analysis in TAVR baseline sβ2M was the only biomarker associated with AKI (OR 5.277, 95% CI 1.50-15.55; p=0.009).

After TAVR sβ2M outperformed other biomarkers in nearly all timepoints with the largest AUC of 0.880 (p<0.001) at 24h. As all SAVR-AKI cases followed sCr criteria of AKI, by definition sCr outperformed other biomarkers. Its accuracy rose from AUC of 0.760 (p=0.013) at 6h to 0.911 (p<0.001) at 48h. Serum sβ2M and sCysC peaked at 24h after SAVR with AUC of 0.808 (p=0.003) and 0.854 (p=0.001), respectively. Multivariate log. reg. analyses with the optimal timepoint of each biomarker showed 24h-sβ2M and 24h-sCysC to be associated with AKI after both TAVR and SAVR (Table 1.)

AKI occurrence was associated with CKD progression (CKDprog.) after neither SAVR (p=0.274) nor TAVR (p=0.202). However, if AKI was accompanied by persistent postoperative sβ2M increase it became associated with CKDprog. after both TAVR (OR 6.56; 95% 1.2– 35. 73 p=0.030) and SAVR (OR 7.67; 95% 1.22-48.05; p=0.03). Among other biomarkers, persistent elevation of sCystC following AKI was associated with CKDprog. but only after SAVR (OR 12,78; 95% CI 1.97-82.9; p=0.008).

Conclusions: In our study sβ2M diagnostic power for periprocedural AKI was at least comparable to sCystC. However, its potential to predict AKI after TAVR and CKDprog. after TAVR and SAVR complicated by AKI outperformed other biomarkers.

Table 1. Table 1.

| | OR for TAVR* | p | OR for SAVR* | p | OR for TAVR* | p | OR for SAVR* | p | |
|--------|---------------------|-------|--------------------|-------|--------------|-------------------------|-----------------------|-------|------|
| 24hβ2M | 38.15 (1.11-1308.1) | 0.044 | 17.2 (1.63-181.69) | 0.018 | 24h CystC | 1782.02 (3.5-905802.07) | 965.6 (2.93-317884.2) | 0.019 | 0.02 |

P698

Mortality determinants in surgical management of infective endocarditis

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Background and purpose: Apart from a slight decrease in the overall mortality, the infective endocarditis (IE) prognosis remains dismal. An expeditious diagnosis and surgical approach in carefully selected patients is crucial. The goal of this study was to evaluate predictors of mortality in patients that underwent surgical treatment.

Material and methods: We performed a retrospective analysis of 173 consecutive patients admitted in a tertiary hospital with the diagnosis of definite or possible IE from July 2011 and July 2014. Clinical data was collected and inserted in a registry base.

Results: A hundred and four patients underwent surgery (60.1%), 70.2% were males, and the mean age was 59.6 years-old. Native valve endocarditis (NVE) was present in 51 patients (49.5%), prosthetic valve endocarditis (PVE) in 43 (41.7%) and device-related infective endocarditis in 9 (8.7%). Regarding the valve affected: isolated mitral valve was recorded in 35.6%, isolated aortic in 32.7% and mitroaortic in 19.2% of the cases. Health-care associated IE was present in 76 (25.5%) and community-acquired IE in 26 (74.5%). Nine of the patients had history of previous infective endocarditis. The major causative microorganisms were Staphylococcaceae (31.7%), followed by Streptococcaceae (21.2%); no microorganism was identified in 21.2% of the cases. As for the echocardiographic findings: an abscess was present in 29.8%, a fistula or perforation in 37.5%, de novo valvular regurgitation in 59.6% and vegetations >10mm or multiple in 65.4% of the patients. During the mean follow-up time of 12.7 months, the overall mortality was 23.1% (24). From the variables studied only older age (≥ 65 years-old: 38% vs < 65 years-old: 9.3%, $p=0.001$), heart failure (36.8% vs 14.3%, $p=0.034$), health-care associated IE opposing to community-acquired IE (42.3% vs 17.1%, $p<0.001$) and septic shock (54.5% vs 20.2%, $p=0.012$) were mortality determinants. Using a multivariate logistic regression modelling, we found that the independent predictors of mortality were age (OR 6.5, 95% CI 2.0-21.5, $p=0.002$), health-care associated IE (OR 4.7, 95% CI 1.5-14.8, $p=0.007$) and septic shock (OR 7.3, 95% CI 1.6-33.4, $p=0.01$).

Conclusion: The heterogeneity involved in the IE clinical presentation and evolution presents the clinicians countless difficulties. In selected cases, surgery is potentially life-saving, however its morbidity and mortality is undeniable. Nowadays, in the literature, there are discrepancies

regarding the optimal surgical timing, emphasizing the critical role of the Endocarditis Team.

P699

Simvastatin may halt the progression of aortic stenosis in the elderly patients with rheumatic fever

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Background: Aortic stenosis is a common disorder affecting increasing numbers of elderly patients, which is associated with markedly increased cardiovascular morbidity and mortality. Atherosclerosis risk factors as hypercholesterolemia and C-reactive protein (CRP) predicts severity and progression of aortic stenosis (AS) in the elderly patients (pts) with rheumatic fever. Statins have shown pleotropic effects, however the role of statins in pts with AS and rheumatic fever remains debatable.

Aim: We aimed to evaluate the effects of simvastatin 10 mg/day on progression of AS in the elderly pts with rheumatic fever.

Methods: 54 pts (33 M, 21 F, mean age – 73,67 \pm 3,45 years) with AS and rheumatic fever were enrolled. The history of common atherosclerosis risk factors was taken: family history, smoking, hyperlipidemia and hypertension. Echocardiography data, CRP and TC levels in the blood were performed in all pts. Aortic valve area (AVA) was calculated by Doppler echocardiography. 30 (55,5%) pts received the standard treatment and simvastatin 10 mg/day (study group), while 24 (44,5%) (control group) – received only the standard treatment for 24 weeks.

Results: TC and CRP levels increased in all groups at baseline (mean levels 7,3 \pm 0,2 mmol/l and 26,04 \pm 1,38 mg/l respectively). Increased TC and CRP levels correlated to AS ($r=0,34$ and $r=0,42$; $p<0,05$). After 24 weeks of treatment with simvastatin, TC levels had been decreased in the study group in 25% pts by 37,67% ($p<0,01$), CRP – by 64,15% ($p<0,01$); in control group in 13% pts – by 20,14% ($p<0,01$) and 11,68% ($p<0,01$) respectively. Lower TC levels correlated to AS ($r=0,36$; $p<0,05$). Decrease in CRP levels correlated to AS ($r=0,45$; $p<0,05$). After 24 weeks of treatment with simvastatin the study group had significantly less stenotic progression, as assessed by Doppler echocardiography, than the control group (average decrease in aortic valve area, 0,11 cm² versus 0,18 cm², respectively ($p = 0,01$)).

Conclusions: The data show, statin therapy may retard progression of AS. Simvastatin reduces TC, CRP levels, and stenotic progression. Its administration may provide benefits for the reduction of hospitalizations and mortality in its population.

Moderated Posters Session 5: General intensive care Monday, 17 October 2016 - 10:00 - 11:00

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Novel insight into post-implantation syndrome after thoracic endovascular aortic repair for acute aortic syndromes

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Background: Post-implantation syndrome (PIS) represents a systemic inflammatory response syndrome initially observed following endovascular aortic repair of infrarenal abdominal aortic aneurysms. Key clinical features of PIS consist of postoperative fever despite negative blood cultures, leucocytosis and increased C-reactive protein (CRP).

Purpose: To investigate the incidence, the biomarker profile and the clinical impact of PIS after thoracic endovascular aortic repair (TEVAR) for type B acute aortic syndromes (AASs).

Methods: This retrospective study included 133 patients with type B AASs undergoing TEVAR; PIS was defined as fever $>38^{\circ}\text{C}$, white blood cells (WBCs) $>12.0/\text{nl}$ and CRP $>10\text{ mg/dl}$ within 72 h after TEVAR, despite negative blood cultures. Fibrinogen (FBG), D-dimer (D-d) and interleukin 6 (IL-6) were also determined. The clinical endpoints were all-cause mortality and a composite of major adverse events (MAEs such as aortic rupture, need for reintervention and all-cause mortality) at follow-up.

Results: PIS was diagnosed in 15.8% of patients and was associated with higher peak values of WBC (17.0 ± 5.1 vs $10.6 \pm 3.7/\text{nl}$, $P = 0.002$), CRP (22.0 ± 5.4 vs $16.8 \pm 8.2\text{ mg/dl}$, $P = 0.03$), FBG (779 ± 246 vs $639 \pm 225\text{ mg/dl}$, $P = 0.046$), D-d (1675 ± 605 vs $1048 \pm 639\text{ }\mu\text{g/l}$, $P = 0.003$) and IL-6 (192 ± 101 vs $84 \pm 34\text{ pg/ml}$, $P = 0.03$) than non-PIS patients. All-cause mortality did not significantly differ between PIS and non-PIS patients during the index hospitalization (0.0 vs 6.3%; $P = 0.60$) and at follow-up (18.8 vs 4.9%; $P = 0.086$). MAEs were more frequent in the PIS than in the non-PIS group (62.5 vs 25.9%; $P = 0.004$).

PIS (hazard ratio [HR] 3.26, $P = 0.022$), stroke (HR 3.41, $P = 0.004$), aortic enlargement (HR 6.88, $P = 0.001$) and partial thrombosis of the false lumen (HR 6.20, $P = 0.003$) were independent predictors of MAEs.

Conclusions: PIS occurred in 15.8% of patients with AASs without affecting in-hospital outcome. At follow-up, PIS was associated with increased rates of MAEs, but not mortality.

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Central venous catheterization in the cardiovascular intensive care unit: comparison between anatomical or ultrasound guided

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Introduction: Recommendations in the central venous catheterization (CVC) favour jugular or subclavian vein over femoral approach. In the acute cardiovascular setting the common antithrombotic therapy can preclude this recommendation due to the increased risk of haemorrhagic complications. Ultrasound guided catheterization of the jugular vein can overcome this limitation.

Methods: We performed a prospective register of the CVC cannulated in our Cardiovascular Intensive Care Unit from 2013 to 2016. Then we selected the jugular CVC, and compared the characteristics and results between anatomical and ultrasound guided approach in terms of success, vascular complication, arterial puncture and pneumothorax.

Results: 220 jugular vein catheterizations were collected, 89 anatomical references guided (REF) and 131 ultrasound guided (US). Basal characteristics were: age REF 76.1 ± 2.3 years-old vs US 66.5 ± 2.4 years-old ($p < 0.01$), male sex 61.8% vs 67.2%, anticoagulation 16.9% vs 43.5% ($p < 0.01$), double antiplatelet therapy 20.3% vs 36.6% ($p < 0.01$), mechanical ventilation 22.5% vs 36.6% ($p < 0.05$), emergent procedure 75.3% vs 32.1%. Results were: success 77.5% REF vs 95.4% US ($p < 0.01$), vascular complication 3.4% vs 2.3% (ns), arterial puncture 14.6% vs 5.4% ($p < 0.05$), pneumothorax 2.3% vs 0% (ns).

Conclusion: Ultrasound guided jugular vein catheterization in our experience resulted more successful and safer compared with anatomical reference guided, even though it was performed in a population with significant higher hemorrhagic risk.

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Predictors of in-hospital mortality in patients with infective endocarditis: a longitudinal study over 14 years

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Introduction: Infective endocarditis (IE) is associated with a high in-hospital mortality rate attributed largely to the occurrence of complications in the acute phase of the disease.

Purpose: The purpose of this study was to evaluate predictors of in-hospital mortality and possible protective factors in patients with IE.

Methods: Single-center prospective observational study of consecutive patients (pts) admitted to the Cardiology Department of a university hospital between 2001 and 2015 with IE diagnosis (established by the Modified Duke Criteria and the European Society of Cardiology 2015 Modified Criteria). Clinical, laboratory, echocardiographic and microbiological parameters were obtained and its relationship with in-hospital mortality was evaluated by Cox regression analysis.

Results: The study population included 120 patients (67.5 % males; age: 65 ± 14 years; length of stay: 42 + 26 days). In-hospital mortality rate was 26 % (31 patients). The most prevalent etiological agent was *Staphylococcus aureus* (17.5%) and the most frequently involved valves were aortic and mitral (57.5 % and 46.7 %).

The parameters identified as in-hospital mortality predictors were age >70 years (p=0.01), positive blood cultures (p=0.037), C-reactive protein > 11,3mg/dL (p= 0.012), creatinine >1.5 mg/dL (p=0.019), immunosuppression (p=0.008), bioprosthetic valve endocarditis (p=0.012), significant prosthetic valve dysfunction (p=0.006), presence of cardiac fistula (p=0.031) and indication for surgery (p=0.008). Complications such as development of heart failure NYHA class IV (p=0.019), arrhythmias (p<0.001), shock (p<0.001), disseminated intravascular coagulation (p<0.001), acute kidney injury (p=0.006), need for dialytic technique (p<0.001), acute respiratory

distress syndrome (p=0.002) and need for mechanical invasive ventilation (p<0.001) were also associated with higher mortality.

The only independent predictor of in-hospital mortality was the occurrence of shock [hazard ratio (HR) = 3.81; 95% IC 1.50-9.67; p=0.005], while surgical intervention during hospitalization had an independent protective effect (HR=0.145; 95% CI 0.042-0.493; p=0.002).

Conclusions: This study confirms the high in-hospital mortality rate of patients with infective endocarditis and identifies the occurrence of shock as an independent predictor of mortality and performing valve surgery during hospitalization as a protective factor. These results highlight the importance of early surgical treatment when appropriate.

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Registry of medication errors in a coronary unit; a tool for pharmacotherapeutic morbidity prevention

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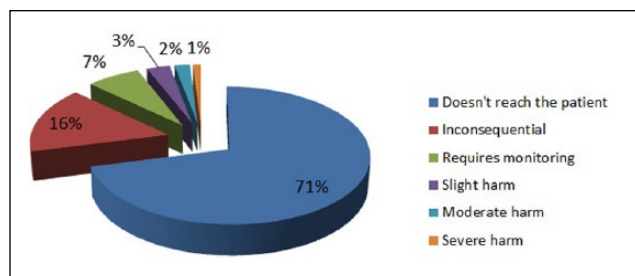
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Background: Medication errors (ME) are one of the most frequent adverse events in medical attention and the majority of them are preventable. Patients admitted in an intensive care unit are, by intrinsic and environmental characteristics, are more vulnerable to mistakes.

Objective: The aim of this study was to analyze the incidence and describe the types of medication errors in our coronary unit (CU) to guide further prevention actions.

Methods: Systematic prospective analysis of medications prescribed and administered in our CU in a period of time of 60 days. The error frequency and classification, patients clinical characteristics, length of hospital stay at that moment and need to microbiological isolation were collected in a daily routine.

Results: One hundred ninety-two patients were included during data collection period. Sixty-eight (35%) of them suffered a ME in at least one of the daily medication prescription lists (50 in one day, 11 in two days and 7 in three days). Of a total of 3706 medications prescribed, 145 (3,9%) medication errors were found, highlighting the therapeutic group of antithrombotics, which represent the 44% (25% antiplatelets and 20% anticoagulants) of the total mistakes. The step that provoked more errors was the medical prescription (64%), followed by transcription in the patient's medication schedule carried out by nursery staff (31%). The majority of ME (71%) did not reach any patients, and those which



Consequences of medication errors.

reached them, only 1% triggered severe but no fatal damage (see figure). All ME were considered potentially avoidable. Patients affected by ME were older (71 ± 8 vs 59 ± 12 years old; $p=0.02$), and they were under microbiological isolation more frequently (8.8% vs 4.8% , $p < 0.001$).

Conclusion: A high ME rate has been noticed in our CU, most of them without significant repercussion to patients, although all of them were potentially avoidable. This issue remarks the need to employ monitoring and prevention tools in this clinical scenario, especially in old, isolated patients or under antithrombotic therapy.

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Mortality risk factors in patients with Takotsubo cardiomyopathy. Portuguese multicentre study

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Introduction: Takotsubo cardiomyopathy (TC) is characterized by a transient left ventricular (LV) dysfunction. Despite the generally favorable prognosis mortality cases are described in TC. Little is known about the factors that are associated with mortality in TC.

Aim: To identify mortality risk factors in TC.

Methods: A multicentre study involving 11 hospitals with inclusion of all patients diagnosed with TC in the last 10 years. We evaluated demographic, clinical, electrocardiographic and echocardiographic data. We determined the factors that are associated with mortality (occurring during hospitalization or follow-up) by

univariate analysis. Multivariate analysis was performed to identify predictors of mortality.

Results: We included 205 patients with TC. In-hospital mortality was 2% and in the mid-term follow up (45 ± 33 months) was 2.4%. With an overall mortality of 4.4%.

In patients with TC the factors associated with mortality were history of angina (16.7% vs 3.2% , $p = 0.008$), absence of an emotional precipitating factor (8.1% vs 0.0% , $p = 0.005$), presentation forms with dyspnea (12.8% vs 1.9% , $p = 0.001$), the presence of ST segment elevation (7.5% vs 1.8% , $p=0.046$), presence of Q wave (10.8% vs 3.0% , $p=0.035$) or bifascicular block (50.0% vs 3.9% , $p=0.002$) in the initial ECG, heart failure (14.6% vs 1.3% , $p<0.001$) and cardiogenic shock (25.0% vs 2.6% , $p < 0.001$) during hospitalization.

Tc recurrence in follow-up is also associated with mortality (20.0% vs 3.6% , $p=0.013$).

In multivariate analysis the only factor predictive of mortality is ST segment elevation in ECG ($p=0.043$).

Conclusion: This study confirmed the low mortality associated with TC in a significant patient population with the disease. Mortality in TC is associated with history of angina, absence of an emotional precipitating factor, the presentation with dyspnea, presence of ST elevation, Q wave or bifascicular block on admission ECG, as well as the occurrence of heart failure or shock during hospitalization. The recurrence of TC in follow-up is also associated with mortality. The only independent predictor of mortality in TC patients identified in our study is St segment elevation in the initial ECG.

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Long-term outcomes and predictors of 3-year mortality after discharge home from acute myocardial - analysis of joined databases PL-ACS and AMI-PL national registries

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Background and aim: Clinical registries of acute myocardial infarction (AMI) rarely cover all country population and detailed follow-up information are usually

| Outcomes after discharge home | | | Predictors of 3-year mortality after discharge home | | |
|--------------------------------|-----------|------------|---|-----------------------|------------------------|
| | At 1 year | At 3 years | | Wald Chi ² | Relative risk (95% CI) |
| Rehospitalizations | | | Age (per 5 years more) | 724 | 1.28 (1.25-1.30) |
| - Non-cardiovascular reasons | 18.4% | 42.0% | LVEF (per 10% less) | 468 | 1.50 (1.45-1.56) |
| - Cardiovascular reason | 38.3% | 56.6% | History of renal failure | 90 | 1.67 (1.50-1.85) |
| - Stable angina | 26.1% | 34.5% | Invasive treatment | 64 | 0.71 (0.66-0.78) |
| - Unstable angina | 7.0% | 10.6% | NYHA class (per 1 more) | 53 | 1.23 (1.16-1.30) |
| - Myocardial infarction | 6.5% | 10.8% | Diabetes mellitus | 48 | 1.30 (1.21-1.40) |
| - Heart failure | 7.0% | 12.6% | STEMI (vs. NSTEMI) | 36 | 0.81 (0.76-0.87) |
| - Atrial fibrillation | 1.5% | 2.9% | Chronic pulmonary disease | 27 | 1.42 (1.24-1.61) |
| - Life-threatening arrhythmias | 0.9% | 1.6% | Peripheral artery disease | 25 | 1.39 (1.22-1.58) |
| - Stroke | 1.4% | 3.3% | History of stroke | 24 | 1.41 (1.23-1.61) |
| - Renal failure | 0.4% | 1.0% | In-hospital cardiac arrest | 19 | 1.84 (1.40-2.41) |
| Procedures | | | Current smoking | 16 | 1.20 (1.10-1.32) |
| - Coronary angiography | 22.5% | 31.3% | LBBB | 14 | 1.27 (1.12-1.45) |
| - PCI | 17.2% | 23.1% | Prior CABG | 9.4 | 0.72 (0.59-0.89) |
| - CABG | 6.0% | 6.9% | History of heart failure | 8.1 | 1.16 (1.05-1.29) |
| - Blood transfusions | 4.7% | 8.2% | Pre-hospital cardiac arrest | 5.4 | 1.45 (1.06-1.98) |
| Mortality | 8.1% | 16.6% | CABG | 4.3 | 0.78 (0.62-0.99) |

not available. On the other hand, in healthcare system databases medical data are not present. Therefore we performed and analysis of joint clinical and administrative databases to assess full picture of AMI in Poland in 2009 with complete 3-year follow-up.

Methods: Polish Registry of Acute Coronary Syndromes (PL-ACS) is an ongoing (since 2003) clinical registry compatible with the CARDS standards, however it does not cover all hospitals. AMI-PL is a nationwide database of the administrative data, mainly derived from the only, public, obligatory, health insurer in Poland (National Health Fund), and provide data on index and follow-up hospitalizations, procedures, and deaths for all Polish patients with AMI. For joined analysis 25175 AMI patients were available (49% NSTEMI and 51% STEMI) what comprise 33% of all AMI in 2009).

Results: The percentage of invasive treatment was 72% in NSTEMI and 85% in STEMI (thrombolysis <1%). Outcomes up to 3 years and predictors of 3-year mortality after discharge home are presented in the table. More than half of patients were rehospitalized due to cardiovascular reasons during 3 years following AMI, mainly due to ischemic stable angina, acute coronary syndromes, and heart failure. Importantly, both invasive treatment as well as bypass surgery and even a history of CABG had a protective effect on 3-year mortality after discharge.

Conclusion: Combined analysis of clinical and administrative databases can show a comprehensive picture of AMI in a particular population and thus should be a preferred method for studying a performance of the healthcare system.

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CHA2DS2-VASc vs GRACE vs PAMI-II: which score serves the best?

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Introduction: CHA2DS2-VASc score (CV), used to predict the thrombo-embolic risk in patients with Atrial Fibrillation, is simple to memorize and apply in day-to-day practice. After validating the CV score as a long-term risk predictor in a population of hospitalized patients with Acute Coronary Syndromes (ACS), it remained unclear how the score behaved in comparison to well validated risk scores in ACS.

Purpose: This study intends to compare the CV, GRACE (G) and PAMI-II (P) scores as predictors of poor outcomes in patients with ACS.

Methods: Prospective data of 1538 patients consecutively admitted between 1st October 2009 and 30th September 2015 diagnosed with an ACS. The population was later divided into two groups: A) patients with ST elevation myocardial infarction (STEMI)(n=642, 41.7%, 72% male); B) patients with non-ST elevation myocardial infarction or unstable angina (NSTEMI/UA)(n=896, 58.3%, 67.1% male). The CHA2DS2-VASc, GRACE and PAMI-II scores of each patient were compared using Receiver Operating Characteristic (ROC) curves and their respective Area Under the Curve (AUC) according to the presence of poor outcomes: composite primary endpoint (CPE – cardiovascular death, re-infarction and stroke) and secondary endpoints (re-infarction, stroke, cardiovascular death and all-cause mortality) during an in-hospital setting and at one year of follow-up.

Results: Considering the ACS population, all scores had good discriminatory potential predicting CPE both in hospital [AUC (CV): 0.671 vs AUC (G): 0.802 vs AUC (P): 0.754, p<0.001] and at 1 year [AUC (CV): 0.703 vs AUC (G): 0.768 vs AUC (P): 0.749, p<0.001]. GRACE out-performed the other scores predicting both

cardiovascular and all-cause mortality during in-hospital stay [AUC (CV): 0.671 vs AUC (G): 0.870 vs AUC (P): 0.782, $p < 0.001$] and at one year of follow-up [AUC (CV): 0.712 vs AUC (G): 0.824 vs AUC (P): 0.778, $p < 0.001$]. This was also observed in the STEMI and NSTEMI/UA populations separately. Regarding the secondary endpoints, all-cause mortality and cardiovascular death were best predicted by Grace score in all the groups. CV score predicted stroke in the ACS population [AUC (CV): 0.874 vs AUC (G): 0.684 vs AUC (P): 0.836, $p < 0.001$] and re-infarction in the STEMI population [AUC (CV): 0.706 vs AUC (G): 0.496 vs AUC (P): 0.670, $p < 0.001$] both at one year of follow-up better than the other scores.

Conclusion: Although the CHA2DS2-VASc score predicted poor outcomes both in the ACS population and in the STEMI and NSTEMI/UA groups, it performed globally worse comparing the most widely used risk score in ACS. However, it achieved better results predicting stroke in the ACS population and re-infarction in the STEMI population at a long term prognosis.

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A comparison between GRACE and CRUSADE risk scores for predicting in hospital mortality and major bleeding in acute coronary syndromes

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Background: The GRACE and CRUSADE risk scores are useful to assess mortality and bleeding risk in pts with acute coronary syndromes (ACS).

Purpose: to compare the performance of GRACE and CRUSADE risk scores to predict in-hospital mortality and major bleeding (MB) in pts with ACS.

Methods: retrospective study of 1587 consecutive pts with ACS. In-hospital deaths and MB were collected. MB was defined as BARC bleeding types 3-5.

Results: during hospitalization 71(4.5%) pts died and 37 (2.3%) pts had MB. In the whole population, receiver operating characteristic curves analyses showed GRACE risk score has better discrimination capacity than CRUSADE risk score for both, mortality and MB (Table 1). However, both scores had low discrimination for predicting MB in the elderly and atrial fibrillation, while CRUSADE risk score was especially poor for predicting MB in pts with eGFR <60mL/min or those treated with new antiplatelets. Calibration was acceptable for both scores (H-L p values >0.05). Moreover, GRACE risk score improved the predictive accuracy of CRUSADE risk score for predicting mortality (NRI: 23%) and MB (NRI: 18%), $p < 0.05$.

Conclusion: GRACE risk score has a better predictive performance for predicting both mortality and MB in pts with ACS. In light of these findings, we propose the GRACE score as a single score to predict these in-hospital complications.

Table 1. Discrimination of GRACE and CRUSADE risk

| AUC | Mortality | | | BARC MB | | | CRUSADE MB | | | All patients |
|-----------|---------------------|-------------------|-------|---------|---------|-------|------------|---------|-------|--------------|
| | BARC | CRUSADE | AUC | BARC | CRUSADE | AUC | BARC | CRUSADE | | |
| | AUC | p | | AUC | p | | AUC | p | | |
| 0.86 | 0.79 | 0.018 | 0.80 | 0.73 | 0.028 | 0.79 | 0.79 | 0.921 | Age | |
| >75 years | 0.77 | 0.73 | 0.215 | 0.60 | 0.50 | 0.067 | 0.61 | 0.59 | 0.680 | |
| <75 years | 0.86 | 0.78 | 0.079 | 0.87 | 0.83 | 0.375 | 0.86 | 0.89 | 0.668 | |
| eGFR | <60 ml/min | 0.81 | 0.75 | 0.169 | 0.74 | 0.65 | 0.142 | 0.71 | 0.71 | |
| | >60 ml/min | 0.85 | 0.81 | 0.008 | 0.81 | 0.75 | 0.055 | 0.81 | 0.79 | |
| 0.894 | Atrial Fibrillation | Yes | 0.78 | 0.74 | 0.460 | 0.69 | 0.62 | 0.301 | 0.67 | |
| 0.63 | | No | 0.86 | 0.79 | 0.034 | 0.81 | 0.73 | 0.029 | 0.81 | |
| 0.81 | | New antiplatelets | Yes | 0.94 | 0.99 | 0.089 | 0.72 | 0.49 | 0.005 | |
| 0.52 | | | No | 0.84 | 0.76 | 0.004 | 0.79 | 0.72 | 0.030 | |
| 0.78 | | | | | | | | | | |
| | | 0.608 | | | | | | | | |

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Prognostic significance of pulmonary vascular resistance trends within 48 hours from ICCU admission in ADHF patients: a landmark analysis

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Background: Despite advances in the treatment of ADHF patients, pulmonary hypertension (PH) due to left ventricular dysfunction is frequently encountered during in-hospital management and denotes one of the major adverse implications on the severity of ADHF pts, directly affecting clinical course and prognosis.

Purpose: We aimed to investigate the role of PH hemodynamic profile and its trends at 48 hours of admission in the clinical course and prognosis during in-hospital stay and one year follow-up after index hospitalization of ADHF pts, utilizing bedside echo-derived parameters.

Methods: 376 consecutive ADHF patients were prospectively analyzed entering a 'landmark survival analysis', investigating early (three weeks) and late (after three weeks to a year) effects of PH and its first 48 hours trends on prognosis. Echocardiography was used to assess mean pulmonary artery pressure (mPAP), pulmonary artery wedge pressure (PAWP), pulmonary vascular resistance (PVR) immediately and at 48 hours of admission in ICCU. Patients were classified into 3 groups according to PVR level on admission and at 48 hours of hospitalization. Primary endpoint was all-cause mortality. Secondary endpoint was a complicated in-hospital clinical course (a composite of iv inotropes use, diuretic resistance, a prolonged in-hospital treatment > a week, pulmonary edema (PE), cardio-hepatic syndrome, cardio-renal syndrome type I, cardiac death). PH related to other causes (group I,III-V according to WHO/ESC/ERS classification) were excluded.

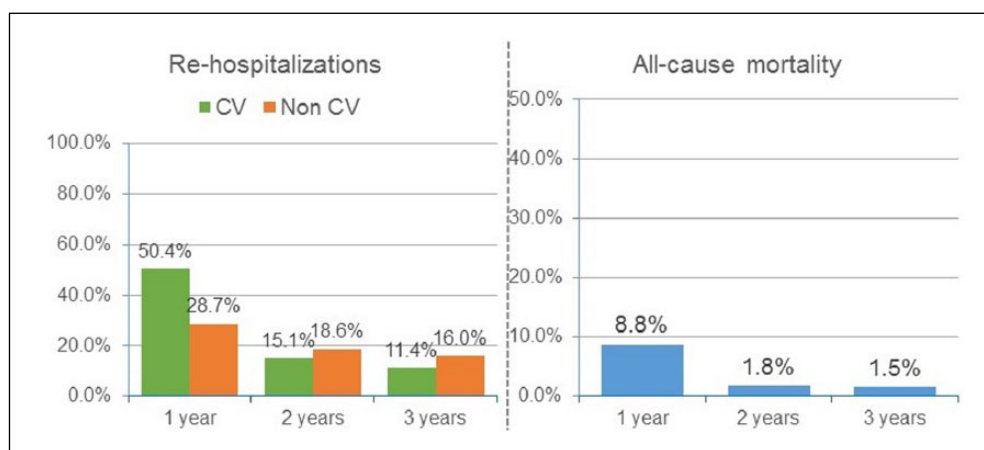
Results: Patients were classified into (I) increased mPAP \geq 25mmHg, PAWP>15 mmHg and normal PVR on admission (n=103), (II) increased mPAP & PAWP & elevated PVR (>3 WU) with at least 25% decrease at 48 hours of admission (n=145), (III) increased mPAP & PAWP with persistently elevated PVR without decrease (or<25%) at 48 hours of admission (n=128). During the early three weeks, mortality was significantly higher in persistently elevated PVR compared to normal PVR, but similar to elevated PVR decreasing at 48 hours ADHF patients (in Cox regression adjusted HR of group 3 to 1 was 5.74 [95%CI: 2.3-14.6, p<.0001] and group 3 to 2 was 1.3 [95%CI: 0.6-3.1, p=.24]). Comparing the complicated in-hospital clinical course HR of group 3 to 1 was 8.94 [95%CI: 2.7-19.2, p<.0001] and group 3 to 2 was 4.6 [95%CI: 1.16-12.8, p<.001]. During one year follow up, all-cause mortality was significantly higher in group 3 compared to group 1 and 2 with HR 4.89 [95%CI: 1.5-13.7, p<.001] and 2.6 [95%CI: 1.24-7.3, p=.014] respectively.

Conclusions: a persistently elevated echo-derived PVR seems to be an important predictor of the early clinical course, as well as in-hospital and one year prognosis in ADHF pts. We conclude from our study that simple and inexpensive PH hemodynamic profile estimation by ECHO during 48 hours of admission in ICCU would be a valuable screening tool to stratify ADHF severity and better program the subsequent early and late management strategy.

718

Three year follow-up of patients with an acute coronary syndrome (ACS) in a large community setting of 2,989,512 subjects of the Italian National Health Service (NHS)

The analysis of data was partially supported by Sanofi



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Background/Introduction: ACSs are a major public health issue that affects millions of people worldwide. Patients with ACSs included in controlled trials (RCTs) are a population selected on the basis of the eligibility criteria of study protocols and do not fully represent the real-world population of clinical practice. Administrative databases have been evaluated, specifically in Northern countries, with the aim of describing the 'real-world' situation of ACSs. However, information on long-term outcomes of ACSs in real world patients of a Mediterranean country still needs to be described.

Purpose: To assess in a real world community setting the clinical characteristics and the 3 year outcomes of patients admitted for an ACS during year 2011.

Methods: From the ARNO Observatory, we carried out a record linkage analysis of discharge records and prescription databases on a population of 2,989,512 subjects of 7 Local Health Authorities from Northern to Southern Italy. The

accrual period lasted from January 1 to December 31, 2011. Discharge records patterns were analyzed for 1 year before and 3 years after the accrual period to identify the clinical events occurring in the study population.

Results: Of the 2,989,512 subjects, 6,226 (2.1%) were hospitalized for ACS during 2011. Female gender accounted for 35.5% of the cases. Mean age was 71±13 (68±13 in males, 77±12 in females). History of diabetes, hypertension, COPD and depression was reported respectively in 30.8, 71.4, 9.5 and 14.6% of the cases.

The Figure shows the re-hospitalization and all-cause mortality rates over the 3 years of follow-up. Both re-hospitalizations and deaths occurred more frequently in the first year after the index admission for ACS. Non cardiovascular (CV) causes of re-hospitalization occurred in a relevant proportion of cases.

Conclusion(s): Real-world evidence provides findings that are different from those derived from RCTs generally conducted by cardiologists. Re-hospitalizations are very frequent, particularly in the first year after the index event and, in nearly one third of the cases, they are due to non-CV reasons, documenting the relevant role of advanced age and co-morbidities. After 1-year follow-up, non CV causes of hospitalization are more frequent than CV causes suggesting the need of a multidisciplinary approach in secondary prevention.

Poster Session 5 - Monday, 17 October 2016 - 08:30 - 12:30

Acute coronary syndrome - ST-elevation myocardial infarction

P738

Result of single-center from monsoon climate of medium latitudes: the lowest occurrence of acute myocardial infarction (AMI) exist in limited temperature interval

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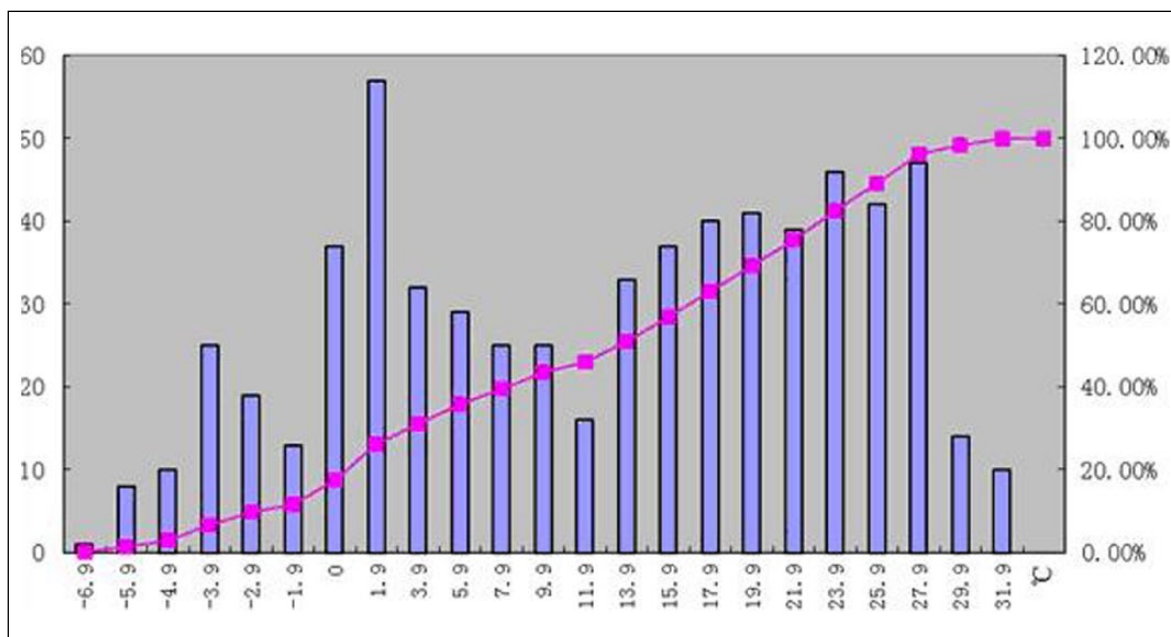
Objective: To investigate the seasonal regulation of AMI patients from monsoon climate of medium latitudes by recording instant temperature and 24H average temperature when acute myocardial infarction occurred.

Methods: Retrospective analysis to 717 acute myocardial infarction (AMI) patients hospitalized in our heart center from January 2010 to December 2012 , Recorded instant temperature and 24H average temperature from the national meteorological center as standard temperature(°C) when AMI occurred. Meanwhile, other AMI risk factors from these patients were also recorded such as age, heart rate, blood pressure, cholesterol, glucose level and smoking history. The correlation between all indicators were

analyzed for searching the limited temperature interval with lowest incidence rates of AMI.

Results: We plot a histogram recording the AMI number of different temperature section, the instant temperature shows bimodal distribution rather normal distribution, the number of AMI patients concentrated near the 0 °C and around 25 to 26 °C, with the trend of temperature two poles, the number falls down. Bimodal histogram prompt samples from two distinct or two factors affect sample as a whole. We thought the peak near the 0 °C due to the atheromatous plaque damage caused by cold snap, but the peak around 25 to 26 °C due to some unknown factors. The histogram of average temperature also shows bimodal distribution, the number of AMI patients concentrated around 0 to 1°Cand near 26°C, with the trend of temperature two poles, the number falls down, too. Only 5% of the sample under the temperature -4.4 °C, Only 5% of the sample above the temperature of 27.575 °C.Between the two peaks, there is the lowest occurrence of AMI from10 °C to 11.9 °C. Only 16 AMI patients enrolled in this temperature interval, accounted for 2.47% of the total sample.

Conclusions: Monsoon climate of medium latitudes has four distinct seasons and large temperature difference, there is a sweet temperature interval for those patient with coronary heart disease. Because when 24H average temperature is 10 °C to 11.9 °C the occurrence of AMI is the lowest number.



temperature distribution

P739

Pregnancy-associated plasma proteins in patients with infarction acute phase STEMI

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Introduction: Worldwide deaths from cardio-vascular disease ranks first among all causes of overall mortality. To improve risk stratification and diagnosis of acute coronary syndrome are open and actively exploring new protein growth factors and damage associated with pregnancy plasma protein-A.

The purpose of the comparative analysis of PAPP-A levels in the blood plasma of patients with acute coronary syndrome.

Material and methods: In the study 71 patients were enrolled with acute coronary pathology, the average age was 57±8.5 years of age. In the blood plasma of patients was measured PAPP-A. Blood sampling was carried out at the time of patient's admission to the verification of the final diagnosis. The concentration of PAPP-A was measured by immunofluorescence. The control group consisted of 20 healthy individuals. The comparison group consisted of 40 patients with hypertension and coronary heart disease with stable forms of angina. The statistical processing of the material held by a 'Statistics 8.0' package.

Results: PAPP-A in 37 patients with Infarction acute phase STEMI were the highest 27,64±11,60 and close to the cases of mortality 27,7±7,1. In 34 patients with Infarction acute non phase STEMI PAPP-A concentrations were slightly lower segment 11,02±7,18, but fairly significantly ($p<0.05$) higher than that of patients with a diagnosis of unstable angina, 8,22±3.16. All patients with myocardial infarction at admission were decorated complications of acute period. 38 patients had a higher risk for Killip 2,5-4. 9 patients had a higher risk of fatality on a scale of Grace in hospital = 40-50%. Absolute mortality from heart attack was 9 cases, which fully complies with Grace in hospital. Analysis of PAPP-A was statistically significant ($p<0.05$) due to weak negative outlook mortality on a scale of Grace in 6 months $p=0,001$, $r=-0,25$.

Conclusion: PAPP-A levels are significantly higher in patients with acute coronary artery disease compared to healthy people and patients with arterial hypertension and coronary heart disease (stable form). In patients with Infarction acute phase STEMI PAPP-A is greater than the value in unstable angina in 3,4 times, and in patients with Infarction acute phase STEMI in 2,5 times. In case of death PAPP-A is 3.3 times higher than that in unstable angina. PAPP-A - factor protein damage, and can be used as the analyzer is unstable atherosclerotic plaques in acute coronary events.

P740

Long term effects of stem cell therapy in acute myocardial infarction: 24 months follow up - pilot study

This work was supported by CREDO Project - ID: 49182, financed through the SOP IEC -A2-0.2.2.1-2013-1 cofinanced by the ERDF

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Background: Stem cell therapy holds potential for treating myocardial ischemia by promoting myocardial regeneration and cardiac repair after ST elevation myocardial infarction (STEMI). Despite major advances in its management, a large number of patients are left with reduced left ventricular ejection fraction (LVEF) leading to an increased risk of congestive heart failure and long term morbidity and mortality. Intracoronary injection of Autologous Bone Marrow Stem Cells (ABMSC) demonstrated to be a promising adjuvant therapy in STEMI patients with low LVEF.

Purpose: Proving that stem cell therapy is a reliable adjuvant treatment in ST-elevation myocardial infarction

Material and Methods: 18 patients with anterior STEMI and LVEF < 40% were divided in two groups: control group and ABMSC group. All patients received standard of care treatment in agreement with current guidelines. At 7-10 days after STEMI, ABMSC group received autologous bone marrow stem cells (harvested from the iliac crest) by infusion in the culprit coronary artery. Patients were followed up for 2 years using clinical and imagistic methods. We evaluated LVEF by 2D echocardiography at baseline, 12 months and 24 months.

Results: No adverse effects were observed during long term follow up for 24 months after stem cell therapy administration. 2D echocardiography analysis of ABMSC group demonstrated an increase in LVEF from baseline to 12 months by 9%, $p = 0.00$ which was sustained at 24 months with an additional increase by 1.29%, $p = 0.004$. In the control group we recorded an increase in LVEF by 7.4%, $p = 0.07$ at 12 months, followed by a decrease by 1.85%, $p=0.105$ at 24 months compared to 12 months. At 24 months compared to baseline LVEF increased by 10.29%, $p = 0.00$ (from 29.42% ± 3.82 to 39.71% ± 5.71) in ABMSC group compared to 5.5%, $p = 0.23$ (from 30.45% ± 5.18 to 36% ± 11.78) in control group. Tests applied failed to prove a significant difference between the two groups at 12 and 24 months. Coronary angiography showed TIMI 3 flow after culprit-lesion PCI in both groups.

Conclusion: We demonstrated a greater improvement of LVEF in ABMSC group compared to control group, from baseline to 12 months, effect sustained at 24 months. Also, we observed a better clinical evolution of stem cell treated patients compared to control group at 24 months follow up. Stem cell therapy proved to be a safe and feasible adjuvant treatment in STEMI, results similar with those from literature. Further studies are required to determine the precise indications and optimal timing/method for cell administration.

P741

Prevalence and characteristics of Myocardial Infarction and Nonobstructive Coronary Arteries in Japanese population

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Introduction: Myocardial infarction and nonobstructive coronary arteries (MINOCA) is an unestablished clinical entity with many questions. Recent review paper mentioned its prevalence is 6% and all-cause mortality at 12 months was lower in MINOCA compared with conventional myocardial infarction (MI).

Purpose: This study aimed to analyze the prevalence of MINOCA and reveal features of it and compare with conventional MI in our Japanese population.

Methods: We reviewed the catheter laboratory database for 5 years (from January 2009 to December 2014). MINOCA were defined as having (1) sudden onset chest symptom, (2) significant elevation of a cardiogenic biomarkers, (3) new ST-T changes or LBBB in ECG and (4) coronary angiography revealed no stenosis more than 50%. The definition of conventional MI is similar to MINOCA except for (4) coronary angiography revealed stenosis more than 75%. Baseline characteristics, coronary risk factors, peak amount of creatine kinase (CK) and CK-MB and prognosis were investigated.

Results: We identified 12 MINOCA and 143 conventional MI cases and prevalence of MINOCA within all MIs was 7.7%. MINOCA cases were significantly older than conventional MI (73.6 ± 10.4 vs. 62.5 ± 13.4 , years old, $p < 0.01$) and there were only female (0:12 vs. 122:21, male:female, $p < 0.001$). There were no statistically significant differences between two clinical entities for coronary risk factors such as hypertension (50.0% vs. 65.7%), diabetes (8.3% vs. 23.1%), dyslipidemia (58.3% vs. 61.5%) and family history of coronary heart disease (25.0% vs. 28.8%) whereas significantly less smoker (no matter current or former) were seen in MINOCA than conventional MI (8.3% vs. 74.8%, $p < 0.001$). Peak value of CK (578.3 ± 716.1 vs. 2931.3 ± 2351.8 , IU/l, $p < 0.001$) and CK-MB (43.3 ± 31.1 vs. 303.2 ± 248.5 , ng/ml, $p < 0.001$) were significantly lower in MINOCA. After a mean follow up of 829 days, no significant difference for all-cause mortality (8.3% in MINOCA and 7.7% in MI) or cardiovascular death (0% vs. 3.5%) was observed. We could estimate the cause of MINOCA in all cases but one case; 9 Takotsubo cardiomyopathy, 1 coronary spasm, 1 embolization caused by paroxysmal atrial fibrillation, 1 unknown.

Conclusions: The prevalence of MINOCA within all MIs in this study was 7.7% and was almost reasonable value compared with recent review. On the other hand unlike former data, they were all female and relatively old. No significant differences were seen for coronary risk factors except for lesser smoker and no significant difference was

observed for prognosis. Peak amount of CK and CK-MB were lower in MINOCA patients. The etiology of MINOCA was estimated Takotsubo cardiomyopathy in three-quarter cases. To our knowledge, majority of the population in the review article is not Asian people especially Japanese. Therefore our data submitted a new question that race difference may exist for understanding MINOCA.

P742

Treatment of acute coronary syndrome in young women: still not there yet

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Background: Women (W) with acute coronary syndrome (ACS) have a different clinical profile than men (M) that is responsible for their undertreatment and worse prognosis. It is not known if young W (YW) with ACS retain this variation. We aimed to assess these differences and how they relate to treatment choice and prognosis.

Methods: Prospective analysis of consecutive patients (P) with ACS in a cardiology centre in 2005-2014. We obtained demographic, clinical, imaging, treatment and prognostic data and compared M and W. We did a subanalysis of P aged <50 years comparing YW and young M (YM).

Results: We analyzed 3395 P (70.4% M; mean age 63.2 ± 13.1). 15.7% were <50 years old (85.4% M; mean age 43.2 ± 5.2). Overweightness and smoking were the most common risk factors across genders in older and younger P, respectively. W were less likely to be overweight ($p = 0.005$), have positive family history ($p = 0.024$) and smoke ($p < 0.001$) and more likely to have hypertension (HT) and diabetes (DB) (all $p < 0.001$). YW only retained less overweightness as a difference ($p < 0.001$). W were more often on treatment for HT, dyslipidemia and DB before admission (all $p < 0.001$). This difference was lost in YW. W more often presented with atypical pain ($p = 0.010$) and heart failure (HF) ($p = 0.013$), but YW showed no differences. 3.1% had a Killip III clinical course, with both W and YW being more affected ($p < 0.008$). W had more atrial fibrillation at presentation ($p = 0.023$), which was not observed in YW. 58.6% had good left ventricle systolic function, that was not different across age and gender. W had less ST-segment elevation ACS (STEMI) (56.4% vs 66.4% $p = 0.001$) and so did YW ($p = 0.036$). W had less inferior infarction ($p = 0.001$) and left main disease ($p = 0.025$). This variation was lost in YW. W were less medicated with and discharged on a combination of acetylsalicylic acid, P2Y12 inhibitor and statin (71.0% vs 79.0%) and on a combination of the previous three drugs with angiotensin converting enzyme

inhibitor and β -blocker (34.8% vs 41.2%) and were less revascularized during hospital stay (59.0% vs 79.8%) (all $p < 0.001$). YW received less statin (82.1% vs 89.9% $p = 0.042$) and revascularization (70.7% vs 80.7% $p = 0.047$), while no difference was found for other treatments. W had more in-hospital complications ($p < 0.001$) and mortality (7.3% vs 4.5% $p = 0.001$), as well as 1-year mortality (6.5% vs 4.4% $p = 0.011$). These differences were not observed in YW.

Conclusion: Overall, M and W with ACS have many significant differences, but YW can only be distinguished from YM by more overweightness, more severe HF and less STEMI. W received less evidence-based pharmacologic therapy and revascularization and had worse in-hospital and medium-term prognosis than M. Prognosis was similar in YW and YM, partly because of improved use of pharmacologic therapy. However, there is still underuse of statins and revascularization in YW, not simply explained by the few differences in clinical characteristics.

P743

Role of acid-base balance at admission in risk stratification of patients with acute myocardial infarction

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Background: Few data are available on the acid-base imbalance in acute myocardial infarction (AMI).

Aim of the work: is to evaluate the role of acid-base balance on the in-hospital complications of AMI patients submitted to coronary revascularization.

Patients and methods: 100 patients with ST elevation AMI. All patients were subjected at admission to full history taking including risk factors of coronary artery disease, electrocardiogram, echocardiogram, laboratory analysis and basic metabolic profile, and during ICU Stay to continuous monitoring to detect occurrence of arrhythmias and signs or symptoms of heart failure (HF).

Results: smoking, hypertension, diabetes and family history for coronary artery disease (FH) were predictors for the occurrence of arrhythmia, while, dyslipidemia, age and male gender were not predictors. In this study; hypertension, dyslipidemia, male gender and FH were predictors for the occurrence of reduced ejection fraction (EF), while smoking, diabetes and age were not predictors. In this study; $pH < 7.35$, serum $HCO_3^- < 22$, base deficit > -3 , anion gap < 12 , serum $Cl/Na < 0.79$, and high uric acid level were predictors for the occurrence of arrhythmia and reduced EF. There was a positive correlation between EF and pH, serum bicarbonate level, base excess, and serum chloride/sodium

ratio. While there was a negative correlation between EF and anion gap and serum uric acid level.

Conclusion: PH, serum bicarbonate level, base excess, serum chloride/sodium ratio and anion gap are predictors for the occurrence of arrhythmia and reduced EF.

P744

ST elevation myocardial infarction in the young: proportion, treatment and prognosis over a decade

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Introduction: Myocardial infarction in the young is less frequent but it has frequently some difficulties in diagnosis and management.

Objectives: To evaluate over time young patients (< 45 years) with ST elevation myocardial infarction (STEMI): its cardiovascular risk profile, treatment and prognosis.

Methods: Retrospective study from a single-center registry of acute coronary syndromes. We selected patients with STEMI and they were grouped in three time periods: 2005-2008 ($n = 826$), 2009-2012 ($n = 775$) and 2013-2015 ($n = 535$). We compared the proportion of patients with < 45 years of age in those three groups, as well as treatment and short-term outcome.

Results: From 2136 patients admitted between 2005 and 2015 with STEMI, 203 (9.5%) had an age < 45 years. The proportion of young patients remained stable over the years (9.8%, vs. 9.9% vs. 8.4%, $p = 0.607$). In the younger patient's group (39 \pm 4 years), there is a predominance of males (86.7%), 27.6% had hypertension, 10.8% diabetes, 39.4% hyperlipidemia and 76.4% were smokers, with stable prevalence over time, except a slight trend for a reduction of smokers (82.7% vs. 76.6% vs. 64.4%, $p = 0.069$). There was also a reduction in the prevalence of previous myocardial infarction (12.3% vs. 3.9% vs. 2.2%, $p = 0.042$). Renal function remained stable. There was an increase in pre-hospital Emergency Medical System (EMS) referral (18.5% vs. 16.9% vs. 35.6%, $p = 0.036$). Presentation in Killip class ≥ 2 occurred in 6.4% of patients, similar between groups. Treatment remained also identical. We found a slight trend for an increase (although non-significant) in hospital (1.2% vs. 2.6% vs. 4.4%) and 30-day mortality (2.5% vs. 2.6% vs. 4.4%).

Conclusions: Young patients represent almost 10% of all patients admitted with STEMI. In those patients, there has been a reduction in smokers and previous myocardial infarction, with better referral by the pre-hospital EMS. There was not, however, any improvement in short-term outcome.

P745

What are the warning signs? Predictors of worsening of the Killip-Kimball class during hospitalization

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Introduction: The Killip-Kimball classification (KK) is a simple risk stratification system applied in patients with Acute Coronary Syndromes (ACS). It is known that patients with KK class I have a lower risk of mortality. However, KK classification is dynamic, depending on several factors, and may worsen during in-hospital stay.

Purpose: Evaluate the differences between patients admitted for ACS which have and have not shown worsening of the initial KK classification.

Methods: A retrospective study of patients inserted in the National Registry of ACS of the Portuguese Society of Cardiology was performed. Only patients with KK class I at admission were selected. The sample was divided in two groups: Group A (GA) without worsening of KK class and Group B (GB) with worsening of KK class.

Results: There were a total of 11647 patients with ACS and KK class I at admission, only 7.8% (912 patients) presented worsening of the KK class during hospitalization. GB had a majority of female patients and older patients. GB showed more prevalence of arterial hypertension, diabetes mellitus, valve disease, cerebrovascular and peripheral artery disease and renal failure. STEMI was more frequent in GB. GB patients had higher Global Registry of Acute Coronary Events (GRACE) Score values.

GB patients were more frequently medicated with diuretics, aldosterone antagonists, amiodarone, digoxin, inotropics and levosimendan. These patients had a greater prevalence of multivessel disease and left main and left anterior descending artery stenosis. There was a lower Left Ventricular Ejection Fraction (LVEF) in GB. There was a higher rate in GB of intra-aortic balloon, mechanical ventilation (both invasive and non-invasive) and temporary pacing usage. Regarding adverse events, there was a higher proportion in GB of Atrial Fibrillation (AFib), mechanical complication, stroke and death (1.0% vs 14.0%, $p < 0.001$). However, after multivariate analysis, with the exception of death (OR 3.76, $p < 0.001$), the occurrence of worsening of KK class is not a predictor of AFib, mechanical complication or stroke.

It is evident that LVEF < 50%, intermediate and elevated GRACE Score, presence of left main and left anterior descending artery stenosis, left bundle branch block and previous valve disease have an independent impact on the occurrence of worsening of the KK class.

Conclusions: As expected, worsening of KK class was associated with a worse outcomes. It occurred mainly

in patients with a substantial past medical history and more severe coronary disease. Though the GRACE score evaluates only initial clinical and analytical parameters upon hospital admission, it accurately predicted the worsening of KK classification during in-hospital stay of patients first classified as KK class I. Multivariate analysis confirms that worsening of KK class is independently associated with a higher in-hospital mortality.

P746

Short- and long-term mortality within different age cohorts of patients with ST-elevation myocardial infarction

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Purpose: Elderly patients with STEMI are often under-represented in randomized trials. Hence, our aim was to investigate the influence of age on patient characteristics, short- and long-term outcome in the Vienna STEMI registry (2003-2009).

Methods: We included patients with known age, gender, history of hypertension (HTN), hyperlipidaemia (HLP), diabetes mellitus (DM), smoking habit, family history (FH), and previous infarction (pMI), infarct location (anterior-wall vs. non-anterior) and shock. Patients were stratified into age cohorts (≤ 45 , 46-59, 60-79, ≥ 80 years respectively). Differences between cohorts were calculated with the Linear-by-Linear association test for trend and mortality with log-rank test. A Cox-regression model was build up to adjust for risk factors.

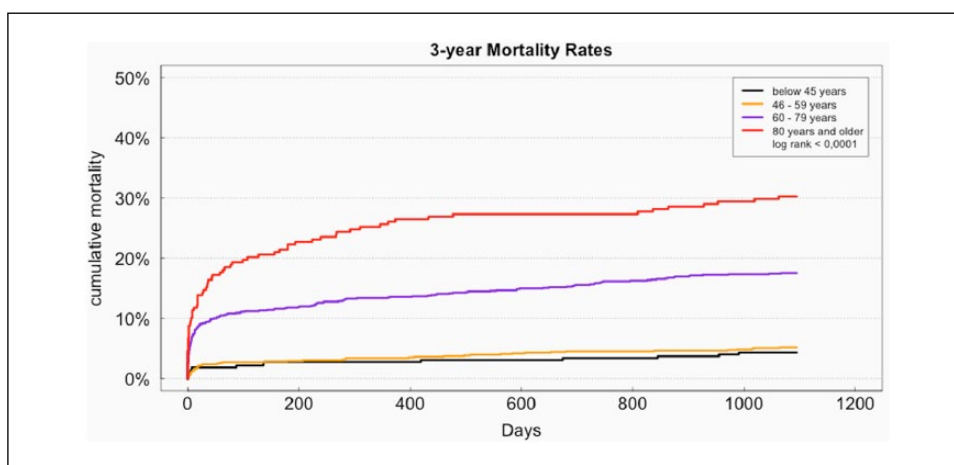
Results: A total of 2452 patients fulfilled criteria for further investigation. Mean age was 60,7 years, overall 30-day and 3-years all-cause-mortality were 6,3% and 12,6%, respectively. Table 1 provides baseline characteristics and the Cox-regression. With rising age, the account of females, DM, HTN, pMI, shock, and anterior-wall infarction increased and FH, smoking and HLP declined significantly. Log-rank shows significant differences for short and long-term mortality ($p < 0,0001$ for both). Cox-regression revealed independent association for Age, HTN and shock for short-term mortality, and independent association of Age, HTN, HLP, Smoking, DM, pMI and shock for long-term mortality.

Conclusion: Several cardiovascular risk factors show a significant linear association with age. The Cox-regression confirmed an independent association of age with short- and long-term mortality, the highest predictor of death was shock.

Table 1. Patient characteristics & Cox-regression

| Description | <45 years | 46-59 years | 60-79 years | >80 years | p-value for trend | HR (95%CI), p-value 30 Day Mortality | HR (95%CI), p-value 3 Year Mortality |
|--------------------------|-------------|-------------|-------------|-------------|-------------------|--------------------------------------|--------------------------------------|
| Age | 50 (15,5%) | 176 (20,0%) | 307 (30,4%) | 115 (48,3%) | <0,0001 | 1,079 (1,047 - 1,112), p<0,0001 | 1,063 (1,04 - 1,087), p<0,0001 |
| Hypertension | 99 (30,7%) | 381 (43,2%) | 529 (52,4%) | 135 (56,7%) | <0,0001 | 0,566 (0,405 - 0,792), p=0,001 | 0,73 (0,576 - 0,924), p=0,009 |
| Hyperlipidaemia | 105 (32,5%) | 329 (37,3%) | 302 (29,9%) | 47 (19,7%) | <0,0001 | n.s. | 0,621 (0,461 - 0,837), p=0,002 |
| Smoking | 229 (70,9%) | 509 (57,7%) | 267 (26,5%) | 9 (3,8%) | <0,0001 | n.s. | 0,614 (0,445 - 0,847), p=0,003 |
| Diabetes mellitus | 24 (7,4%) | 151 (17,1%) | 236 (23,4%) | 46 (19,3%) | <0,0001 | n.s. | 1,434 (1,108 - 1,857), p=0,006 |
| Family History | 94 (29,1%) | 162 (18,4%) | 108 (10,7%) | 7 (2,9%) | <0,0001 | n.s. | n.s. |
| Previous Infarction | 30 (9,3%) | 102 (11,6%) | 160 (15,9%) | 44 (18,5%) | <0,0001 | n.s. | 1,598 (1,214 - 2,104), p=0,001 |
| Anterior Wall Infarction | 156 (48,3%) | 392 (44,4%) | 499 (49,5%) | 130 (54,6%) | =0,03 | n.s. | n.s. |
| Shock | 12 (3,7%) | 48 (5,4%) | 104 (10,3%) | 34 (14,3%) | <0,0001 | 8,659 (1,04 - 1,087), p<0,0001 | 5,164 (4,029 - 6,619), p<0,0001 |

Table provides baseline characteristics of age cohorts (total number and % within age cohort, p-value for trend) and results of Cox-regression for short- and long-term mortality (HR (95% CI), p-value).



3-year Mortality of Age Cohorts

P747

Switch to potent P2Y12 inhibitor in ST elevation myocardial infarction: role of platelet reactivity testing

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Dual antiplatelet therapy (acetylsalicylic acid (ASA) + P2Y12 receptor antagonist) is a cornerstone of ST elevation

myocardial infarction (STEMI) management. When initial clopidogrel treatment seems sub-optimal, switching to ticagrelor is attractive, but the evidence base is insufficient.

Although the generic P2Y12 receptor antagonists are manufactured to be pharmaceutically equivalent, in several studies non-equal biological efficacy of generic and original antiplatelet drug (clopidogrel) has been demonstrated. The similarity of efficacy and safety of switching brand name vs generic clopidogrel to ticagrelor remains unproved.

The purpose of the study was to assess whether the switch from clopidogrel brand name to ticagrelor in patients with STEMI is totally equal to the switch from clopidogrel generic in terms of

pharmacodynamic profiles and whether this switching is associated with a reduction of adverse cardiovascular events risk reduction independently from initial platelet reactivity.

Methods: We assessed baseline characteristics, in-hospital and 6 months outcomes in following groups: ASA + clopidogrel (original vs generic), ASA + ticagrelor and ASA + clopidogrel (original vs generic) switching without a reloading dose to ticagrelor. Total enrollment in the study was 543 patients. Inhibition of platelet aggregation (IPA) was measured by impedance and luminescence aggregatometry (Chronolog 700), aspirin and PRU tests by VerifyNow System.

Results: Inhibition of platelet aggregation achieved at baseline was comparable across all groups. IPA on 7th day since STEMI was maximal in ASA + ticagrelor group (95.1%, $p = 0.042$). Pharmacodynamic profile in terms of platelet aggregation and ADP release showed product-based differences: ASA + clopidogrel generic group IPA 2.9% vs ASA + clopidogrel original 73.5% ($p = 0.011$). Patients experiencing P2Y12 receptor antagonists switch demonstrated either worsening IPA (clopidogrel generic to ticagrelor: -97.9%, $p = 0.047$), or no significant differences (clopidogrel original to ticagrelor: 42.3%, $p = 0.127$), and were at higher risk of cardiovascular adverse event, hazard ratio 1.96, 95% CI 1.24 - 5.14. There was no evidence of excess risk of bleeding (in hospital and 6 months) or in-hospital complications in the patients who were switched from clopidogrel (both generic and original) to ticagrelor.

Conclusion: In heterogeneous by initial platelet reactivity group of patients with STEMI P2Y12 receptor antagonists switch results in non-profitable changes of platelet function. The pharmacodynamic profiles of brand-name and generic clopidogrel differ in patients with STEMI. Thus, for each P2Y12 receptor antagonist individual safety/efficacy data should be considered before administration, and strict indications/contraindications for switching of P2Y12 receptor antagonists in STEMI should be applied.

P748

Prognostic value of new onset atrial fibrillation in patients presenting with ST-elevation myocardial infarction in a Tunisian registry

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Background: New-onset atrial fibrillation (NOAF) is reported in nearly 10% of patients presenting with ST-elevation myocardial infarction (STEMI) during the hospital course.

Purpose: We sought to compare outcomes in patients presenting for STEMI with NOAF vs. those without NOAF.

Methods: We analyzed data from a retrospective single center registry enrolling patients presenting for acute STEMI between January 1998 and October 2014. Patients experiencing NOAF were compared to those without NOAF regarding clinical characteristics and in-hospital outcomes. Multivariate analysis was performed to determine the relationship between NOAF and in-hospital mortality.

Results. Among a total of 1498 patients enrolled during the study period, 100 (6.7%) experienced NOAF during the hospital course. When compared to patients without, patients with NOAF were more likely to be elderly (27% vs. 13.4%, $p < 0.001$), to have an anterior localization of the STEMI (59% vs. 45.6%, $p = 0.009$) and to present with heart failure (HF) on-admission (39% vs. 20.9%, $p < 0.001$). In-hospital mortality was significantly higher in patients with NOAF (23% vs. 7.6%, $p < 0.001$). When adjusted to main risk conditions and in addition to advanced age, female gender, HF and renal failure on-admission and cardiogenic shock, NOAF was independently associated to in-hospital death (OR=2.77, 95% CI: 1.54-4.96, $p = 0.001$).

Conclusions: According to the present study, NOAF in patients presenting for STEMI is frequent. It is independently associated to worse in-hospital outcomes.

P749

Increased use of percutaneous coronary intervention in elderly aged 75 years or older with acute myocardial infarction improved short-term outcomes - a retrospective analysis of a single center

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Introduction: Percutaneous coronary intervention (PCI) is a well-established treatment for acute myocardial infarction with persistent ST elevation (STEMI). However, recent studies have shown that elderly patients are less likely to undergo PCI.

Purpose: To determine whether treatment with PCI reduces in-hospital mortality and improves short-term outcomes in elderly patients presenting with STEMI.

Methods: We performed a retrospective comparative analysis of consecutively admitted patients aged 75 years or older with STEMI in two nonconsecutive years - 2011 and 2014.

Results: The elderly patients were 56 (mean age 81 ± 4.9 years, 48.2% women) in 2011 and 43 (mean age 80 ± 3.7 years, 58.1% women) in 2014. There was no significant difference in the major coronary heart disease risk factors (arterial hypertension, diabetes mellitus, smoking habit, dyslipidemia), BMI, baseline

levels of hemoglobin, white blood cell count and C-reactive protein or renal function (GFR) in both groups. Time from symptom onset to PCI was identical in both groups - 11.5 ± 14.6 vs 11.6 ± 13.8 hours, $p=0.979$. Use of guideline-recommended drug therapy was the same except for the increased use of P2Y12 inhibitors during the second period (82.1 vs 97.7%, $p=0.021$). Comparing the two periods, PCI treatment was also increased from 75% to 97.7% ($p=0.002$). In-hospital course was more complicated in the first period – significantly more patients had in-hospital worsening of heart failure (44.6 vs 18.6%, $p=0.009$) and need of mechanical ventilation (26.8 vs 9.3%, $p=0.039$) despite similar LVEF (43 ± 11 vs $47 \pm 12\%$, $p=0.099$). There was insignificant difference in the rate of conduction disorders, arrhythmias, need of IABP implantation or renal-replacement therapy. Despite the increased rate of PCI and P2Y12 inhibitors treatment there was no increase in the bleeding events in the second period (25 vs 9.3%, $p=0.065$). The overall in-hospital mortality was significantly reduced in the second period (26.8 vs 9.3%, $p=0.039$). The Kaplan-Meier curve showed significant difference in overall survival between PCI and no PCI group (log rank $p<0.001$). In a multivariable logistic regression model including diabetes, renal failure, heart failure, maximal Killip class ≥ 3 and lack of PCI the only independent predictors of mortality were lack of reperfusion by PCI - OR 7.188 (95% CI 1.343-38.472, $p=0.021$) and maximal Killip class ≥ 3 - OR 39.86 (95% CI 4.718-336.838, $p=0.001$).

Conclusion: Our study revealed that the increased use of PCI in elderly patients with STEMI resulted in decreased in-hospital mortality and improvement of short-term outcomes without increase in the bleeding events.

P750

Effects of hyperlipidemia on coronary flow, microcirculation and left ventricular systolic function after primary coronary intervention

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After primary percutaneous coronary angioplasty (PPCI), distal emboli include also atheromatous material and lipids.

Aim: Evaluation of the effects of hyperlipidemia on coronary artery flow and left ventricular systolic function after PPCI.

Methods: 162 patients with acute anterior ST-elevation myocardial infarction undergoing PPCI were studied. TIMI and myocardial blush (MBG) before and after PPCI, ST-elevation resolution, TTE-Doppler sampling of flow in the left anterior descending coronary artery (LAD), and assessment of left ventricular (LV) ejection fraction early after PPCI and before discharge were measured.

Results: Patients with hyperlipidemia had smaller extent and lower frequency of complete ST-elevation resolution, and lesser improvement in LV systolic function at discharge. Treatment of hyperlipidemia was associated with a tendency of lower maximal troponin blood levels. Patients with cholesterol blood levels exceeding 240mg%, had higher frequency of absence of ST-elevation resolution after PPCI, however, LV systolic function was similar between the groups. Patients with low density lipoprotein levels exceeding 160mg% had higher maximal diastolic LAD velocity and integral at late evaluation, but LV systolic function was not affected by the level. Patients with high density lipoprotein more than 40mg% were older, with lower body weight, more heart failure at presentation and had higher creatinine phosphokinase levels. High triglyceride levels did not affect LV systolic function.

Conclusions: After PPCI, hyperlipidemia is associated with reduced coronary and myocardial flow and with lower LV systolic function. Prior treatment of hyperlipidemia was associated with less myocardial damage after PPCI.

P751

Positive effects of intravenous 5-lipoxygenase inhibitor quercetin in acute ST elevation myocardial infarction: intermediate results of ongoing randomized open blinded multicenter study

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The aim was to evaluate anti-inflammatory, antioxidant effects and the impact on endothelial function of intravenous 5-lipoxygenase inhibitor bioflavonoid Quercetin (Q) in patients with STEMI.

The study involved 94 STEMI patients admitted in the first 12 hours after symptoms onset and treated by primary PTCA. Patients were randomized in 2:1 ratio to Q in addition to standard therapy (60 pts) or to control group (34 pts). There were no differences between groups in baseline characteristics and standards of treatment.

The results of flow-dependent vasodilatation test on the first day of STEMI did not differ in two groups ($p = 0.654$). Q treatment was associated with significant improvement of flow-dependent vasodilatation during index hospitalization ($6,45 \pm 1,02\%$ on the 1st day vs $9,96 \pm 0,94\%$ on the 7th day respectively, $p = 0.004$) in the absence of changes in the control group ($p = 0.324$). Q did not significantly affect the dynamics of von Willebrand factor, soluble E-selectin, soluble CD40L and C-reactive protein. There was a significant increase of VEGF level in Q group on day 7 ($149,3 \pm 47,2$ pg / ml on the 1st day vs $396,0 \pm 64,7$ pg / ml on the 7th day respectively, $p = 0.002$) in contrast to the control

group ($p = 0,373$). There were no significant differences in myeloperoxidase (MPO) concentration in the blood plasma of patients with AMI on the first day between groups ($p = 0,603$). Q therapy led to a significant reduction of MPO level in plasma ($611,7 \pm 83,3$ ng / ml on the 1st day vs $382,4 \pm 65,4$ ng / mL on the 7th day, $p = 0.013$), that was not observed in the control group ($525,9 \pm 122,3$ ng / ml on the 1st day vs $437,6 \pm 104,8$ ng / mL on the 7th day, $p = 0.210$). Patients treated by Q had significantly fewer episodes of acute heart failure (Killip II-III) during index hospitalization.

Intravenous Quercetin added to the standard management of STEMI (with aggressive statin therapy and double antiplatelet treatment) has no additional anti-inflammatory effects, but can improve endothelial function and has antioxidant properties (including reduction of MPO concentration). All of this can assess this compound as an perspective for further cardioprotective studies in acute coronary syndromes.

P752

The controlling nutritional status (CONUT) score can affect the prognosis in elderly patients with ST-Elevation myocardial infarction undergoing primary coronary intervention

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Purpose: The prognostic impact of nutritional status in ST-elevation myocardial infarction (STEMI) patients is poorly understood.

Methods: We used the controlling nutritional status (CONUT) score and the prognostic nutritional index (PNI) score on outcomes of 945 patients with acute STEMI undergoing primary percutaneous coronary intervention with stent.

Results: During a median follow-up of 2 years (1-3.3 years, interquartile range), 56 patients (5.9%) died for all-cause of death. In the dead group, the CONUT and PNI scores were more severe than in the alive group. Elderly patients (≥ 71 years) had both nutritional indices more serious than patients < 71 years. In the whole population of the study, CONUT and PNI correlated with clinical markers of poor prognosis such as brain natriuretic peptide (BNP), creatinine and liver enzymes. Kaplan-Meier curves revealed that the patients with severe CONUT but not patients with severe PNI index had the highest event rate for all-cause death, with a log-rank of $P < 0.001$. The Cox proportional hazard analyses showed that, dissimilar to PNI score, the CONUT score was associated with increased risk of all-cause death for both unadjusted model and age- and sex-adjusted model, while in a full-adjusted model the best predictors were age and BNP.

Conclusions: In STEMI patients, the nutritional status evaluated by the CONUT score, in addition to other comorbidities, can affect the prognosis in elderly patients. These results suggest a personalized nutritional treatment as well as an accurate assessment of the appropriateness of lipid-lowering treatment after coronary revascularization.

P753

Predictors of major adverse cardiac events at one year in non ST-elevation myocardial infarction

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Background: Nowadays, the management of non ST-elevation myocardial infarction (NSTEMI) is based on the assessment of prognosis, mortality risk and the occurrence of major adverse cardiovascular events (MACCE).

Aim: The aim of our study was to determinate the predictive factors of MACCE in STEMI

Methods and results: We retrospectively enrolled 250 consecutive patients admitted to our department during 2014, and managed as a NSTEMI. We analyzed the clinical characteristics, coronary angiographic findings and MACCE at 1-year clinical follow-up.

The mean age was $61,65 \pm 11,9$ years. The sex ratio was 1,65. Cardiovascular risk factors were as follows: 62.8% of patients were hypertensive, 52% were smoking, 47.2% had diabetes, and 34% had dyslipidemia. 34 patients (13,6%) had a MACCE at one year.

Predictors of MACE at one year were age > 75 years ($p = 0.005$), diabetes ($p = 0.006$), dyslipidemia ($p = 0.035$), chronic renal failure ($p = 0.002$), arteritis ($p = 0.050$), hemoglobin < 10 g / dL ($p = 0.005$), TIMI score > 5 ($p < 0.001$), GRACE score > 140 ($p < 0.001$) and three-vessel disease ($p = 0.023$).

Using the Cox model inducing all factors that $p < 0.2$, the independent predictors of MACCE were age > 75 years ($p = 0,012$), diabetes ($p = 0,019$), chronic renal failure ($p = 0,056$), GRACE score > 140 ($p = 0,003$) and TIMI score > 5 ($p = 0,001$)

Conclusion: The prognosis of NSTEMI patients have been improved since the use of drug eluting stent and new antithrombotic, nevertheless in our population, elderly, diabetic and patients with chronic renal failure still have poor prognosis.

P754

Impact of an emergency ST Elevation Myocardial Infarction network in octogenarian patients in our community

Table 1.

| | Group A (N=76) | Group B (N=60) | p |
|----------------------------|----------------|----------------|----------|
| | Prior ICA | Post ICA | |
| AGE | 84,24 ± 3,68 | 84,93±3,83 | p > 0,05 |
| • Anterior | 41 (53,9%) | 20 (33,3%) | p > 0,05 |
| • Non anterior | | | |
| • LBBB | 3 (3,9%) | 2 (3,3%) | |
| STRATEGY | 15 (19,7%) | 3 (5%) | |
| • Fibrinolysis | 46 (60,5%) | 55 (91,7%) | p< 0.001 |
| • PCI | | | |
| • Conservative management | 15 (19,7%) | 2 (3,3%) | |
| COMPLETE REVASCULARIZATION | 37 (48,7%) | 31 (51,7%) | p > 0,05 |
| HOSPITAL DEATH | 21 (27,6%) | 16 (26,7%) | p > 0,05 |
| CARDIAC HOSPITAL DEATH | 15 (19,7%) | 8 (13,3%) | p > 0,05 |
| REINFARCT | 3 (3,9%) | 0 (0%) | p > 0,05 |
| TVR | 2 (2,6%) | 1 (1,7%) | p= 0.009 |
| STROKE | 4 (5,3%) | 1 (1,7%) | p > 0,05 |
| BLEEDING | 3 (3,9%) | 4 (6,7%) | p > 0,05 |
| HF | 27 (35,5%) | 27 (45,0%) | p > 0,05 |
| VENTRICULAR ARRHYTHMIA | 4 (5,3%) | 2 (3,3%) | p > 0,05 |

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Background: The development of regional networks have demonstrated survival improving in patients with STEMI. Management of elderly patients are usually under-represented in trials.

Purpose: Our aim was to assess the impact of STEMI network on octogenarians survival in our community (Infarct Code Aragon-ICA-).

Methods: We analyzed 136 octogenarians with STEMI from 2014-2015 and we divided them into group A: patients managed in 2014 before the development of our network and group B: after the initiation of the ICA. Primary endpoints were death, MACE and readmissions. Mean follow-up was 14±7.5months. SPSS18 was used for analysis.

Results: We found no differences between infarct localization, complete revascularization rates or antiplatelet treatment. Cases of group A were more likely to undergo a conservative management (3.3 vs 19.7%;p<0.001) and fibrinolysis therapy (19.7 vs 55%;p=0.012). There was a significant mayor rate of primary CPI after ICA (60.5 vs 91.7% ;p<0.001) but this does not result in a significant reduction in mortality. There was a significant reduction in readmissions after ICA (41.2 vs 13.3%;p=0.04), including acute heart failure (HF)

readmissions, in spite of a significant worse LVEF among post ICA patients (50±19 vs 45±21%;p=0.03). There was a significant reduction in MACE and readmissions after STEMI network (34.2 vs 18.3%;p=0.03).

Conclusion: The development of a STEMI network have improved octogenarian health profile, reducing readmissions for ACS and HF and increasing MACE-free patient rates among elder people, a particular population with a vital prognosis greatly limited by age.

P755

Ten years follow-up results of primary percutaneous coronary intervention in left main coronary artery disease

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Introduction: Left Main Coronary Artery (LMCA) acute occlusion is uncommon (0.8% of primary percutaneous coronary interventions -PCI-) with very poor prognosis. In this situation, primary PCI is a complex procedure because of hemodynamic and electrical instability of patients with a high mortality.

Purpose: The main objective of this study was to evaluate the efficacy and safety of primary PCI in LMCA disease at 10 years clinical follow-up.

Methods: We prospectively included 30 consecutive patients (71.73 ± 11.68 years, 80% male) with STEMI undergoing primary PCI in LMCA between June 2006 and April 2015. We evaluated the presence of major cardiac events (MACE) after 10 years clinical follow-up (median 38.5 months): cardiac death, nonfatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis.

Results: Door-to-balloon mean time was 27 minutes and system delay mean time was 171.83 minutes. 93.3% were LMCA bifurcation lesions. We performed thromboaspiration in the 46.7% of cases and abciximab was used in the 33.4% of patients.

The most frequently technique employed was 'provisional stenting' in 86.2% of cases and zotarolimus eluting stent was implanted in 75% of patients. Final 'kissing-balloon' was performed in the 48.3% of the patients and angiographic success rate was 96.7%. During follow-up, MACE rate at 10 years was 33.3%. We observed a cardiac death rate of 26.7% (in-hospital mortality 23%), non-fatal acute myocardial infarct rate of 3.7%, TLR rate of 10% and 0% of stent thrombosis rate. The MACE rate was significant higher in patients with moderate-severe left ventricular systolic dysfunction ($p=0.008$) and patients with Killip class 3-4 at presentation ($p=0.003$). 20% of patients had an angiographic follow-up.

Conclusions: In spite of high angiographic success rate without complications at the procedure, primary PCI in LMCA disease presents high in-hospital mortality with long-term poor prognosis.

P756

Impact of T negative waves and reperfusion success in outcomes of early latecomer patients with anterior ST-elevation myocardial infarction

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Background: T negative waves have been associated with an open artery in the context of ST-elevation myocardial infarction (STEMI) of the anterior wall, so improving the success of PCI. Patients who arrive to emergency, asymptomatic, with more than 12 hours of symptoms onset, are a subgroup that may improve outcomes if they are revascularized with PCI. Those asymptomatic latecomer patients have some clinical and electrocardiographic criteria that makes them appropriate candidates for invasive management.

Purpose: To assess if T negatives waves in the EKG of asymptomatic latecomer patients are associated with success of reperfusion with PCI and if the latter is correlated with better outcomes in the follow up.

Methods: Retrospective study of patients with STEMI of the anterior wall who presented to our hospital, with more than 12 to 72 hours of symptoms onset, without symptoms of ischemia or heart failure at admission. We correlated their first EKG with the strategy of management (invasive –conservative), infarct related artery patency, the success of the revascularization procedure and outcomes (cardiovascular mortality and heart failure) during hospitalization and at 12 months. The statistical analysis was done in SPSS 22 using frequencies, percentages and the fisher test to compare categorical variables.

Results: We found 22 latecomer patients with anterior STEMI. A 63.6% of patients received invasive management. Sixteen patients (72%) had T negative waves. The coronariography was done in 75% of T negative patients versus 33% in T positive wave patients. In the invasive group the presence of T negative wave was associated with an open artery in 75% of cases and a positive T wave was associated with a closed artery in 50% of cases. The sensibility of the T negative wave to predict an open artery was 90%, but the specificity was only 25%. The 56% of patients with negative T waves were successfully reperfused versus 100% with positive T waves were not. These latter patients had worse outcomes at follow up (mortality 100% vs. 16.7% at 12 months). At 12 months mortality was higher in no reperfused patients (62.5% vs. 0%) OR: 3.3; IC: 1.29 – 8.59, $p=0.019$. We did not found differences in heart failure during follow up.

Conclusions: The presence of T negative waves in the EKG in asymptomatic early latecomer patients with anterior wall STEMI is related to an open infarct related artery (ARI) and success of reperfusion with PCI; the latter is associated with better outcomes at 12 months follow up. So we can't deny reperfusion in patients with these characteristics. The study is limited for the little number of patients and that was made in one institution. Currently we are working in the first research of latecomers in a nation wide registry in our country.

P757

Long-term impact prognosis of renal failure in patients treated with primary percutaneous coronary intervention for STEMI

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Introduction: - The presence of renal disease (RD) has been associated with a worse prognosis in patients with acute coronary syndromes. There is little data related to prognosis value of patients treated with primary percutaneous coronary

intervention (PPCI) for STEMI. A long-term forecast shows little data in this area. Our goal is to evaluate the long-term impact of RD in a cohort of consecutive patients with PPCI.

Methods:- Renal disease was defined as creatinine clearance below/equal 60 ml/min according to Cockcroft-Gault equation and taking the first value of serum creatinine as a reference (this value is taken at time of patient admission). We have compared global and cardiovascular mortality for 1, 3 and 5 years between two groups on the presence of RD

Results:- Out of the 826 patients with the following characteristics: the first one was the fact of having an available value of serum creatinine at the moment of the admission; and the second one was undergo primary angioplasty between 2005 and 2012, RD was presented in 180 patients. Patients with RD tended to be older (78 ± 10 years) and more women (32,2% vs 17,8% $p < 0,01$), hypertensive (80% vs. 54,6% $p < 0,01$) with a history of peripheral artery disease (14,4% vs 6,8% $p = 0,01$) and coronary bypass surgery (22,6% vs. 9,8% $p = 0,007$). These patients also took chronic ACO more frequently (18,1% vs 4,9% $p < 0,001$). Hospital stay was significantly longer in the RD group. RD showed a trend-toward to high previous stent thrombosis as a ground for STEMI (5% vs 1,1%, $p = 0,001$). All-cause mortality was significantly more frequent in renal disease patients (24,5% vs 9,6%, $p < 0,001$) and cardiovascular mortality (18,1% vs 4,9% $p < 0,01$) was more frequent too. These results sustain in the long term, over a period of 3 and 5 years for both: all-cause mortality (30,9% vs 13% $p < 0,001$ and 50,7% vs 25,8% $p = 0,03$, respectively) and for cardiovascular mortality (22,6% vs 5,5% $p < 0,001$ and 37,3% vs 10,4%, respectively).

Conclusion:- The presence of basal renal disease in patients treated with PCPI for STEMI is an important predictor of all-cause and cardiovascular mortality in the long term. An early identification is needed in order to anticipate the most common complications in cases of renal disease.

P758

Time from chest pain onset to coronary reperfusion in STEMI patients presented for emergency PPCI correlates with levels of circulating plasma miRNAs

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Background: MicroRNAs (miRNA) are small non-coding RNAs that regulate gene expression by interacting with multiple mRNAs. They can be released from tissue into plasma as a consequence of cellular damage. Certain miRNAs reflect

the degree of damage seen in tissues including the heart. Therefore, they may be used as surrogate for myocardial damage. The duration from onset of symptoms to coronary reperfusion in STEMI patients who subsequently undergo primary percutaneous coronary intervention varies greatly. Thus, measurement of miRNAs levels in these patient may correlate with the extent of myocardial injury

Purpose: In this study we attempt to establish whether the plasma levels of cardiac-related miRNAs (miRNA-133a, miRNA-208b, miRNA214 & miRNA-194) measured in patients presenting with a STEMI immediately prior to reperfusion are influenced by symptom duration.

Methods: Four miRNAs linked to cardiac injury and cardiac remodelling (miRNA-133a, miRNA-208b, miRNA214 & miRNA-194) were measured in the plasma of STEMI patients (n=32) immediately before they underwent primary PCI. The values were compared with respective time from symptom onset to reperfusion (≤ 300 minutes) using bivariable correlation and linear regression (SPSS software). Total RNA was extracted from plasma using miRNAeasy serum/plasma kit (Qiagen). MiRNAs were measured using Taqman primers and miRNA levels assessed using quantitative PCR and normalized using cel-miR-39-3p(000200).

Results: A significant ($P = 0.001$) & ($P = 0.03$) positive correlation was obtained for miRNA-133a & miRNA-214 levels with duration from symptom onset to reperfusion. No correlation was seen for miRNA-194 whilst the plasma levels for miRNA-208 were not detected for most patients during this duration.

Conclusion: These data show that miRNA-133a and miRNA-214 plasma levels increase with increasing ischemia time. Whether these changes in miRNAs predict the degree of myocardial reperfusion damage and remodelling is not presently known and requires further investigation.

P759

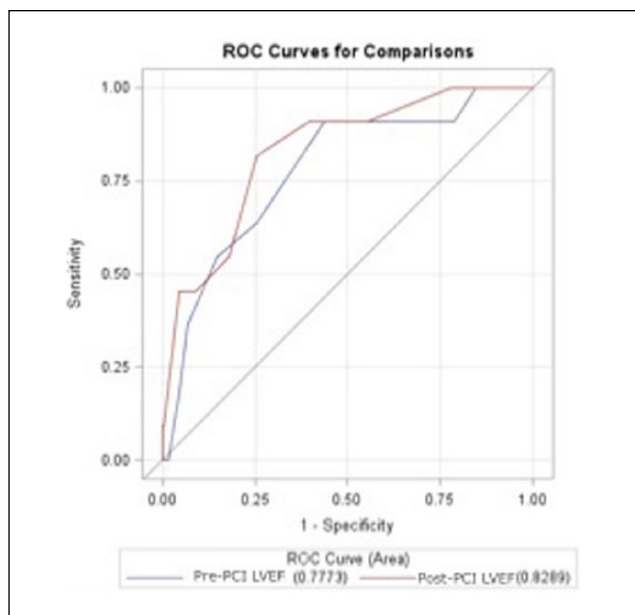
Optimal timing of echocardiographic assessment of left ventricular ejection fraction in patients with ST-elevation myocardial infarction

The Danish Heart Foundation, OUH/RH Research Fund, Rigshospitalets Research Fund, The Heart Centre (Rigshospitalet) Research Fund

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Background: Left ventricular ejection fraction (LVEF) is a strong predictor of mortality in patients with ST-elevation



Pre- and post-PCI LVEF ROC curves

myocardial infarction (STEMI). LVEF may increase after primary PCI (pPCI), and a repeated measurement of LVEF may often be requested in the days after the STEMI for therapeutic and prognostic guidance. It is, however, not known whether this is necessary.

Purpose: To compare the prognostic information of echocardiographic LVEF just before (pre-PCI LVEF) and within 1-3 days after pPCI (post-PCI LVEF) in STEMI-patients.

Methods: In 230 STEMI-patients without cardiac arrest, echocardiography was performed prior to pPCI and within 1-3 days after. Prognostic information of LVEF from pre- and post-PCI echocardiography on 30-day mortality was assessed by the area under the receiver operating characteristic curve (AUCROC). The association between 30-day mortality and LVEF $\leq 30\%$ was assessed at both time-points by a Cox proportional hazard model adjusting for age, sex, known heart failure, and known ischemic heart disease.

Results: We found no difference in mean (SD) pre-PCI LVEF (44 (11) vs post-PCI LVEF 43 (12) %, $p=0.81$). Both showed good prognostic information in terms of risk of death. LVEF at the two time-points provided similar prognostic information (AUC(ROC) pre vs post: 0.78 vs 0.83, $p=0.54$) (Figure). Adding the combined LVEF assessment (pre+ post-PCI) added no prognostic information (AUCROC 0.83, $p=0.38$). Pre- and post-PCI LVEF $\leq 30\%$ were both independently associated with 30-day mortality (HR (CI): 7.6 (2.2 – 26.1), $p=0.001$ and 4.2 (1.3 – 13.8), $p=0.02$, respectively). We found no difference between the two hazard ratios ($P(F\text{-distribution}) > 0.1$).

Conclusion: Echocardiographically assessed LVEF in the post-pPCI phase after a STEMI do not add extra prognostic information to a pre-pPCI LVEF assessment in STEMI

patients. LVEF $\leq 30\%$ at both time-points is independently associated with higher risk of 30-day mortality.

Acute coronary syndrome - Non ST-elevation myocardial infarction

P760

Fondaparinux versus enoxaparin in non-ST elevation myocardial infarction: results of a Brazilian registry

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Background: Recent studies have been proposed the superiority of fondaparinux compared with enoxaparin in patients with non-ST elevation myocardial infarction (NSTEMI), mainly related with bleedings.

Purpose: To analyze the in-hospital outcomes of patients with NSTEMI treated with fondaparinux (group I) versus enoxaparin (group II).

Methods: This was an observational, retrospective and multicentric study with 2,282 patients (335 in the group I and 1,947 in the group II) between May 2,010 and May 2,015. The following data were obtained: age, sex, diabetes, systemic arterial hypertension, smoke, dyslipidemia, familial history of precoces coronary artery disease, previous coronary artery disease (percutaneous coronary intervention or coronary artery bypass graft), hemoglobin, creatinine, higher troponin, left ventricle ejection fraction, medication used at hospital and coronary definitive treatment. The primary endpoint was all cause of in-hospital death. The secondary end point was combined events (death, non-fatal unstable angina or myocardial infarction, cardiogenic shock, bleeding and stroke). Comparison between groups was made by T-test and Q-square. Multivariate analysis were determined by logistic regression and was considered significant when $p < 0.05$.

Results: Were observed significant differences in use of clopidogrel (65.4% vs. 67.9%, $p < 0.038$), statins (98.5% vs. 93.8%, $p < 0.0001$), B-blockers (96.1% vs. 87.4%, $p < 0.0001$), smoke (24.2% vs. 30.5%, $p = 0.007$), hypertension (67.8% vs. 73.6%, $p < 0.0001$), heart failure (10.7% vs. 8.8%, $p = 0.039$) and killip classification > 2 (1.8% vs. 5.6%, $p = 0.003$), respectively between groups I and II. 40.2% of patients were submitted to percutaneous coronary intervention in group I versus 35.1% in group II ($p = 0.13$). Significant difference was observed between groups I and II

in combined events (13.8% vs. 22%, OR = 2.93, $p = 0.007$) and bleeding (2.3% vs. 5.2%, OR = 4.55, $p = 0.037$).

Conclusions: Similar with recent studies, fondaparinux was better than enoxaparin in a Brazilian registry, with reduction in combined events and bleedings.

P761

The accuracy of high-sensitive troponin I testing in patients with renal insufficiency for diagnosis of coronary artery disease in the emergency department

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The sensitivity and specificity of high-sensitive troponin are around 90-95% in general population. However, in patients with renal insufficiency these values have a controversial diagnostic accuracy.

The main objective of this study is to value the diagnostic accuracy of high-sensitive troponin I determination in patients with renal insufficiency for diagnosis of coronary artery disease with significant stenosis in coronary angiography in patients with chest discomfort.

A cross-sectional analysis included patients older than 18 years with chest discomfort and decreased glomerular filtration rate <60 ml/min/1.73m². High-sensitive troponin I was measured and coronary angiography or myocardial perfusion imaging were carried out in these patients.

There were a total of 4883 patients, 134 had renal insufficiency (59.7% male), aged 72.13 + 13.6 years. Sixty-nine had positive high-sensitive troponin I and 65 negative, 57 (42,5%) had coronary disease with significant stenosis. Overall, sensitivity was 80.7% and the specificity was 70.1%. The area under the curve was 0.84.

In conclusion, the diagnostic accuracy of high-sensitive troponin I for presence of significant coronary stenosis in patients with renal insufficiency, was less specific and sensitive than general population.

P762

Use of high-sensitivity cardiac troponin T and GRACE score in a district general hospital: how concordant are we with ESC guidelines?

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Background: Significant challenges in the management of non-ST-elevation acute coronary syndrome (NSTEMI-ACS) are making an early accurate diagnosis and deciding which patients require further investigation and treatment. Recent ESC guidelines recommend using high-sensitivity cardiac troponin T (HsTnT) as part of a rapid rule-in/rule-out protocol

for the diagnosis of suspected NSTEMI-ACS. Risk scores such as the Global Registry of Acute Coronary Events (GRACE) are useful in risk assessment and prognosis.

Purpose: To examine significant changes in HsTnT and the use of calculated GRACE score in ACS algorithms.

Methods: We conducted a retrospective analysis of 226 serial HsTnT results for 103 patients admitted to our emergency care centre in December 2015. A structured proforma was used to obtain: i) symptoms and onset; ii) risk factors; iii) cardiovascular examination; iv) ischaemic ECG changes; v) times of serial HsTnT; vi) clinical outcomes: initiation on ACS treatment, angiography \pm angioplasty, 30-day readmission, post-discharge MI and mortality. A $\geq 20\%$ change in HsTnT at 0 and >3 h was defined as significant by our assay. Patients were stratified into low, intermediate and high-risk groups according to retrospectively calculated GRACE score.

Results: We analysed serial HsTnT for 103 consecutive patients with a mean age of 67 years [range 19-98; S.D. 18.5] of which 63% were male. Risk factors included 34% diabetic, 6% hypertensive, 16% current smokers and 41% with previous CABG/PCI. 94% presented with chest pain or shortness of breath. All HsTnT results were conducted at 0 and >3 h. Calculated GRACE score demonstrated that 55 patients were low risk (53%), 27 patients were intermediate risk (26%) and 18 patients were high risk (17%). 24 patients had ACS diagnosed (23%). In this group, 11 patients had a significant change in HsTnT (46%); 8 patients proceeded to angiography (73%) of which 7 patients had significant coronary artery disease and proceeded to angioplasty (88%). 4 patients had re-admissions within 30 days (17%). 79 patients did not have a significant change in HsTnT (77%). 20 patients had ischaemic findings on ECG (25%). 6 patients proceeded to angiography (8%) of which 0% had angioplasty as no new culprit lesions were found. 15 patients had re-admissions to hospital within 30 days (19%). There were no post-discharge MIs in this cohort. We found that 11% of low risk GRACE, 22% of intermediate risk GRACE and 33% of high risk GRACE were found to have a true ACS.

Conclusion: Our study supports HsTnT as a sensitive tool for rapid rule-in/rule-out diagnosis of ACS. Incorporating the use of GRACE risk score in our analyses demonstrated a notable relationship between higher GRACE score and increased detection of ACS. The clinical use of GRACE scoring should be encouraged in accordance with ESC guidelines to guide further investigations and management in high-risk patients.

P763

Prevalence and prognostic value of the vitamin D in elderly patients hospitalized for acute coronary syndrome

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Introduction: The absence of vitamin-D (25(OH)D) in patients with acute coronary syndrome (ACS) is associated with increased morbidity and mortality in the medium term. However, their prognosis role is yet to be determined.

Objectives: Assessing the possible prognostic impact of the severe deficit of 25(OH)D (serum levels <10ng/ml) in elderly patients admitted with ACS.

Methods: In a prospective cohort of 117 patients ≥ 70 years (45 women, age 78 ± 6 range 70-97 years) with ACS, were obtained plasma samples at hospital admission in 99 patients for determination of 25(OH)D. The adverse clinical event analyzed was the result combined from mortality, reinfarction and stroke and rehospitalization, at 6 months event.

Results: The average serum concentration of 25(OH)D was 15.4 ± 12.9 , presenting 34.3% of patients with a severe deficit. A total of 11.1% of patients had an adverse event during hospitalization, with a hospital mortality of 9.1%. Patients with levels of 25(OH)D <10 ng/ml had an event rate of 20.6%, significantly higher than the 6.2% observed in the remaining patients (HR 3.95, CI 1.1-14.6, $p = 0.04$). After adjusting to GRACE risk scale and other potential confounding variables, severe deficit of 25(OH)D remained as a predictor clinic-hospital although not statistically significant events variable (HR 3.7, CI 0.99-15, $p = 0.06$).

Conclusion: The severe deficit of 25(OH)D was associated with an increased incidence of hospital events in elderly patients with ACS.

P764

Impact of type 2 diabetes mellitus to coronary lesion complexity in pre menopausal women with acute coronary syndrome

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Background: Coronary Artery Disease (CAD) is a multifactorial disease, its expression being influenced by interactions of genetic as well as environmental risk factors. CAD is a leading cause of death mainly in post-menopausal women due to estrogen deprivation that has been proven in few epidemiological studies. Menopause is a natural part of ageing that usually occurs between 45 and 55 years of age, as a woman's estrogen levels decline. In the UK, the average age for a woman to reach the menopause is 51. Diabetes mellitus has also been shown to reduce levels of estrogen in pre-menopausal women thereby nullifying its protective effects.

Purpose: To determine the association between type 2 diabetes mellitus (T2DM) and Coronary Lesion Complexity in pre-menopausal women with acute coronary syndrome (ACS).

Methods: This is a cross-sectional study conducted retrospectively using medical records of female patients under the age of 51 who were admitted to the ICCU with acute coronary syndrome within the year 2012 to 2014. T2DM was diagnosed based on Indonesian Society of Endocrinologists guideline or history of consuming anti-diabetic agents. Coronary artery complexity was evaluated using vessel score which further categorized three vessel disease and left main disease as complex lesion while others as non-complex lesion.

Result: 34 subjects were included in this study, out of which 16 subjects (47,1%) were diagnosed with T2DM. Average age was $46,53 \pm 3,74$ years old. Cases admitted in the ICCU mostly consisted of Unstable Angina Pectoris (58,8%) followed by NSTEMI (29,4%) and STEMI (11,8%). 6 (37,5%) subjects in T2DM group had complex lesions, while 1 subject (5,6%) in the non-diabetic group had complex lesions. Bivariate analysis showed a significant association between T2DM and complex coronary lesions (Fisher test p value 0,03; OR 1,51 95%CI 1,02 - 2,24). There was no association between obesity, hypertension, and dyslipidemia with coronary lesion complexity.

Conclusion: Type 2 Diabetes Mellitus is associated with complex coronary lesions in pre-menopausal women diagnosed with acute coronary syndrome.

P765

Usefulness of GRACE risk score for predicting 1-year mortality in patients with type-2 acute coronary syndrome

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Background: The clinical usefulness of GRACE risk score for predicting mortality in type-1 acute coronary syndromes (ACS) is clearly established and clinical practice guidelines recommend its use in these patients. The 1-year mortality in type-1 and type-2 ACS is similar, despite the important differences in clinical characteristics and management strategies between. However whether the GRACE risk score is also useful in type-2 has not been previously studied.

Purpose: To assess the accuracy of GRACE risk score for predicting 1-year mortality in patients with type-2 ACS.

Methods: We performed a retrospective analysis of an ambiperspective registry including 304 consecutive patients with type-2 ACS admitted to the cardiology department of

a tertiary hospital between January 2011 and January 2015. During index hospitalization, GRACE risk score could be calculated in 91% of cases. Patients were clinically followed and 1-year vital status was recorded by 3 trained cardiologists in all. Risk score performance was assessed with receiver operating characteristics curves analysis and Hosmer-Lemeshow goodness of fit test.

Results: A total of 276 type-2 ACS patients (72±12 years, 52% male) were included. Most common secondary causes of type-2 ACS were tachyarrhythmias (39%, n = 107), heart failure (17%, n = 47) and severe aortic stenosis (13%, n = 36). The mean GRACE risk score was 130 ± 36 points. Based on GRACE risk categories, 38 (14%) patients had low risk, 61 (22%) had intermediate risk and 177 (64%) had high risk. At 1-year, 44 (16%) patients died. Compare to survivors, deceased had higher GRACE score (154 ± 4 vs. 126 ± 2 points respectively; p<0.001). Risk categories analysis of GRACE risk score examined as a function of mortality revealed that there was a graded increase in mortality with increasing GRACE risk categories (low: 0 (0%), intermediate: 6 (14%) and high: 38 (86%); p<0.001). Discrimination and calibration of GRACE risk score were good: ROC = 0.72 (CI95% 0.64-0.80) and Hosmer-Lemeshow p test = 0.672.

Conclusions: GRACE risk score showed a good model performance for predicting 1-year mortality in type-2 ACS patients. Consequently it may represents a clinical useful tool in this clinical scenario.

P766

Troponin I and non-ST elevation acute myocardial infarction: the importance of the peak value

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Introduction: Troponin is not only a mainstay for the diagnosis in acute coronary syndromes, but has also been shown to have some prognostic value.

Purpose: To study the prognostic impact of rising troponin I levels in non-ST elevation myocardial infarction (NSTEMI).

Methods: We analysed a total of 428 consecutive patients admitted for NSTEMI between 2009 and 2012. We binned troponin I in three groups: group A: P< 33 (troponin I <4.15 ng/ml); group B: P33-P66 (4.15 ≤ troponin I <14.1 ng/ml); group C: P>66 (troponin I ≥14.1 ng/ml). A clinical follow up was performed (mean time 24±10 months) targeting mortality, re-admission to the hospital due to heart failure (HF) and major adverse cardiovascular events (MACE).

Results: The sample consisted of 428 patients with a mean age of 69±13 years, 69% of which were male. The mean grace score was 157±53.

Demographics were similar for the three groups. Group A patients showed a non-significant trend for a shorter hospital stay and more often had a Killip-Kimbal class of 1 (84% vs 70% vs 57%, P<0.01).

Higher troponin levels were associated with a higher prevalence of the culprit lesion in the circumflex artery (14% vs 21% vs 34%, p<0.01). The prevalence of preserved systolic function decreased as troponin rose (73% vs 70% vs 54%, p<0.01). Greater troponin levels were associated a higher GRACE risk score (143±51 vs 160±51 vs 164±56, p<0.01). Higher troponin levels tended to be associated with worse outcomes, namely: 1) in-hospital mortality (2.8% vs 2.8% vs 7.8%, p=0.06); 2) re-admission due to HF (7.5% vs 9.2% vs 16.8%, p=0.05) and 3) all-cause mortality (20.1% vs 20.7% vs 30.5%, P=0.08). The group with a higher troponin (Group C) was definitely associated with worse outcomes: 1) in-hospital mortality (2.8% vs 7.8%, P=0.02); 2) re-admission due to HF (8.3% vs 16.8%, P=0.01); 3) all-cause mortality (20.4% vs 30.5%, P=0.03). The occurrence of MACE did not vary significantly between groups.

After adjustments for age (OR 1.06, P<0.01), GRACE score (1.01, P<0.01) and nt pro-BNP (OR 1.00, P=0.03), troponin was not independently associated with mortality during follow up. With a multivariate logistic regression model including the binned troponin, nt-proBNP, GRACE score and age years, only age, GRACE score and nt pro-BNP remained independent predictors of mortality.

Conclusion: Our data showed that that troponin I was associated with variables of increased risk during a non-STEMI, but it showed no independent prognostic value

P767

Left main coronary artery disease in non ST segment elevation myocardial infarction: impact in in-hospital morbidity and mortality

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Introduction: Unlike stable coronary disease, approach to left main coronary artery (LMCA) disease in non-ST segment elevation myocardial infarction (NSTEMI) still lacks evidence in latest recommendations.

Purpose: Determine the prevalence of LMCA disease in NSTEMI and assess the impact of percutaneous coronary intervention (PCI) in in-hospital morbidity and mortality.

Methods: We considered 3173 patients (P) with NSTEMI, submitted to coronary angiography and analyzed those with LMCA stenosis ≥50%. We considered 2 groups: Group 1- P submitted to PCI of LMCA; Group 2- P not submitted to PCI LMCA. We registered data concerning demographic

features, patient history including cardiovascular and non-cardiovascular co-morbidities, class of Killip-Kimball at hospital admission, coronary anatomy, number of vessels subjected to PCI, type of stent, medical therapy and left ventricular function. We considered the following in-hospital complications: re-infarction, heart failure (HF), stroke, major bleeding and in-hospital mortality. We performed multivariate data analysis to assess independent predictor factors for LMCA PCI.

Results: LMCA disease was found in 10.4% (331 P) and 17.5% of these (58 P) were subjected to LMCA PCI. No differences were found concerning age, gender or patient history between the 2 groups. At hospital admission P from group 1 presented higher classes of KK ($KK \geq 2$: 37.9% vs 26.1%; $p=0.015$). During hospital stay, P from group 1 were more frequently treated with clopidogrel (100% vs 91.2%, $p=0.021$), glycoprotein IIb/IIIa antagonists (24.1% vs 8.1%; $p<0.001$), heparin (29.8% vs 14.1%; $p=0.004$) and calcium channel blockers (26.3% vs 10.3%; $p=0.001$). In addition to LMCA disease, P in group 1 presented less frequently right coronary and left circumflex disease (58.9% vs 76.5%; $p=0.007$ and 62.5 vs 76.1%; $p=0.035$, respectively), although no differences were found in total number of affected vessels. Simultaneously with LMCA PCI, P from group 1 more frequently underwent PCI of left anterior descending artery (48.3% vs 17.1%; $p=0.003$) and implanted drug-eluting stents (86.2% vs 28.6%; $p<0.001$). No differences were found in duration of hospital stay, left ventricular function or any of the considered complications. In-hospital mortality was similar in both groups (group 1: 1.7%; group 2: 4.8%; $p=0.43$). By multivariate data analysis the most important independent factor for LMCA PCI was the presence of isolated LMCA disease at coronary angiography [OR: 5.07 (2.05-12.5); $p<0.001$].

Conclusions: The prevalence of LMCA disease was 10.4% in NSTEMI patients. LMCA PCI in these patients appears to be safe as it was not associated with an increase in mortality or complications. Isolated LMCA disease was found as the most important independent factor for LMCA PCI.

P768

Prognostic impact of patients with myocardial infarction with non obstructive coronary atherosclerosis

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Introduction and objectives: Myocardial infarction with no obstructive coronary atherosclerosis (MINOCA), namely clinical evidence of MI with normal or near normal-coronary arteries on angiography (stenosis severity <50%) ranges between 5-25% of acute coronary syndrome (ACS).

Methods: Patients with MINOCA diagnosis were consecutively included. All patients had a typical clinical presentation, fulfilling the universal definition of myocardial infarction and had normal or nearly normal coronary angiography findings. By using a CMR scan, cine and delayed enhancement images were assessed to achieve the final diagnosis. During follow-up, major adverse cardiovascular events (MACE) were recorded.

Results: In total, 69 patients with MINOCA (mean age 56 ± 15 years; 62 % female) were screened. Cardiac biomarkers showed a moderate elevation on admission (median troponin-T ultra-sensitivity serum level 747ng/ml [339-1300]). The principal diagnostic groups in the CMR imaging studies were myocarditis in 27 patients (39.1%), tako-tsubo cardiomyopathy in 18 (26.1%), myocardial infarction in 17 patients (24.6%) and indetermined in 7 (5.6%). At 12 months total MACE rates were 14.5% (death 2.9%; cardiovascular readmissions 13%; reinfarction 1.4%). According to the main diagnostic groups, MACE rates were: myocarditis 11.1%, myocardial infarction 17.67%, tako-tsubo cardiomyopathy 16.7%, indeterminate 14.3%.

Conclusion: Based upon the findings of this study, MINOCA is not a benign condition, that requires further evaluation to elucidate potential treatable causes.

P769

Prognostic impact of mitral regurgitation after an acute coronary syndrome

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Background: Mitral regurgitation (MR) is a frequent and severe complication in the context of an acute coronary syndrome (ACS).

Purpose: Our purpose was to evaluate the prognostic impact of this entity after an acute coronary syndrome with (STE-ACS) and without (NSTEMI-ACS) ST-segment elevation.

Methods: We collected data from all patients hospitalised in our centre consecutively from January 2013 through June 2015 with an ACS and in whom a coronary angiography was performed. Patients were classified into 3 groups; Group 1 (n=210): patients with no MR; Group 2 (n=250): patients with slight MR; Group 3 (n=82): patients with mild or severe MR. The severity of MR was evaluated by echocardiography following the recommendations of the current clinical practice guidelines.

Results: The total sample size was 542 patients; 76.6% (n=421) had a NSTEMI-ACS. In the total sample, the presence

Table 1.

| VARIABLES | TOTAL ACS (n=542) | | | | NSTE-ACS (n=421) | | | |
|-----------------------|-------------------|---------------|--------------|-------|------------------|---------------|--------------|-------|
| | Group 1 N=210 | Group 2 N=250 | Group 3 N=82 | p | Group 1 N=160 | Group 2 N=189 | Group 3 N=72 | p |
| In-hospital mortality | 7 (3,3%) | 8 (3,2%) | 23 (28,0%) | 0,001 | 5 (3,1%) | 5 (2,6%) | 21 (29,2%) | 0,001 |
| 1-year mortality | 9 (4,8%) | 18 (7,9%) | 11 (19%) | 0,002 | 5 (3,4%) | 15 (8,7%) | 8 (16,3%) | 0,01 |
| Revasc. | 163 (94,2%) | 194 (90,7%) | 50 (79,4%) | 0,017 | 120 (95,2%) | 142 (91%) | 40 (75,5%) | 0,003 |
| HF | 31 (15,0%) | 65 (26,0%) | 51 (62,2%) | 0,001 | 20 (12,7%) | 49 (25,9%) | 46 (63,9%) | 0,001 |

Revasc: successful revascularisation; HF: heart failure.

of a more severe form of MR (Group 3) was associated with non-revascularised stenosis, low left ventricular ejection fraction (LVEF), worse Killip class and complications such as heart failure (HF) or cardiac arrest. Patients in Group 3 had a higher mortality during hospitalisation and up to one year after discharge. There were no significant differences in de novo appearance of atrial fibrillation. These results were very similar in the subgroup of patients with NSTE-ACS.

The multivariate analysis showed a very significant association between mild-moderate MR and higher mortality for all ACS (OR=3.779; 95% CI: 1.242-11.07; p=0.019) and for NSTE-ACS (OR=4.73; 95% CI: 1.44-15.604; p=0.01), independently of any other variables (number of vessels affected, Killip class, cardiac arrest, age, diabetes, LVEF at discharge and calcium levels). Age (p=0.061), hypocalcemia (p=0.025) and Killip class (p=0.001) were also associated with a higher mortality.

Conclusions: The development of MR is an independent predictor of a higher mortality during hospitalisation and up to one year after discharge in patients with an ACS. The severity of MR was also associated with the presence of HF and with LVEF at discharge.

Acute heart failure

P770

MAGGIC score in heart failure: what impact does etiology have?

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Introduction: Since heart failure (HF) represents such a heterogeneous group, creating risk scores is especially difficult in this population. In the MAGGIC meta-analysis[†], Pocock et al proposed the application of a risk score capable

Table 1.

| | | CD | VD | HT | CP |
|-------------------------------|-----|---------|---------|---------|---------|
| In-hospital mortality | AUC | 0.838 | 0.559 | 0.957 | 0.624 |
| | p | p=0.005 | p=0.486 | p=0.118 | p=0.472 |
| Mortality at 2-year follow-up | AUC | 0.593 | 0.620 | 0.798 | 0.757 |
| | p | p=0.291 | p=0.026 | p=0.018 | p=0.227 |

of predicting which patients with heart failure would have a worse prognosis.

Purposes: In this study, the authors calculate the MAGGIC score (MS) in a population of patients hospitalized for HF and determine whether its accuracy is enhanced in a specific etiology. The results were correlated with in-hospital mortality and mortality at 2 years follow-up. The accuracy of the MS in patients with HF was then compared when analyzing heart failure of different etiologies: ischaemic cardiomyopathy (CD), valve disease (VD), hypertensive cardiomyopathy (HT) and cor pulmonale (CP).

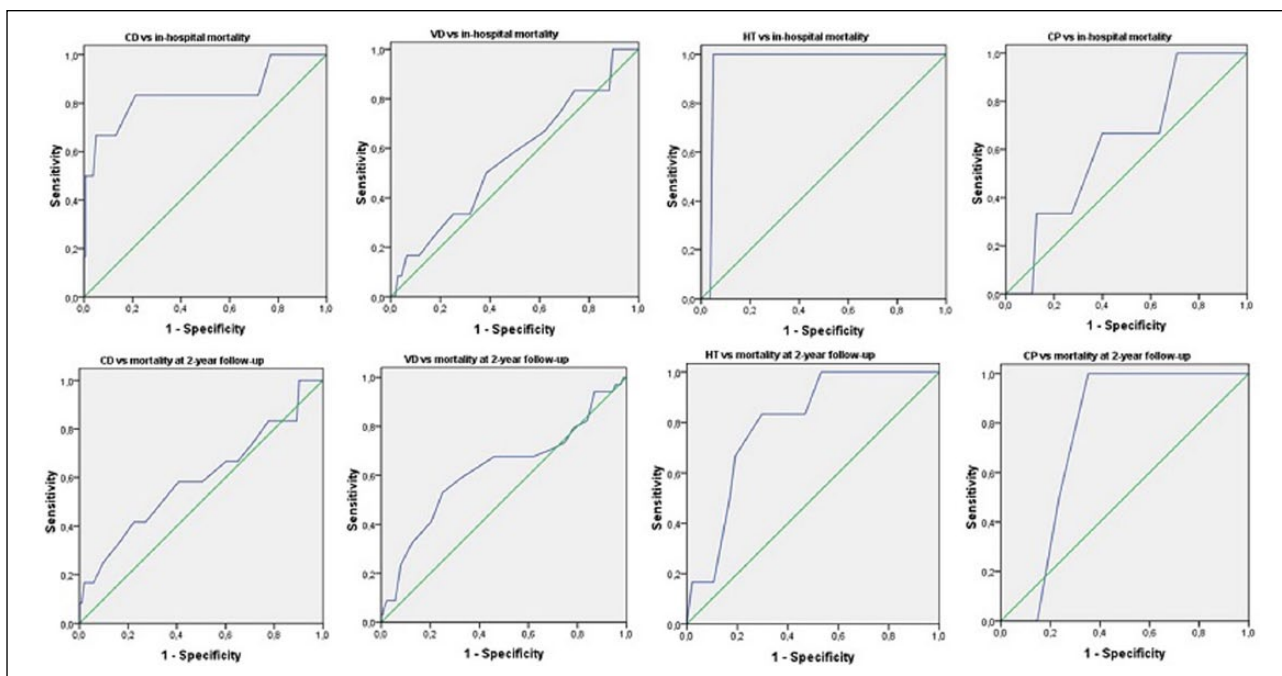
Methods: The MAGGIC Score was calculated in patients hospitalized for heart failure. Clinical, analytical, and echocardiographic parameters were evaluated. The patients were divided into four groups depending on the etiology of the heart failure: Group A with CD, Group B with VD, Group C with HT and Group D with CP.

Results: A total of 386 patients were evaluated, 24.0% had CD, 50.3% had VD, 16.0% had HT and 9.7% had CP.

When considering in-hospital mortality, the ROC curves detailed in the image were ascertained.

The following table shows the AUC and the corresponding statistical significance.

Conclusion: The results show that there are differences in the accuracy of the MAGGIC score depending on the etiology. The score is accurate at predicting worse short-term prognosis in CD, but not long-term prognosis. It predicts worse outcome in HT, though not statistically significant in short-term predictions. The MS was not capable of predicting outcome in VD and CP. The main shortcoming of this study was the small patient population. More studies



are needed to develop scores with applicability to the diverse population with HF, independent of its etiology.

† Predicting survival in heart failure: a risk score based on 39 372 patients from 30 studies. Pocock SJ et al. *Eur Heart J*. 2013 May;34(19):1404-13.

P771

Clinical characteristics of patients with acute heart failure with advanced Killip class after myocardial infarction

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Introduction: Myocardial infarction (MI) is an important cause of acute heart failure. The degree of acute heart failure in patients with MI can be stratified using the Killip classification, which consists in: class I - patients with no clinical signs of heart failure; class II - patients with rales or crackles in the lungs, an S3 and elevated jugular venous pressure; class III - patients with acute pulmonary oedema; and class IV - patients in cardiogenic shock. The Killip classification predicts mortality: patients in Killip class I have better prognosis than patients in Killip class IV.

Purpose: Killip classification was developed in 1967 and the clinical characteristics of patients in each Killip class have changed considerably since its development, due to population aging and to better primary and secondary prevention, with more intensive control of cardiovascular risk factors. The authors propose to study patients with MI

to better characterise those with low Killip class (classes I and II) and those with advanced Killip class (classes III and IV).

Methods: Retrospective observational study of a sample of 2000 consecutive patients with MI treated with percutaneous coronary intervention. All patients were stratified using Killip classification and divided in patients with low and advanced Killip class. Data were collected regarding demographics, cardiovascular risk factors, laboratory tests and coronarography. Continuous variables were compared between groups using Student's t-test and binary variables using test of proportions.

Results: 1895 (94.75%) patients had low Killip class and 105 (5.25%) had advanced Killip class. Patients with advanced Killip class were older (71.3 years vs 66.9 years, $p < 0.001$), with no statistical difference in sex or body mass index. Regarding cardiovascular risk factors, patients with advanced Killip class had higher prevalence of diabetes (50% vs 30.8%, $p < 0.001$), with no statistical difference in the prevalence of hypertension, hyperlipidaemia or smoking. These patients presented more often with lower systolic blood pressure (126.3 mmHg vs 141.4 mmHg, $p < 0.001$) and higher heart rate (80.3 bpm vs 73.5 bpm, $p < 0.001$). Regarding coronarography, patients with advanced Killip class have more number of coronary arteries with lesions (1.9 vs 1.5, $p < 0.01$) and more total number of coronary lesions (2.9 vs 2.2, $p < 0.001$).

Conclusions: Patients with acute heart failure after MI with advanced Killip class are distinct from patients with low Killip class, regarding demographics, cardiovascular risk factors, presentation and coronary lesions. Age, diabetes

and more severe coronary artery disease are strongly associated with acute heart failure with advanced Killip class in patients with MI.

P772

Impact of ischemic etiology on clinical status, treatment and 12-month mortality in patients with no-ACS severe acute heart failure

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Ischemic heart injury is the most common etiology of heart failure (HF). However, there are limited data on the impact of ischemic etiology on clinical status and long-term prognosis among patients with severe acute heart failure (SAHF) not associated with current acute coronary syndrome (ACS) treated by heart failure team in the hybrid intensive cardiology care / intensive care (ICC/IC) department.

Aim: To assess the clinical characteristics, treatment modalities and 12-month mortality of no-ACS SAHF treated by heart failure team in the hybrid ICC/IC according to the etiology (ischemic or non-ischemic) of SAHF.

Methods: The data of consecutive 112 patients with no-ACS SAHF were analyzed. No-ACS SAHF was defined as NYHA IV class on admission to the ICC/IC department and at least one of the: pulmonary congestion on chest x-ray scan, cardiogenic shock, catecholamine or IABP support, ultrafiltration, mechanical ventilation, prolonged (≥ 7 days) diuretic infusion, or multi-organ failure. The two groups were compared: IHF (n=61) with ischemic cause of heart damage and NIHF (n=51) with other etiology of HF (in 2 patients the etiology was combined). Follow-up mortality at 12-month was obtained from the government database and was available for all patients except for 3 foreigners.

Results: The most common etiology of NIHF was valvular diseases (43%), in 47% of patients the etiology could not be definitely established. 75% of IHF patients had a history of myocardial infarction, 57% prior PCI and 23% prior CABG. The IHF patients were older (62 vs. 54, $p=0.001$), more frequently males (84% vs. 65%, $p=0.02$), with chronic kidney disease (56% vs. 29%, $p=0.005$), diabetes mellitus (54% vs. 27%, $p=0.005$), history of stroke (11% vs. 1%, $p=0.07$), and smoking history (64% vs. 23%, $p<0.001$). More IHF patients had ICD or CRT-D already implanted before admission (44% vs. 26%, $p=0.04$). The mean APACHE-HF (3.8 vs. 3.4) as well as NT-proBNP level on admission (11456 vs. 9677) were comparable in

IHF and NIHF. Left ventricle ejection fraction was lower in IHF (21% vs. 27%, $p=0.02$). There were no significant differences between the groups in treatment modalities (mechanical ventilation, hemodiafiltration, IABP, LVAD implantation, heart transplantation) except for 14 PCI procedures performed in IHF. However, NIHF patients required more catecholamine usage. In-hospital adverse events were similar in IHF and NIHF patients (resuscitated cardiac arrest - 13% vs. 14%, stroke - 0% vs. 2%, major bleedings (11% vs. 10%), and death (25% vs. 22%). Among 83 discharged patients with available follow-up died 15 (34%) with IHF and 11 (28%) with NIHF, p log-rank = 0.42.

Conclusions: Despite significant differences in clinical characteristics and some dissimilarities in advanced treatment modalities, the early and late mortality do not differ in patients with ischemic and non-ischemic etiology of severe acute heart failure not associated with current ACS, being relatively high at 12-month.

P773

Impact of ventricular tachyarrhythmia developed in patients with stress-induced cardiomyopathy on in-hospital outcome

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Background: Stress-induced cardiomyopathy (SCMP) is characterized by transient regional wall motion abnormality of the left ventricle with relatively favorable outcome. Although there were some case reports that ventricular tachyarrhythmia was developed during acute phase of SCMP, there is no report for the effect of this arrhythmic event on in-hospital course of SCMP. Therefore, we sought to investigate the clinical impact of ventricular tachyarrhythmia developed in patients with SCMP on in-hospital outcomes.

Methods: This was a multicenter, observational study of 232 SCMP patients, who were divided into two groups according to whether ventricular tachyarrhythmia occurred during acute phase of SCMP course or not ('VT' vs. 'non-VT' group). Demographic, clinical, angiographic, and echocardiographic characteristics were compared between groups. All-cause death of patients with SCMP was recorded.

Results: The incidence of ventricular tachyarrhythmia was 5.6%. There was no differences in demographic, clinical, angiographic, and echocardiographic characteristics including age, sex, risk factors, stressor type, peak cardiac biomarkers, extent of obstructive coronary artery disease,

and echocardiographic parameters except initial systolic (SBP) and diastolic blood pressures (DBP) between VT and non-VT groups (94±48 vs 115±29mmHg in SBP and 55±18 vs 70±17mmHg in DBP, $p<0.05$) and left ventricular ejection fraction (31±13 vs 41±12%, $p<0.05$). Inotropic agents and ventilator care were more frequently used in VT group (76.9 vs 26.6%, $p<0.001$, and 46.2 vs 20.6%, $p<0.05$, respectively), and corrected QT (QTc) interval was longer in VT group (559±61 vs 515±69msec, $p<0.05$). All-cause death occurred in 23 patients (10.3%) during in-hospital course, that showed no statistical difference between VT and non-VT groups (15.4 vs 10.0%, $p=0.63$).

Conclusion: Ventricular tachyarrhythmias were more frequently developed in patients with SCMP with hemodynamic instability (requiring isotropic support), low left ventricular systolic function, longer QTc interval, or respiratory difficulty requiring ventilator care. However, ventricular tachyarrhythmia developed in patients with SCMP might be not associated with fatal in-hospital outcome.

P774

Impact of Hyponatremia on the prognosis of patients with acute heart failure

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Introduction: Hyponatremia is the most common electrolyte disturbance in patients with acute heart failure. Its prevalence in different series varies between 1 and 45%, this depends on the definition of hyponatremia itself and the clinical presentation of patients including the notion of diabetes and kidney failure. Our aim was to determine the effect of hyponatremia on patients admitted with acute heart failure.

Patients and Methods: we performed a retrospective study including 120 patients admitted to our department for the management of an acute heart failure episode during 2014. Hyponatremia was defined as a blood sodium concentration $<135\text{mmol/l}$. we conducted one year follow up

Results: Our population includes 83 men and 37 women with mean age of 61.3 years. Twelve patients (10%) had kidney failure and 34 patients (28.33%) were diabetic. During the hospitalization 16 patients (13.33%) showed hyponatremia (Group A) in contrast to group B. There were no significant differences regarding demographic characteristics of both groups. The proportion of patients with severe LV dysfunction (LV EF $<25\%$) (A = 43.75% B = 15.38%; $p = 0.008$) and dilated LV (LV diastolic diameter $> 60\text{mm}$) (A = 68.75% B = 30.85%; $p = 0.004$) were statistically higher in group A than group B. The use of dialysis was much more common in group A than

in group B (A = 6.25%, B = 0%, $p = 0.01$), the number of rehospitalization > 2 was higher in group A (A = 43%, B = 19%, $p = 0.03$). Finally hyponatremia were one of the predictors of mortality at one year in our series (A = 31.25% B = 10, 54%; $p = 0.024$).

Conclusion: Our study confirms poor prognosis of hyponatremia in patients with acute heart failure not only at short term but also at long term

P775

Epidemiology and outcomes in community-acquired versus hospital-acquired acute kidney injury in patients with decompensated heart failure

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Objective: Acute kidney injury (AKI) is a common problem in patients hospitalized with acute decompensated heart failure (ADHF) and occurs up to 70%. Little is known about AKI acquired in the community (CA-AKI) and how it differs from hospital-acquired AKI (HA-AKI). The aim of the study was to determine the prevalence of CA-AKI and HA-AKI in ADHF patients and to evaluate the impact on short-term (30-days mortality) and long-term (6 months rate of ADHF rehospitalizations) outcomes.

Methods: In 183 patients admitted with ADHF (125 male, 69±9 years (M±SD), arterial hypertension (AH) 87%, ischemic heart disease (IHD) 56%, myocardial infarction (MI) 53%, atrial fibrillation 51%, diabetes mellitus (DM) 36%, known chronic kidney disease (CKD) 40%, ejection fraction 44±15%) the prevalence of different variants of AKI was assessed. AKI was defined using 2012 KDIGO Guidelines. Depending on the timing of AKI, AKI was divided into CA-AKI, presenting on admission, and HA-AKI, that occurred after admission. Mann-Whitney and multiple logistic regression analysis were performed. $P < 0.05$ was considered statistically significant.

Results: 41% of patients developed AKI. CA-AKI was revealed in 56% of all AKI cases. Patients with CA-AKI versus HA-AKI were younger (65±8 vs 71±8 years, $p<0.01$), had lower rate of previous ADHF-hospitalizations (71 vs 100%, $p<0.001$). There was no difference in prevalence of main comorbidities, but there was tendency to higher rate of AH, IHD, DM, CKD and anemia in patients with CA-AKI. Patients with CA-AKI had higher risk of 30-days mortality (21 vs 12%, $p < 0.05$) and similar 6 months rate of ADHF rehospitalizations (48 vs 49%, $p > 0.05$).

Conclusions: CA-AKI was more frequent in ADHF patients and developed in 56%. Patients with CA-AKI had higher risk of 30-days mortality than HA-AKI and similar rate of long-term outcomes

P776

Incidence and prognostic value of comorbidities in patients with decompensated heart failure and acute kidney injury

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Objective: Patients admitted with acute decompensated heart failure (ADHF) often have multiple concomitant diseases that complicate management and may adversely affect outcomes. Up to 70% of ADHF patients had at least 1 noncardiac comorbidity (CoM), of which the most common are chronic kidney disease (CKD), anemia, diabetes mellitus (DM) and chronic obstructive pulmonary disease (COPD). The aim of the study was to determine the prevalence of CoM in ADHF patients depending on the presence of acute kidney injury (AKI) and to evaluate the impact on short-term (30-days mortality) and long-term (6 months rate of ADHF rehospitalizations) outcomes.

Methods: in 183 patients admitted with ADHF (125 male, 69±9 years (M±SD), arterial hypertension 87%, ischemic heart disease 56%, myocardial infarction 53%, atrial fibrillation 51%, DM 36%, known CKD 40%, COPD 29%, anemia 20%, ejection fraction 44±15%) the prevalence of AKI and main CoM was assessed. AKI was defined using 2012 KDIGO Guidelines. Mann-Whitney and multiple logistic regression analysis were performed. P <0.05 was considered statistically significant.

Results: Patients with AKI versus patients without AKI had higher rates of DM (40 vs 26%, p<0.05) and anemia (33 vs 11%, p<0.001). 41% of patients developed AKI and 79% of them had at least 1 CoM and 5% pts all 4 of them. AKI in patients with COPD versus without COPD was transient (76 vs 48%, p<0.05), had higher rate of long-term outcomes (71 vs 41%, p<0.05) and there was tendency to more frequent community-acquired (presenting on admission) AKI (76 vs 50%, p>0.05). There was not found any difference in prognosis between anemic and non-anemic pts. AKI in DM patients versus AKI without DM was persistent (87 vs 18%, p<0.001), had higher risk of 30-days mortality (30 vs 9%, p<0.05) and tendency to higher 6 months rate of ADHF rehospitalizations (53 vs 44%, p>0.05). Development of AKI in the presence of CKD versus AKI de novo less often was transient (45 vs 71%, p<0.01), had lower risk of 30-days mortality (11 vs 29%, p<0.05) and higher 6 months rate of ADHF rehospitalizations (60 vs 29%, p<0.01). Evaluation the impact of CoM on outcomes demonstrated the increasing risk of long-term outcomes in parallel with the increasing number of CoM (1CoM-44%, 2- 50%, 3- 76%, 4- 100%, p<0.05).

Conclusions: 79% of ADHF patients with AKI had at least 1 main comorbidity. The presence of comorbidities is the

independent risk factor for adverse short- and long-term outcomes in ADHF patients with AKI.

P777

Evidence of inflammation-mediated serum iron depletion in acute heart failure

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Background: Inflammation is a hallmark of heart failure (HF) pathophysiology and several pro-inflammatory mediators have been associated with adverse effects on myocardial function and outcome. However, the link between inflammation and impaired cardiac function remains obscure. Iron (Fe) depletion, independently of the presence of anemia, has been suggested to negatively impact on cardiac bioenergetics, contractility and clinical outcome. The association between inflammation and Fe kinetics might be particularly relevant in infection-associated HF decompensation (IAHFd), in which overproduction of pro-inflammatory mediators can exacerbate the effects of Fe depletion on cardiac function.

Purpose: Evaluate the impact of inflammation-mediated serum Fe depletion in acute HF (AHF).

Methods: We retrospectively analyzed 548 patients from our AHF registry. Clinical, analytical and echocardiographic data was evaluated. In a subgroup of 164 patients, admission interleukin-6 plasma levels were quantified by EIA.

Results: Mean age was 76.3 ± 12.2 years, 56.7% of the patients were male and 59.4% had systolic dysfunction. The prevalence of low serum Fe was 72.8%. Analytical data on admission was (mean±SD): Fe 42.5±29.2µg/mL; Hb 11.9±4.4g/dL; CRP 47.4±65.1 mg/L and IL-6 36.3±62.3 ng/mL. Patients admitted with IAHFd presented with higher CRP (78.1±5.2 vs 25.4±2.5; p<0.001), IL-6 (55.4±13.2 vs 27.4±3.5; p=0.007), lower Fe (33.5±1.37 vs 49.1±1.9, p<0.001) and similar haemoglobin (11.9±0.12 vs 11.7±0.4, p=NS) and BNP (1973.9±129.3 vs 1912.2±133.1, p=NS), compared with other forms of HF decompensation. A significant inverse association was observed between admission Fe and: i) CRP (b1=-0.65; r2=0.103, p<0.001) and ii) IL-6 (b1=-0.35; r2=0.038; p=0.016), with a stronger association in IAHFd subgroup: CRP (b1=-1.41; r2=0.132, p<0.001) and IL-6 (b1=-1.34; r2=0.107; p=0.019). In IAHFd, an association was also observed between the degree of serum Fe depletion and BNP worsening (DBNP=admission BNP-discharge BNP) (b1=-14.9; r2=0.036, p=0.011). Curiously, in this group of patients, the extent of recovering of Fe levels during the hospital stay (DFe=discharge Fe-admission Fe) correlated with the degree of BNP normalization (b1=12.17; r2=0.06; p=0.002).

This association remain statistically significant after controlling for age, gender, ejection fraction, hemoglobin and eGFR (b1=11.6; r2=0.076; p=0.005). Regarding Fe levels at discharge, mean levels were 61.0±43.1ug/L and there was no difference between IAHFd and other forms of HF decompensation (62.3±3.4 vs 60.5±2.2, p=NS).

Conclusion: Our results support an association between inflammation and low serum Fe levels in AHF. This association is particularly relevant in IAHFd, in which Fe drop correlates with BNP increase, and might partially underlie infection-associated functional deterioration. Our data identifies IAHFd patients as a susceptible population to inflammation-mediated iron depletion effects on cardiac function.

P778

Echocardiographic abnormalities in patients with heart failure with atrial fibrillation

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Abstract Background: The prevalence of atrial fibrillation (AF) in heart failure (HF) varies according to the criteria of enrolment and the use of echocardiography Doppler parameters in the definition of HF.

Aim: a-to evaluate the clinical characteristic of patients with DHF complicated by AF and further assess the causative agents-b- evaluate the clinical and biochemical markers for the prediction of AF in HF.

Method: Over the duration of 12 months, patients were enrolled based on diagnosis of HF according to admission code. Patients were classified into two subgroups and group A, with Systolic HF, with LVREF% ≤ 50%, n = 140 (40%). group B: diastolic HF, with preserved LVPEF% > 50%, n = 204 (60%),The presence or absence of AF on ECG was recorded. The predictive value of different clinical and biochemical variables for the development of AF was evaluated using logistic multiple regression analysis.

Results: Three hundred and forty four eligible patients were admitted with HF out of 7650 that had other medical problems. The prevalence of HF in this population was 4.5%, those with DHF were 2.7% and SHF of 1.8%. The incidence of AF on ECG was 35% in the whole study population and 65% were in sinus rhythm (SR). The occurrence of AF was twice higher in diastolic HF patients of 22% compared with 11% in systolic HF. Echo pulsed Doppler in DHF and AF compared with those in SR showed a severe restrictive pattern with significantly thick septum wall, higher LV mass index, shorter DT and higher E/e- ratio of 12.4 vs. 9.73, P < 0.05. The predictive risk (odd ratio) of different clinical variables for development of AF in HF was positive for LV hypertrophy on ECG of

2.4, history of hypertension of 1.6, history of DM of 1.4, BMI > 28 of 1.7.

Conclusions: The prevalence of HF was 4.5% in the study population, with SHF of 1.8% and DHF of 2.7%. Patients with DHF and AF were with higher female ratio with restrictive pattern compared with SHF. The incidence of AF in the whole study was 35%. The best predictor of AF in diastolic HF was LVH on echo followed by history of hypertension and DM.

P779

Is it always hypertensive non-acute coronary syndrome acute pulmonary edema such a benign clinical condition?

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Background: Non-Acute Coronary Syndrome(ACS) Acute Pulmonary Edema(APE) is a severe form of Acute Heart Failure(AHF), hiding behind a common clinical picture a significantly etiopathogenic polymorphism. Early identification of the underlying disease/substrate is important both in terms of treatment and prognosis. Hypertensive non-ACS APE associated with hypertensive crisis, at a patient with preserved LVEF, in the absence of significant valvular disease and no history of coronary artery disease(CAD), was and is considered a relatively benign condition, with low risk in-hospital mortality(IHM).

Purpose: Analysis of IHM according with underlying disease in a group of patients with non-ACS APE . Identification of correlation between prognosis, substrate and risk factors(RF) .

Methods: 92 patients with non-ACS APE, consecutively hospitalized in Cardiology Clinic-St. Pantelimon Hospital, between 01.01-31.12.2013, distributed and analyzed by 3 etiologies, established on anamnesis, clinical and paraclinical data: ischemic, primary valvular and hypertensive. Each substrate was analyzed through associated cardiovascular RF. We have identified common elements and particularities; correlations between IHM, prognosis factors and substrate .

Results: 41(44.56%) patients with ischemic etiology, 22(23.91%) valvular, 26(28.26%) hypertensive. The incidence of RF and their association is great both for ischemic and hypertensive substrate, with statistically significant differences between the 3 substrates for hypertension(p=0.05), diabetes type II(p<0.01) and smoking(p=0.06)-table 1.

IHM was 9.64 % and was not correlated significantly with substrate(p=0.6): maximum for ischemic(58.74%) , but also higher for the hypertensive(23.08%) .

Table 1. Table 1. Substrate and cardiovascular RF

| | Ischemic | Valvular | Hypertensive | Statistical value |
|----------------------|----------|----------|--------------|-------------------|
| % | 44.56% | 23.91% | 28.26% | |
| Hypertension | 71.93% | 80.56% | 100% | p=0.058 |
| Dyslipidemia | 61.4% | 38.89% | 66.67% | p=0.43 |
| Type II DM | 49.12% | 27.77% | 22.22% | p=0.002 |
| Active smoking | 12.28% | 5.56% | 19.44% | p=0.06 |
| Association of >4 RF | 36.6% | 22.22% | 33.33% | p=0.24 |

DM-Diabetes Mellitus, RF-Risk Factors

Conclusions: Although seemingly a benign condition, non-ACS APE with hypertensive substrate associates a high IHM(2.22%) and a high incidence of cardiovascular RF and association of them, similar to the ischemic substrate, excepting type II DM. These data raise the issue of the real etiopathogeny of those patients with a high probability for subclinical CAD and the requirement of its early diagnosis.

P780

The cardio-renal anaemia syndrome: short-term prognosis of hemoconcentration

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Introduction: Anaemia in cardio-renal syndrome (CRS) has a multifactorial etiology and has been associated with poor outcome in acute heart failure (AHF). Hemodilution may contribute to congestive heart failure. On the other hand, hemoconcentration (HC) in response to diuretic therapy in the AHF has been associated with lower mortality and is also a cause of increase in the creatinine (IncCr). It is postulated that small changes in creatinine (Cr) in patients without established renal failure are due to HC rather than renal function impairment.

Objectives: To assess the prognosis of HC in patients hospitalized for AHF with anaemia.

Methods: A total of 618 consecutive patients admitted for AHF between 1 January 2012 and 31 December 2012 were included. IncCr was defined according to KDIGO criteria and HC as elevation of hemoglobin (Hb) comparatively to admission during hospitalization. Anaemia was defined by hemoglobin concentration <12g/dl. Evaluated 6 months all cause-mortality. Performed uni and multivariate analysis and survival curves.

Results: Mean age was 79 ± 11 years; 42% men. The mortality at 6 months was 41%. 49% of patients had IncCr. These patients were older, with longer average length of stay ($p < 0.05$) and with no difference in the mean dose of diuretic used ($p = 0.6$). HC occurred in 42% of patients with IncCr and was associated with improved survival after adjustment for demographics and comorbidities (HR 1.6, 95% CI: 1:06 to 2:33; $p = 0.026$) compared with IncCr without HC. According to KDIGO stages, HC was associated with better survival in stages 1 and 2 (HR 1.76; 95% CI: 1.12-2.76; $p = 0.01$), which was not significantly different among stage 3 patients (log rank, $p = 0.7$). The HC in patients with anaemia without IncCr was associated with poor prognosis (logrank, $p = 0.04$). No different prognosis was seen in patients without anemia and without IncCr (logrank, $p = 0.79$). HC in patients with IncCr stages 1 and 2 was associated with better prognosis only in patients without anemia at admission (logrank, $p = 0.02$).

Conclusion: Congestion heart failure, chronic renal disease and anemia form a vicious circle. HC in patients with IncCr without renal failure (stage 1 and 2) nor anemia is associated with a better prognosis. Interpreting renal function changes has to take in account not only the increase in creatinine but also other characteristics as the clinical course, the comorbidities or the fluid overload status.

P781

Cost of hospitalization for acute heart failure: an experience of Moroccan hospital

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Introduction: The economic impact of heart failure is enormous, both to individual and country; the aim of this study is to evaluate the cost of hospitalization of acute heart failure in Moroccan hospital.

Materials and methods: This is a retrospective study included 120 patients admitted for signs and symptoms of acute heart failure. All of them have had clinical examination, biological and radiological investigations and medical treatment.

Results: The average age of patients was $63,7 \pm 8.08$ years, [102 men and 18 women], they had more than three cardiovascular risk factors, previous history of ischemic heart disease was found in 73.3% of cases. Most common decompensation factors were pulmonary infection and poor drugs adherence. Duration of hospitalization was $9, 5 \pm 3, 25$ days, cost of bad space was 259 €, cost of investigations was 671, 42€, cost of medication was 276, 18€.

Conclusion: These results demonstrated that cost of hospitalization is very high with great impact on economy

where the interest of prevent this affection to reduce the spending.

Atrial fibrillation

P782

Use of anti arrhythmic drugs (AAD) in management of patients with atrial fibrillation (AF), single center experience

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Introduction: Restoration of sinus rhythm in patients with of Atrial fibrillation has been an area of debate. Although rhythm control strategy has not been proven to be superior to rate control. However, in certain groups of patients the focus of management is the reversion to normal sinus rhythm (SR) and prevention of AF recurrence.

Synchronised direct current cardio version (DCCV) is a popular procedure with high success rate in the short-term management, while the use of AAD is more effective in long-term. The Association of ADD with cardiac and non-cardiac side effects could explain the reluctance to start AAD for AF management especially after first episode of AF.

Current guidelines advocates for use of ADD in order to increase the rate successful cardio version and to reduce recurrence of AF.

Purpose: To review practice of anti arrhythmic drugs use in our centre compared to published guidelines and to design a local guidelines derived for anti arrhythmic drugs use to maintain SR.

Method: We performed a retrospective review of medical records of all patients attended the cardiology department for DCCV in the period between October 2014 – December 2014.

Information collected include; duration of AF, outcome of DCCV, Anticoagulant, ejection fraction, Left atrium diameter, use of AAD pre and post DCCV and cardiac rhythm 3 months post DCCV.

Result of the first cycle of the audit was presented locally and a guideline for use of AAD pre and post DCCV was developed.

A second cycle of the audit included 50 patients who attended for DCCV from October 2015-December 2015.

Results: A total of 80 patients were included in this audit, 30 patients in the first group and 50 patients in the second cycle with no significant differences in basic characteristics. The mean age was 63.4 in the first group vs. 61.7 in the second (P= 0.27). Prevalence of low ejection fraction was 33.3% vs. 46% (P= 0.3791). The mean left atrium diameter

was 3.9 cm in both cycles and the percentage of patients on beta Blocker was 90% vs. 88 % (P = 0.9179). Percentage of patients with AF of more than 3 years duration was 20% in both groups.

We noted a significant increase in use of anti-arrhythmic medications from 26.7% to 78% (P<0.0001). Patients who remained in sinus rhythm in first cycle were 4 (15.38%) in comparison to 32 patients (65%) (P<0.0001).

2 patients developed symptomatic bradycardia secondary to amiodraone and one patient had wide QRS tachycardia secondary to Flecainide.

Conclusion: Our audit showed that simple intervention such as introduction of local guideline for use of AAD can lead to significant increase in AAD use and maintenance of SR post successful DCCV in 3 months follow up.

P783

Novel atrial fibrillation pathway reduces hospital length of stay

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Introduction: Atrial fibrillation (AF) remains a significant burden to the health service. It is estimated that 1.36 million people (2.4%) in England suffer from AF. We recently developed an AF safety discharge pathway complemented by day-case access to echocardiography, 24-hour electrocardiogram monitoring and anti-coagulation service that allows prompt diagnosis and treatment of AF in Ambulatory Emergency Care (AEC).

Methods: We performed a retrospective review on all patients presenting with isolated AF to the Emergency Department (ED). Patients achieving discharge heart rates of less than 120bpm with no evidence of high-risk features (syncope, chest pain, ischaemic ECG changes, haemodynamic instability, raised troponin) were referred to the AEC.

Results: Sixty-five patients were referred to AEC over 6 months. Mean age was 60 years (19-92) with a male to female ratio of 1.6:1 and mean CHA2DS2Vasc was 2.9 (0-5). Most patients were referred directly from ED or via the admitting medical team with a median length of stay of 1 day(s) (n=55).

Median time from referral to review in AEC was 1 day. Thirty-day hospital admission rates were low at 12% (n=8). Six were admitted for AF control and 2 were admitted for other reasons (lung cancer and elective venesection in known haemochromatosis). Two patients were admitted for AF-control requiring DC Cardioversion. One unrelated death was reported due to lung cancer prior to the 3-month follow up.

Conclusion: The ambulatory care service is a good option for the management of AF. Our data demonstrates that significant bed stays can be reduced by the application of this novel pathway. We did not observe any increase in mortality or adverse outcomes suggesting this is a safe strategy for this patient group (providing a strict adherence to the guideline).

P784

Preoperative predictors of post-CABG surgery Atrial Fibrillation in high thromboembolic risk patients

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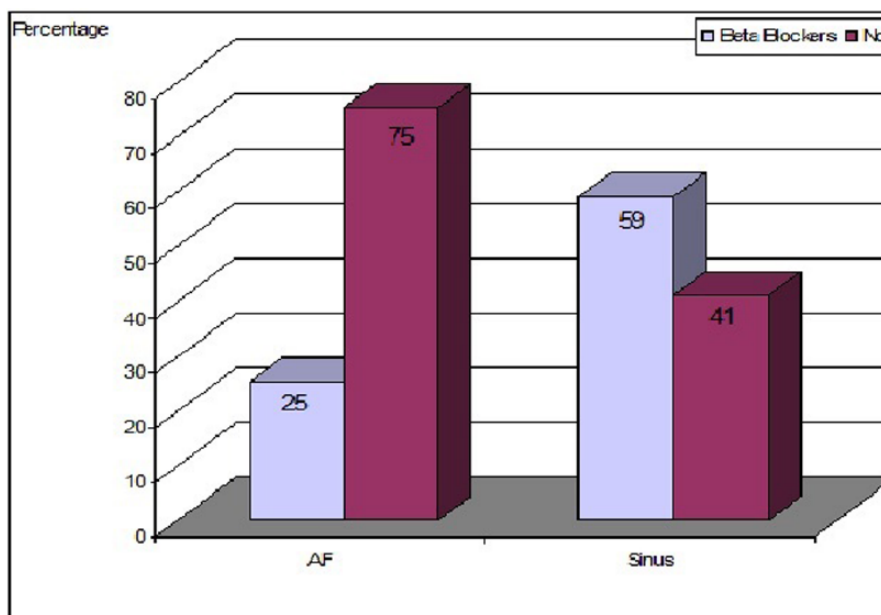
Background: Atrial fibrillation is a very common cardiac arrhythmia. It occurs in up to 60% of patients after CABG surgery. Moreover, post-operative AF is associated with an increased incidence of post-operative hypotension, ventricular arrhythmia and even stroke. Additionally AF following CABG prolongs hospital stay. There are many stroke risk schemes. The simplest one is the CHADS² score. The CHADS² [cardiac failure, hypertension, age, diabetes, stroke (doubled)] risk index evolved from the AF Investigators and Stroke Prevention in Atrial Fibrillation (SPAF) Investigators criteria. Many clinical factors have been studied such as increased age, chronic obstructive pulmonary disease, hypertension, high resting pulse rate, and preoperative angina. Many

attempts were done to identify the true predictors of occurrence of postoperative atrial fibrillation among various patient populations. However no one report about such predictors among highly vulnerable group such as those with high thromboembolic risk as those with high CHADS² score.

Study objectives: We aimed at detecting the simple pre-operative variables that could be associated with post-operative atrial fibrillation among selected high risk patient group as those with high CHADS² score.

Patients and methods: The study involves 100 patients who were in sinus rhythm, with high CHADS² score (≥ 2) and had open heart surgery for coronary artery bypass grafting. All patients were subjected to careful history taking, full clinical examination, ECG and Echocardiographic assessment. All patients were followed up for 3 months. They had post-operative ECG, and one month and three months Holter monitoring to detect any rhythm changes.

Results: There were 68% males with mean age 59.9 ± 10.3 years. 68% were hypertensives, 48% were diabetics, 28% had heart failure, 38% had previous stroke and/or TIA and 26% had history of previous AF. The mean CHADS² score was 2.4 ± 0.6 . The incidence of post-operative AF was 32%. Those patients who developed AF were mostly hypertensives, diabetics, with heart failure, with previous history of AF and with high CHADS² score. High basal heart rate, increased P wave dispersion, impaired left ventricular systolic function and increased left atrial dimensions were associated with AF occurrence. Pre-operative use of beta-blockers was detected as protective factor against AF.



Role of beta blockers

Conclusions: Post-CABG AF occurs in about one third. Some preoperative parameters that could predict post operative AF include hypertension, diabetes, history of heart failure and history of previous AF. Additionally, CHADS² score doesn't only predict thromboembolic risk in AF patients but also could predict AF occurrence as well. Moreover, high basal heart rate, increased P wave dispersion, increased left atrial dimensions and impaired left ventricular systolic function were associated with AF. Finally beta-blocker therapy was found to be protective against post-CABG AF.

P785

Paroxysmal atrial fibrillation and inflammatory markers

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Atrial fibrillation (AF) is considered one of the most common of cardiac arrhythmias and associated with atrial structural changes that may have an inflammatory basis. Recently it has been revealed that inflammation contributes to the pathogenesis of AF. The purpose of the study is to evaluate the relationship between structural parameters and some inflammatory markers in patients with different clinical forms of nonvalvular AF.

Methods: 141 patients with AF (mean age 59, 73 ± 6, 49, duration - average 14, 36 ± 12, and 7 months) were enrolled in this study. Echocardiography examination and 24-hour ambulatory Holter monitoring ECG were registered in each patient. Blood samples were tested on the serum concentration of CRP and IL-6 by ELISA-method. All patients were divided into three groups: paroxysmal AF - 49 patients, persistent and long persistent AF - 23 patients, permanent AF - 71 patients. Statistical analysis of the data was made using software SPSS 13.0 and EXCEL-2007. The informative significance of the parameters was revealed by Two Step Cluster analysis

Results: the obtained results showed that depending on the AF form different degrees of the structural changes of the heart were revealed. The duration of AF plays a definite role in the increasing of the sizes of LA and EDD and in reducing EF for all clinical forms of AF. Moreover, in patients with paroxysmal AF there is a direct correlation between the age and the LA and LV sizes. According to the cluster analysis in patients with paroxysmal AF the reliable indicators of information content are as follows: the duration of AF, the size of LA, EDD, EF and the concentration of IL-6 and CRP. In patients with the persistent type of AF the reliable indicators of information content are: the duration of AF, the size of LA, EDD and EF. In patients with permanent AF the reliable indicators of information content are: the duration of AF, the size of LA and EF only.

Conclusion: the obtained results suggest that inflammatory markers play the important role in the pathogenesis of AF, particularly in paroxysmal form. They contribute to the structural remodeling of the heart in patient with different forms of AF

P786

Assessment of combination of elevated Gal-3 and NT-proBNP levels as an independent predictors of new-onset AF in patients with acute coronary syndrome

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BNP and NT-proBNP may be of use in excluding myocardial infarction and to assist in determining prognosis in ACS. BNP, NT-proBNP and Galectin-3 (Gal-3) is an integral proteins associates with severe course and progression of heart failure, and with the processes of inflammation and fibrosis.

Purpose: The current study assesses the ability of NT-proBNP and Gal-3 to predict short-term outcomes in diabetic patients with ACS and to determine utility of them as a predictors of new-onset AF.

Materials and methods: A total of 108 patients (age 54.6 ± 4.6 years; 52 of them women) after ACS with varying degrees of compensation of DM-2 were included. 28 patients with the level of glycosylated hemoglobin (HbA1c) < 7.0% constituted group 1; 46 patients with HbA1c level 7.0-9% - group 2; and 34 patients with HbA1c > 9% - group 3. Serum Gal-3 concentration was analyzed using a commercially available enzyme-linked immunosorbent assay kit, the NT-proBNP analysis was performed with a commercially available immunoassay at the baseline, at 3 and 6 months after ACS, also was studied the relationship between them concentrations and AF development.

Results: Galectin-3 levels in contradistinction to NT-proBNP were not significantly associated with EF ($r = -0.003$, $p > 0.05$). The concentrations of Gal-3 and NT-proBNP were greatest in patients of group 3 and significantly exceed the value of the 1st group (Gal-3 at the baseline, respectively, in 1, 2 and 3 groups: 28.20 ± 0.58 ng/ml; 34.39 ± 0.72 ng/ml; 38.96 ± 1.16 ng/ml ($p < 0.05$)) and (NT-proBNP at the baseline, respectively, in 1, 2 and 3 groups: 228.60 ± 31.92 ng/ml; 388.67 ± 28.14 ng/ml; 648.91 ± 46.34 ng/ml ($p < 0.05$)).

Repeated measurements at 3 and 6 months remained elevated levels of Gal-3 and NT-proBNP in the patients with insufficient glycemic control; significant difference of Gal-3 levels and NT-proBNP were observed between the 1st and 3rd groups. The incidence of new-onset AF during 6 months of observation significantly different between groups and amounted in patients 1, 2 and 3 groups of 7.7%,

19.6% and 35.3% respectively. NT-proBNP levels > 630 ng/ml and Gal-3 levels > 32 ng/ml were significantly associated with new-onset AF during observation. After analyzing the appearance of clinical events during hospitalization, except new-onset AF we also observed a higher rate of new diagnosis of HF and new-onset of diuretics treatment, but not ventricular arrhythmias in the patient with high concentration of Gal-3 and NT-proBNP.

Conclusions: Combination of elevated Gal-3 and NT-proBNP levels may be considered as an independent predictors of new-onset AF in patients with DM-2 after ACS. Measurement of Gal-3 and NT-proBNP levels can be used, in addition to established risk scores, to determine to an increased risk of the new-onset AF in diabetic patients with ACS.

P787

Predictors of relapse following Elective DC Cardioversion: single UK centre experience

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Introduction: Atrial Fibrillation (AF) and flutter carry an increased risk of mortality. Several risk factors are associated with AF and flutter occurrence. We assessed whether the same risk factors have an effect on the success of DC cardioversions and subsequent maintenance of sinus rhythm at follow-up.

Methods: Retrospective data from electronic records of 109 consecutive patients who underwent elective DC cardioversion was analysed to assess for any correlations between patient demographics, co-morbidities, anti-arrhythmic use and echocardiogram findings (Left atrial size/volume/area graded for the level of dilatation according to the British Society of Echocardiography guidelines) with success at cardioversion and subsequent maintenance of sinus rhythm.

Results: Overall, the mean age was 63 years (85% males, 15% females) with 97% successful conversion to sinus rhythm. Unsuccessful cardioversion was associated with > moderate dilated left atrium. Persistent sinus rhythm at follow up was 62%. Relapse into AF/flutter (38%), was associated with female sex (63% versus 33% for males), <65 years (42% versus 34% with >65 years), > moderate LA dilatation (88% versus 37% with mild dilatation) and use of two anti-arrhythmic medication (43% versus 38% on single agent). Comorbidities associated with higher relapse rate included thyroid disease (67%), sleep apnoea (50%), valvular heart disease (41%), previous MI (30%) and hypertension (23%). Relapse risk was higher with current alcohol intake (75% versus 40% with previous excessive alcohol intake) with 85% of current and previous drinkers in the <65 age group.

The relapse rates for non-smokers, ex-smokers and current smokers were 43%, 25% and 17% respectively.

Discussion: Elective DC cardioversion is extremely effective at reverting patients to sinus rhythm with a high rate of persistent sinus rhythm at follow up. Predictors of relapse include female sex, age <65years, certain co-morbidities and echocardiographic left atrial dilatation. Important modifiable life-style risk factor include current alcohol use with a protective effect from smoking.

P788

Usefulness of neutrophil/lymphocyte ratio as predictor of new-onset atrial fibrillation in acute coronary syndrome

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Introduction: Neutrophil/lymphocyte ratio (NLR) has been proposed as a novel marker of systemic inflammation and oxidative stress. It is an emerging marker of prognosis in patients (pts) with cardiovascular disease and it has been reported an association between the NLR and the recurrence of atrial fibrillation (AF) after ablation. We investigated the relation between the NLR and new-onset AF in pts with acute coronary syndrome (ACS).

Methods: Retrospective study based on a sample of 1253 pts consecutively admitted in the coronary care unit with ACS. New-onset AF has been defined as AF first detected on admission or during hospitalization; the NLR was determined at admission.

Results: We observed new-onset AF in 79 pts (6.3%). These were significantly older ($p < 0.001$) and had higher valvular disease prevalence ($p < 0.001$). There were no differences in cardiovascular risk factors or previous coronary disease. ST elevation myocardial infarction was the most common form of presentation in pts with new-onset AF ($p = 0.007$).

In echocardiographic evaluation, these pts had a higher prevalence of mitral regurgitation (grade > II/IV) ($p < 0.001$) and left ventricular ejection fraction <40% ($p = 0.001$); the left atrium diameter was also higher ($p = 0.002$).

These pts had, at admission, higher levels of creatinine ($p = 0.004$) and NT-proBNP ($p < 0.001$) and lower levels of hemoglobin ($p < 0.001$). The NLR was higher (7.7 ± 5.3 vs 6.0 ± 7.2 , $p = 0.03$), but no difference was found in the total white cell count. Receiver operating characteristic curves explored the relation between the preoperative NLR and new-onset AF; the area under the curve was 0.65 (95% CI 0.59 to 0.71, $p < 0.001$). Using a cut-off level of 4.6, NLR predicted new-onset AF with a sensitivity of 65% and specificity of 64%.

After multivariate analysis, we have established as independent predictors of new-onset AF: higher left atrium diameter ($p = 0.04$), NLR ≥ 4.6 ($p = 0.02$) and mitral regurgitation (grade $> II/IV$) ($p = 0.005$).

Conclusion: Higher NLR was associated with occurrence of new-onset AF. Our findings support an inflammatory etiology in new-onset AF in pts with ACS but suggest that other factors are also important.

P789

Ivabradine and atrial fibrillation risk in acute coronary syndrome patients

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Introduction: ivabradine (Iva) inhibits sino-atrial node cells depolarization lowering heart rate. Recent evidence indicates and increased risk of atrial fibrillation (AF) in patients treated with Iva. The impact of this drug in acute coronary syndrome (ACS) setting is less well studied despite the negative impact of new onset AF in this context.

Aim: to investigate the relation between Iva use and AF incidence in ACS patients.

Methods: we used data collected in Portuguese Registry of ACS. We evaluate new onset AF and Iva exposure during hospitalization in this database that gathers information from patients admitted with ACS diagnosis. Patients were divided in three groups: one group initiate Iva during hospitalization (group A), another was already on Iva and kept it during hospitalization (group B) and finally one group not exposed to Iva (group C).

Sociodemographic data, previous medical history, ACS type, medical history - cardiovascular risk factors, AF, renal failure, chronic pulmonary disease (COPD), ischemic and valvular heart disease - were collected. We also study heart failure development (Killip class >1) and the ventricular function (ejection fraction - EF) during hospitalization.

Results: we analyze data of 12481 patients admitted with ACS diagnosis between October 2010 and February 2016 (73.2% male, mean age of 65 ± 13 years); 42.1% were admitted with ST elevation myocardial infarction diagnosis, 47.3% non-ST elevation myocardial infarction and 7.2% with unstable angina. New onset AF occurred in 593 (4.6%) patients.

Iva was prescribed during hospitalization in 577 patients (4.6%), 104 (0.8%) of them were already taking Iva and kept it during hospitalization.

Group C patients were younger than group A and group B (65 vs 67 vs 71 years $p < 0.01$), had less previous heart failure (4.5 vs 10.6 vs 30.8% $p < 0.01$), valvular heart disease (2.5 vs 5.9 vs 10.8% $p < 0.01$), renal failure (5.3 vs 8.8 vs 19.2% $p < 0.01$) and COPD (4.9 vs 14.8 vs 9.6% $p < 0.01$). On admission group

C patients had less signs of heart failure than group A and B (12.9 vs 32.6 vs 26.9% $p < 0.01$), undergone coronary angiography more often (88.7 vs 83.1 vs 57.7% $p < 0.01$) as revascularization (67.8 vs 60.7 vs 32.7% $p < 0.01$) and had better systolic function (EF 52 vs 47 vs 48% $p < 0.01$).

Mortality was higher in group B than in group A and C (5.8 vs 4.9 vs 3.1% $p < 0.01$).

New onset AF was more frequent in group A than in groups B and C (8.0 vs 5.8 vs 4.9% $p < 0.01$). After adjusting for confounding variables no statistical significant relation was found between Iva initiation during hospitalization (OR=1.13 95% CI 0.41-3.09) or Iva use before and during hospitalization (OR=1.18 95% CI 0.46-3.05) and no Iva use.

Conclusion: incidence of new onset AF was low even in patients with new Iva prescription. Patients on Iva had a worst risk profile. In multivariate analysis Iva use was not an independent predictor of new onset AF.

P790

Effects of fentanyl and midazolam on platelets function in patients with lone atrial fibrillation

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Atrial fibrillation (AF) is associated with increased risk of thromboembolic complications. The aim of the study was to assess impact of commonly use drugs for analgesia (fentanyl) and sedation (midazolam) on platelet activation.

Electrical cardioversion have been performed in 24 male patients (mean age 49,5, range 21-60) with atrial fibrillation. The platelet status were measured before (T0) and after drug administration (T1) (12 patients after fentanyl administration and in 12 patients after midazolam). The number of platelet aggregates, platelet derived microparticles and leukocyte-platelet aggregates (CD11b+CD61+ elements and CD45+CD61+) and expression of P-selectin (CD62) and part of fibrinogen receptor (CD41) on platelets was tested by flow cytometry.

A significant drop of platelet-leukocytes aggregates was observed after fentanyl administration (CD45+CD61+ T0 vs T1; 13.25 ± 6.52 vs 7.36 ± 1.2 , $p < 0.005$ and for CD11b+CD61+ T0 vs T1; 8.99 ± 3.21 vs 6.5 ± 0.98 , $p < 0.05$). There was no midazolam impact on platelet activation. Despite aggregation no other significant changes in platelets function have been detected.

The results of the study suggest that fentanyl using could be beneficial in reducing thromboembolic complication in AF patient undergoing electrical cardioversion.

Table 1. Summary of the study in final analysis

| Author (Year) | Sample (n) | Method | Indicator | Optimal NLR Cut-off | Follow-up | Outcome | OR (95% CI) | p-value |
|------------------------|---------------------------------|--------------------|------------------|---------------------|-------------------|---------------------|-----------------------|----------|
| Arbel Y, et al (2014) | STEMI (n= 538) | Prospective cohort | NLR on Admission | 6,5 | 1082 + 547 days | All-cause mortality | 2,2 (1,04-4,8) | p= 0,039 |
| Sen N, et al (2013) | STEMI onset <12 hours (n= 212) | Prospective cohort | NLR on Admission | 4,27 | 38 months (36-40) | All-cause mortality | 3,07 (2,21-4,98) | p < 0,01 |
| Xu-Hua S, et al (2010) | STEMI onset <12 hours (n= 551) | Prospective cohort | NLR on Admission | 6,47 | 5,2 years | All-cause mortality | 2,27 (1,32-4,29) | p=0,002 |
| Han YC, et al (2013) | STEMI onset <12 hours (n= 326) | Prospective cohort | NLR on Admission | 6,52 | 12 years | All-cause mortality | 3,91 (1,02-15,04) | p= 0,047 |
| Cicek G, et al (2015) | STEMI onset <12 hours (n= 2518) | Prospective cohort | NLR on Admission | 6,65 | 22 months (1-54) | All-cause mortality | 1,082 (1,052-1,114)** | p= 0,001 |

*Per incremental unit **Unadjusted OR

Biomarkers

P791

Neutrophil to lymphocyte ratio as a long term mortality predictor in st-elevated myocardial infarction undergoing percutaneous coronary intervention: a mini systematic review

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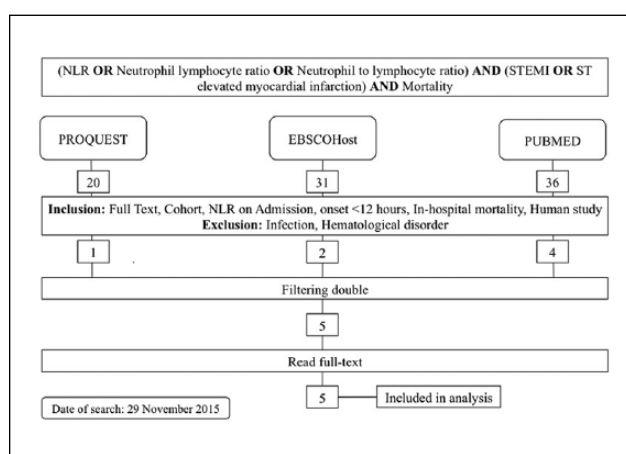
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Background: ST-elevated Myocardial Infarction (STEMI) remains one of the disease with high mortality and morbidity rate, hence prognosis stratification is essential in the disease management. Neutrophil to Lymphocyte Ratio (NLR), an inexpensive bedside tool, recently showed promise as a mortality predictor in STEMI patients. Therefore, we aim to review the role of NLR as an mortality prognostic marker in STEMI patients undergo Percutaneous Coronary Intervention (PCI)

Method: We conducted structured search in several databases including Proquest, EBSCOHost, and Pubmed for any studies on STEMI patients undergoing PCI in order to review the correlation between NLR and all-cause mortality. All selected studies undergo study appraisal according to Oxford CEEBM prognosis study appraisal worksheet.

Result: After implementing inclusion and exclusion criteria, five prospective cohort studies were selected comprising of 2518 participants. All studies measured NLR value on admission with various cut-off values ranging from 4,27 to 6,65. However, all except one studies showed that elevated NLR remains an independent prognostic predictor despite multivariate adjustment.

Conclusion: Further studies are necessary to determine the specific cut-off value. Nevertheless, NLR has shown



Search Algorithm

a promising long term prognostic marker performance in STEMI patients undergo PCI.

P792

Risk assessment of single baseline measurement of high-sensitivity troponin: a 6-month prospective study comparing three different assays

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Background: The 2015 ESC guidelines for acute coronary syndromes (ACS) without ST-segment elevation recommend different algorithms according to the type of high-sensitivity troponin assay. However, it is unknown whether there are clinically relevant differences among various high-sensitivity assays.

Table 1.

| 99th percentile | Sensitivity (95% CI) | Specificity (95% CI) | PPV (95% CI) | NPP (95% CI) |
|----------------------------------|----------------------|----------------------|-------------------|---------------------|
| Abbott Architect hs Troponin I | 87.5% (71.0-96.5) | 74.8% (70.7-78.6) | 18.5% (12.7-25.7) | 98.9% (97.2-99.7) |
| Roche Elecsys Troponin T hs | 100.0% (71.5-100.0) | 57.8% (52.4-63.1) | 7.0% (3.5-12.2) | 100.0% (98.2-100.0) |
| Siemens Dimension EXL Troponin I | 84.8% (68.1-94.9) | 89.1% (86.1-91.7) | 33.3% (23.4-44.5) | 98.9% (97.5-99.6) |

Sensitivity, specificity, positive and negative predictive values for the 99th percentile of each assay

Purpose: We aimed to compare the diagnostic and prognostic accuracies of three high-sensitivity troponin assays in the emergency department (ED).

Methods: Prospective cohort study enrolling 548 consecutive patients admitted to the ED with suspected ACS (50.2% male gender, age 67 ± 19 years; GRACE score 118 ± 38). Blood samples were subjected to triple testing with Abbott Architect hs Troponin, Roche Elecsys Troponin T hs, and Siemens Dimension EXL Troponin. The predefined 6-month combined endpoint included acute myocardial infarction (AMI), unscheduled coronary revascularization and cardiovascular mortality.

Results: Type 1 AMI was the final diagnosis of 25 (4.6%) patients, 9 (1.6%) of them with ST-segment elevation. The 6-month incidence of the combined endpoint was 6.0%. With only one measurement, collected on patient ED admission, the accuracy for the combined endpoint was not statistically different between assays, but the Roche Elecsys assay had the numerically higher accuracy (AUC: 0.88, 95% CI: 0.81–0.96). Considering the 99th percentile, a positive Siemens Dimension EXL assay (15.3% patients) had a higher specificity for the combined endpoint than a positive Abbott Architect assay (29.0% patients) or a positive Roche Elecsys assay (44.0% patients) – Table 1. Patients with undetectable Siemens Dimension EXL assay (73.5% patients) had 3 combined endpoint events (1 AMI, 1 unscheduled revascularization, 1 CV death); patients with undetectable Abbott Architect (6.7% patients) or Roche Elecsys (37.0% patients) assays had no events at follow-up. Thus, the negative predictive values of undetectable Abbott Architect (100.0%, 95% CI: 90.0-100.0%) and Roche Elecsys (100.0%, 95% CI: 97.2-100.0%) assays were higher than with undetectable Siemens Dimension EXL (99.3%, 95% CI: 97.8-99.8%) assay.

Conclusion: Novel generation high-sensitivity troponin assays have lower specificity for cardiac adverse outcomes, but may allow a simple and safe rule-out with only a single baseline measurement.

P793

Troponin levels in patients with stable CAD

Supported by the development plan of the Central Military Hospital of the Ministry of Defence MO IK 1012.

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Introduction: Cardiac troponins are specific markers of myocardial damage. Their elevation is not always related to acute myocardial ischaemia. The increased sensitivity of diagnostic kits has resulted in an increase in the number of positive results in patients without acute coronary syndrome (ACS).

Aim: To determine the level of highly sensitive troponin T (hs TnT) in stable patients (without ACS) before selective coronarography (SCG), to determine the correlation between hs TnT values and the extent of atherosclerotic damage to the coronary arteries.

Methodology: We studied a group of 251 consecutive patients with indications for SCG diagnosis.

Indications: stable angina pectoris, shortness of breath, newly diagnosed heart failure, syncope, and ventricular arrhythmia. Exclusion criteria: ACS including unstable angina pectoris, prior cardiopulmonary resuscitation, cerebrovascular accident (CVA) within the last 6 months, and ongoing sepsis. The hs TnT value was determined before SCG (normal range, 0-0.013 ug/l). Monitored parameters: coronary angiography, age, gender, heart rate, and serum creatinine levels. The study included 182 patients with normal renal function and 69 patients with renal insufficiency.

Results: The average age of the studied population was 69.6 ± 10.3 years (median, 70 years); 33% of patients were women. The serum level of hs TnT for the entire population was 0.031 ± 0.091 ug/l (0.014). A positive hs TnT was noted in 133 patients. The population study group consisted of 121 patients with normal coronary arteries or with insignificant atherosclerotic disease. Significant damage involving one or more arteries was present in 130 patients. In the subgroup with significant coronary disease, we found a significantly higher hs TnT level than in the group of patients without significant coronary disease: 0.043 ± 0.125 ug/l (0.018) versus 0.019 ± 0.018 ug/l (0.013) ($p=0.008$) (Mann-Whitney test). Significantly higher troponin levels were found in the group of patients with renal insufficiency: 0.057 ± 0.150 ug/l (0.023) vs. 0.022 ± 0.053 ug/l (0.012), respectively ($p<0.05$)

(Mann-Whitney test). Patients with positive hsTnT underwent two years follow up. ACS occurred in 4 patients (3%), 16 patients (12%) needed the hospital care due to cardiac causes. New onset of heart failure was recorded in 9 patients (6,8%). 3 patients (2,3%) died within 2 years from the first contact.

Conclusion: Slightly elevated serum hs TnT levels are common in patients with stable coronary artery disease (CAD). We observed a significant correlation between the level of troponin and the presence of atherosclerotic damage to the coronary arteries. Determination of basal hs TnT levels in patients with stable CAD is reasonable as they may be used for comparison in case of change in a patient's clinical condition. Necessity of hospital care (12%) and the new onset of heart failure (6,8%) are mostly recorded in patients with positive hs TnT during the two years follow up.

P794

Factors underlying troponin I elevation after pacemaker implantation

Ministry of defence Czech republic - 1012

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Introduction: Cardiac troponins are highly specific markers of myocardial damage, their elevation is not always connected with ischemia. It exists many others reasons for their elevation. The aim of our investigation was to determine the correlation between pacemaker implantation and elevation of cardiac specific markers.

Aims: 1/ To determine the elevation of troponin I after the implantation of pacemaker (single or dual chamber) with active lead.

2/ Is time of fluoroscopy in the correlation with troponin I elevation after pacemaker implantation?

3/ How much is elevated troponin I in unselected population of cardiologic patients.

Method: A defined group of 230 patients were indicated for the pacemaker implantation. The values of cardiac specific markers (troponin I, CKMB and myoglobin) were stated before the implantation and repeated 6 and 18 hours later. Monitored factors were fluoroscopic time, the number of attempts of pacemaker implantation (attachment to myocardium), single chamber versus dual chamber pacemaker implantation and other clinical data.

Results: The mean patient age was $77,9 \pm 8,0$ years (median 79,5). Females formed 44% of the group. A total of 136 double chamber and 94 single chamber pacemakers were implanted.

The average time of fluoroscopy was $38,8 \pm 22,0$ seconds (median 33,5 s). In the whole group of patients troponin I increased from the initial $0,02 \pm 0,07$ ug/l to $0,18 \pm 0,17$, $p < 0,001$ (Wilcoxon test) 6 hours later and decrease to $0,09 \pm 0,18$ ug/l 18 hours later, $p < 0,001$ (Wilcoxon test). There were minor changes in other cardiac specific markers. The correlation between serum levels of troponin I after the implantation of pacemaker and fluoroscopic time in the whole group of 230 patients was set, (Spearman correlation coefficient = $-0,39$, $p < 0,001$ resp. $0,37$, $p < 0,001$) after 6 and 18 hours respectively. We set also correlation between troponin I elevation and number of attempts electrode implantation (deployments to myocardium) in 6 resp. 18 hours ($p < 0,001$, resp. $p = 0,026$, Mann-Whitney test).

Conclusion: A mild troponin I elevation after the uncomplicated pacemaker implantation with active lead electrode system is a common phenomenon. Difficulty of the procedure correlates positively with the troponin I levels after the implant procedure.

P795

Predicting hemodynamics from metabolic measurements using support vector regression in an isolated ex-vivo four-chamber working heart model

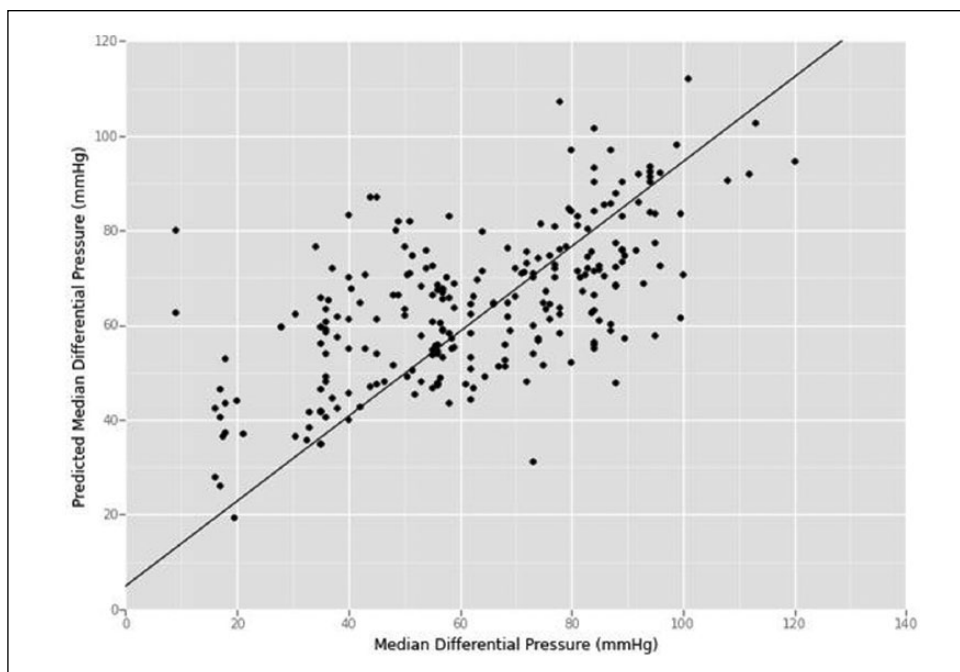
Medtronic LLC

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Introduction: Ex vivo cardiac perfusion, in which hearts are perfused with warm, oxygenated, nutrient-enriched blood pre-transplantation, has emerged as a promising technique for the maintenance and recovery of donor organ viability. However, the established system utilizing Langendorff perfusion assesses cardiac function based on metabolic parameters with greatest reliance on lactate levels. An isolated four-chamber working heart model was used to evaluate the correlation of metabolism and hemodynamics to make pharmacological drug testing with this model translational. We explored the utility of Support Vector Regression (SVR) in the prediction of hemodynamic data from a set of relevant metabolic parameters measured with a blood gas machine. In these studies, ATP and fatty acids were administered as possible cardioprotective and signaling agents.

Methods: Yorkshire swine hearts (n=18) were explanted using standard surgical techniques and placed on a four-chamber



SVR Accuracy

in vitro apparatus. A clear modified Krebs-Henseleit buffer solution was utilized for perfusion. Hemodynamic profiling was performed by the placement of pressure catheters in all chambers. Arterial perfusate samples from the aorta as well as venous samples from the coronary sinus were collected every 10 minutes to evaluate changes in function over the course of time in a four-chamber working model.

Results: A linear regression model was fit between venous lactate levels and median left ventricular differential pressure for all 243 timepoints. Although there was a negative relationship between lactate levels and hemodynamic performance, the R^2 value only reached 0.06. Venous glucose concentration was more strongly correlated to performance, yielding an R^2 value of 0.147. Inputting a standard parameter profile of venous and arterial glucose, potassium, sodium, calcium, chloride, glucose, lactate, pH, pCO₂, and pO₂ levels to a linear SVR algorithm achieved an R^2 value of 0.38, with an average five-fold cross validation score of 0.31. This performed better than linear regression on any individual parameter. The linear SVR's robustness to overfitting was verified by tuning the C regularization parameter on a validation curve.

Conclusion: Using machine learning models to infer hemodynamic function from metabolic readings is a promising method for improving monitoring of heart viability. It is important to note that despite the limited number of input variables, our model was able to predict hemodynamic function reasonably well, even independent of when in the experiment the measurement was taken.

P796

Circulating copeptin and high-sensitive troponin I in patients with chest pain after a recent syncope

Association for the Promotion of Research in Arteriosclerosis, Thrombosis and Vascular Biology (ATVB) and the Ludwig Boltzmann Cluster for CV Research

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Background: Copeptin is useful in the early rule-out of acute myocardial infarction (AMI) patients. No evidence is available on characteristics and copeptin values of chest pain patients with syncope in the emergency department (ED).

Methods: We measured copeptin and high-sensitivity cardiac troponin I in 700 consecutive ED patients admitted with chest pain between February 2011 and January 2012. Retrospectively, we selected only patients with a concomitant syncopal episode. Copeptin cut-off values above 10 pmol/L were considered positive.

Results: Sixteen patients (males = 8) were found; with mean age 72.3 ± 18.4 years. All patients exhibited elevated

Table 1. Patient baseline characteristics

| Patient Number | Age (years) | Sex | Symptom onset (hr) | Copeptin (pmol/L) | hs-cTn I level | Other findings |
|----------------|-------------|-----|--------------------|-------------------|----------------|--------------------------------|
| 1 | 91 | F | 6 | 75.74 | Normal | HTN, CAS, dehydration |
| 2 | 75 | M | 3 | 28.40 | Elevated | HTN, DVT/PE, duodenitis |
| 3 | 96 | F | 6 | 19.53 | Normal | HTN, dehydration |
| 4 | 92 | F | 1.25 | 42.70 | Normal | HTN, heart valve insufficiency |
| 5 | 42 | M | 6 | 80.32 | Normal | Ethanol consumption |
| 6 | 71 | M | 6 | 53.88 | Normal | DM2, heart failure, smoking |
| 7 | 74 | F | 3.5 | 189.60 | Elevated | RBBB, recent PCI, smoking |
| 8 | 59 | M | 8-12 | 145.60 | Elevated | HTN, AMI |
| 9 | 94 | M | 6 | 246.90 | Normal | HTN, hyperlipidemia |
| 10 | 32 | F | 6 | 16.55 | Normal | None |
| 11 | 78 | F | 6 | 54.73 | Normal | HTN, CAS, dehydration |
| 12 | 79 | M | 3 | 45.89 | Normal | HTN, congestive heart failure |
| 13 | 81 | F | 3 | 41.58 | Normal | HTN, atrial fibrillation |
| 14 | 64 | M | 6 | 348.60 | Normal | DM2, previous AMI, smoking |
| 15 | 64 | F | 3 | 147.50 | Elevated | HTN, DVT/PE |
| 16 | 56 | M | 1 | 26.97 | Elevated | AMI, smoking |

HTN=hypertension, DM2=diabetes mellitus type 2, RBBB=right bundle branch block, CAS=carotid artery stenosis

copeptin levels (median 54.3 pmol/L, IQR 31.7 to 147.0 pmol/L). Five of 16 patients with recent syncope had elevated hs-cTnI at 0 / 3 hours. Syncope in 7 of the 11 patients with normal troponin values was likely due to worsening of their cardiovascular comorbidities (Table). The remaining patients likely experienced a vasovagal syncope.

Conclusion: Elevated copeptin in combination with normal troponin levels are mainly seen in patients experiencing non-coronary chest pain and syncope. Further studies are warranted to identify potential confounders.

P797

Coronary heart disease and genetic polymorphisms. clinical, angiographic, procedure technique and major events and restenosis in long-term follow-up evaluation post percutaneous coronary intervention

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There are clinic and genetic polymorphism differences in coronary artery disease (CHD). Percutaneous coronary intervention (PCI), clinic, angiographic, procedure technique may influence the evolution, major events (death, AMI, revascularization) and clinical restenosis. This study aims to evaluate if genetic polymorphism have some influence in long-term follow-up after PCI.

A total of 182 patients, the coronary disease group (CDG) with CHD of a closed health system were submitted to PCI from 2001 and 2007 and to genetic follow-up evaluation until 12/31/2008. The control group (CG), with 36 patients, were angiographically normal but they were submitted to genetic evaluation. The polymorphisms evaluated were the ACE I/D and A166C (AT1R). In this period 221 procedures were performed in 182 patients. Restenosis was considered as symptoms and/or as a ischemic tests with angiographic restenosis. Qui square, Fisher exact and Student t test were used. Cox multivariate regression analysis were not used because only three clinical characteristics and A166C had P<0.10.

The CG and CDG patients were: female 20 (55.6%) and 49 (26.9%), (P=0.0007); age 55.9±11.1 and 60.8±10.5(P=0.0100); tabaco smokers 5 (13.9%) and 67 (36.8%), (P=0.0132); diabetes 4 (11.1%) and 48 (26.4%), (P=0.0802); hypertension 29 (80.6%) and 146 (80.2%), (P=0.9631); dyslipidemia 14 (38.9%) and 112 (61.5%), (P=0.0119); family history 12 (33.3%) and 60 (33.0%), (P=0.9659); obesity 9 (25.0%) and 60 (33.0%), (P=0.3476); ACE polymorphism DD 16 (44.5%), DI 17 (47.2%), II 3 (8.3%) and DD 81 (44.5%), DI 70 (38.5%), II 31 (17.0%), (P=0.3612); A166C polymorphism AA 36 (100.0), AC 0 (0.0%), CC 0 (0.0%) and AA 135 (74.2%), 42 (23.1%), 5 (2.7%), (P=0.0026). In CDG with 221 procedures, there were no difference: between ACE and A166C polymorphism at one, two or three vessel disease; between majors events, deaths, AMI and revascularization; and between restenosis and the mean vessel diameter, lesion

extension and bare metal or drug eluting stents (DES), although were implanted in 27 (12.2%) patients, being 15 (55.5%) patients with in stent restenosis and the others with small vessel diameter and long lesions.

In CDG there were more males, older people, more smokers, dislipidemia and they were genetically A166C polymorphism different from CG, the latter did not have CC or AC. There were no differences between the variables studied and illness extension, major events and restenosis in the CDG, even in relation to bare stens and DES, maybe because DES were used to the less favorable lesions and in stent restenosis.

P798

Usefulness of red cell distribution width for predicting type of death in patients with acute coronary syndrome

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Background: The red cell distribution width (RDW) has been related with higher risk of mortality in patients with acute coronary syndrome (ACS). However the mechanisms involved in this association have not been studied. The evaluation of the type of death associated with high levels of ADE can help clarify its prognostic role.

Purpose: The aim of this study was to evaluate the usefulness of RDW predicting the type of death in patients with ACS.

Methods: The RDW was measured at admission for 1508 consecutive patients (67±42 years, 74% male) with ACS from January 2011 to December 2014. Clinical and analytic variables were collected during hospitalization. Cardiovascular death (CV) and non-cardiovascular death (NCV) were defined according with 'Standardized Data Collection for Cardiovascular Trials Initiative'.

Results: During the follow-up period, 190(12.6%) patients died. Of this, 145 patients deceased due to cardiovascular causes (76%), 41 due to non-cardiovascular causes (22%) and were unknown in 4 patients (2%). Patients with CV and NCV deaths had higher levels of RDW (patients with CV death 13,7% [13,2-14,5] versus 14,1% [13,5-15,4], p<0,001; patients with NCV death: 13,8% [13,2-14,5] versus 14,6% [13,6-16,1], p<0,001). Quartile analysis of RDW levels revealed higher mortality in the last quartile

(RDW >14,5%, p<0,001). The area under the receiver operating characteristic curve (AUC) were similar for both events (CV death: 0,61 [0,56-0,66] and NCV death: 0,67 [0,58-0,76]). After multivariant analysis, the RDW >14,5% was a predictor of risk for both types of death (CV death, HR: 1,48, confidence interval 95% [CI]: 1,01-2,17, p=0,046 y NCV death, HR: 1,99 [CI]: 1,01-3,89, p=0,046). The Kaplan-Meier survival analysis showed that patients with RDW >14,5% had higher CV and NCV mortality. It was more pronounced in CV death curves, with separation of this curves from the beginning of follow-up (Figure 1) in opposite to NCV curve (Figure 2).

Conclusion: RDW levels were associated with higher risk of CV and NCV death in patients with ACS. Further studies are needed to clarify the pathophysiological role of the RDW in these patients.

P799

Early dynamics of serum levels biomarkers in primary anterior STEMI patients

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Purpose: to study the early dynamics of serum levels of ST-2, IL-1β, NTproBNP, hCRP in patients (pts) with primary anterior STEMI.

Methods: 21 pts with primary anterior STEMI (mean age 60.47±7.4) were enrolled. Blood samples were drawn on the 1st (T1), 3d (T2), 7th (T3), 14th (T4) days of STEMI and 6 month after STEMI (T5). The serum levels of ST-2, IL-1β, NTproBNP, hCRP were determined by the immunoassay and were compared with healthy individuals (H).

Results: All pts underwent reperfusion therapy, 6 pts by the primary PCI, 15 pts - PCI after successful fibrinolysis (67%). Average reperfusion time was 5.01±3.5 h.

Dynamics of ST-2 (ng/ml) was the following: 90.48±83.07(T1)→46.34±35.42 (T2)→30.04±11.28 (T3)→28.76±7.83 (T4)→28.78±8.82 (T5). Levels of ST-2 gradually decreased to T4 (p<0.05), then it was no changes. It was in 3 times above than H at the admission. However, the half of the pts had the value, as in H already to T4. NTproBNP (pg/ml) revealed decrease of the value from 7th day to 6 month in 2 times: 419.76±377.10→198.8±139.5 (p<0.05), but it was above the H at T5 in 4 times. IL-1β (pg/ml) decreased from T1 to T4 in 1.5 times - 1.17±0.43→0.93±0.42 and the numerous of the pts with value above than H continue to decrease to T5 (p<0.05). But the value was above than H to T5 too. 94% pts had the

value of hCRP (mg/l) above, than H at T2 - 9.95 ± 2.04 ($p=0.05$), then it gradually decreased in 2 times - 4.8 ± 3.04 to T4 and became, as in H at T5.

Conclusion: Thus, the dynamic of ST-2 was to gradually decrease of the value from the 1st to the 14th day. Despite on, it was above, than H at admission, it achieved the normal range, as hCRP, to discharge. But hCRP decreased from 3d to 14th day. NTproBNP and IL-1 β were above than H at discharge. Although, IL-1 β decreased, as ST-2 to 14th day, NTproBNP reduced from 7th day to 6 month.

P800

Daytime ambulatory blood pressure variability predicts fluorophores advanced glycation end products (AGEs)-to-NADH ratio in type 2 diabetes and controls

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Background: Higher advanced glycation end products to nicotinamide adenine dinucleotide hydride (AGEs-to-NADH) ratio was described in diabetes subjects with cardiovascular disease compared to controls. However, no data has been reported regarding the relation between AGEs-to-NADH ratio and 24-hour ambulatory blood pressure monitoring parameters.

Purpose: We aimed to assess the association between AGEs, NADH, the AGEs-to-NADH and ambulatory blood pressure control and variability in type 2 diabetes and control subjects.

Methods: Serum AGEs (370/435 nm) and NADH (370/460 nm) were measured in type 2 diabetes subjects with cardiovascular disease ($n=26$), without cardiovascular disease ($n=37$) and controls ($n=25$) using fluorescence spectroscopy. All subjects underwent 24-hour ambulatory blood pressure monitoring. Daytime, nighttime and 24-hour mean blood pressure and blood pressure variability were assessed. Blood pressure variability was calculated using standard deviation.

Results: We found significantly higher AGEs (19.4 ± 3.1 vs. 18.0 ± 3.4 and 15.9 ± 1.5 ; $p=0.002$) and lower NADH (14.9 ± 2.7 vs. 13.2 ± 2.6 and 19.6 ± 2.1 ; $p=0.30$) in diabetes subjects with cardiovascular disease compared to those without cardiovascular disease and controls. The AGEs-to-NADH ratio was significantly higher in diabetes subjects with cardiovascular disease compared to those without cardiovascular disease and controls (1.38 ± 0.26 vs.

1.32 ± 0.21 and 0.82 ± 0.11 ; $p<0.001$). The AGEs-to-NADH ratio was significantly and positively associated with mean daytime, night-time and 24-hour systolic blood pressure ($r=0.27$; $p=0.01$), also with daytime systolic blood pressure variability ($r=0.27$; $p=0.01$). In linear regression analysis, the AGEs-to-NADH ratio was significantly predicted by daytime systolic blood pressure variability ($p=0.01$), even after adjustment for age, sex, smoking status, diabetes and hypertension duration ($R^2=0.19$; $p=0.014$).

Conclusion: Our findings suggest that daytime ambulatory blood pressure variability might be implicated in increasing the newly reported fluorophores AGEs-to-NADH ratio in type 2 diabetes and control subjects.

P801

Impact of microalbuminuria in the development of contrast-induced nephropathy in patients undergoing primary angioplasty

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Introduction: Contrast-induced nephropathy (CIN) has become one of the main causes of acute renal failure in-hospital medical practice, with impact on morbidity and mortality at short and long term. Albuminuria corrected by creatinine measurement (MAU) in single urine sample is a novel index associated with cardiovascular risk and renal function. The objective of this study is to evaluate the incidence of CIN in patients undergoing primary percutaneous coronary intervention for acute myocardial infarction, the prevalence of MAU depending on cardiovascular risk factors and its impact on development of CIN.

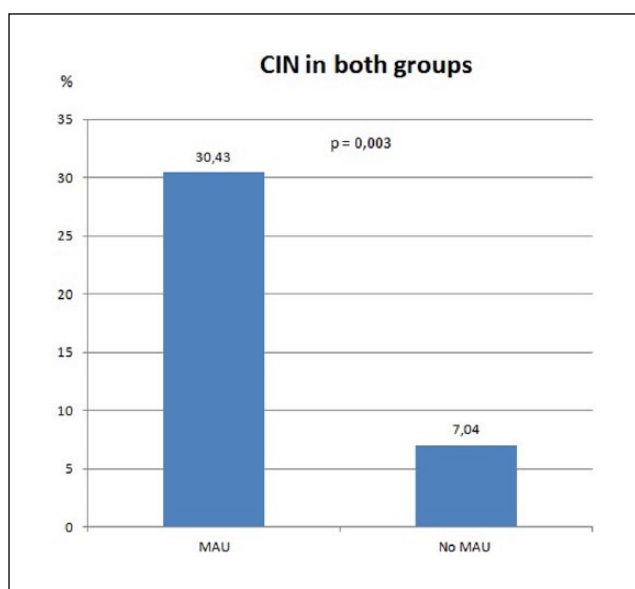
Methods: Observational cohort study defined by the presence of microalbuminuria at admission in patients undergoing primary percutaneous coronary intervention at Lozano Blesa Hospital cath-lab. Albuminuria level was determined at admission, as well as a cardiometabolic risk profile and serial troponin I. NIC was defined as the elevation of serum creatinine in 0.5 mg/dl or 25% increase with respect to the baseline within the first 72 hours after exposure to the contrast medium.

Results: The incidence of NIC was 12,8% ($n: 12$), significantly higher in patients with glomerular filtration (GF) <60 ml/min. The incidence of CIN was significantly higher in patients with MAU (30.4% vs 7%, $p 0,003$). Multivariate analysis showed that there were no

Table 1. Baseline Characteristics

| | MAU (23) | No MAU (71) | p |
|--------------------------|---------------|---------------|-------|
| Age (years) | 63,74 ± 15,26 | 62,68 ± 12,99 | 0,745 |
| Men (%) | 69,56 (16) | 78,87 (56) | 0,36 |
| BMI (kg/m ²) | 27,99 ± 6,32 | 28,07 ± 4,63 | 0,95 |
| Hipertension (%) | 65,22 (15) | 49,30 (35) | 0,184 |
| Diabetes (%) | 43,48 (10) | 29,58 (21) | 0,218 |
| Dislipemia (%) | 39,13 (9) | 32,39 (23) | 0,618 |
| Smokers (%) | 34,78 (8) | 38,03 (27) | 0,78 |
| Killip class III/IV* (%) | 8,70 (2) | 4,23 (3) | 0,593 |
| Contrast volume (cm3) | 245,9 ± 57,58 | 211 ± 81,56 | 0,06 |

MAU: microalbuminuria, BMI: body mass index. *Killip class at admission.



CIN in both groups

independent predictors for NIC development, remaining microalbuminuria in the limit of the statistical significance.

Conclusion: The incidence of NIC in our environment is low. MAU is associated with an increase in the incidence of NIC, staying at the limit of significance as a predictor factor in a multivariate analysis. No cardiometabolic profile was associated independently with CIN.

Cardiac surgery

P802

Incidence, main complications and mortality of perioperative acute myocardial infarction (pAMI) after heart valve surgery

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Introduction: Perioperative acute myocardial infarction (pAMI) after cardiac surgery is associated with high morbidity and mortality and with an increased use of health resources.

Purpose: We aimed to determine the incidence, main complications and the 30-day mortality rate of pAMI after heart valve surgery.

Methods: 803 consecutive patients were enrolled (>18 years-old). All of them underwent heart valve surgery with cardiopulmonary bypass, with a mean of 2-year follow-up. Patients included were divided into two groups: patients with pAMI after heart valve surgery (according to diagnostic criteria for myocardial infarction (MI) after coronary artery bypass graft surgery (CABG), MI type 5, defined by 'Third Universal Definition of MI') and patients without pAMI after heart valve surgery. We used Pearson's chi-squared test for categorical variables to analyze differences between groups.

Results: Data from 803 patients underwent heart valve surgery, were analyzed. 88 patients fulfilled the diagnostic criteria of MI type 5, with an incidence of 9.1%. The incidence of complications in the group of patients with pAMI after heart valve surgery was 56.8%. Main complications were prolonged stay in the intensive care unit (ICU) >5 days (69.4% vs 13.6%, p<0.001); acute kidney injury (AKIN 2) (56.8% vs 23.9%, p<0.001); prolonged invasive mechanical ventilation >48 hours (27.1% vs 3.4%, p<0.001); cardiogenic shock (18.2% vs 0.3%, p <0.001); the requirement of intra-aortic balloon pump (IABP) (6.8% vs 0.3%, p<0.001); excessive mediastinal bleeding (3.4% vs 0.8%, p=0.031) and cardiac arrest (2.3% vs 0.3%, p=0.012). The 30-day mortality rate in the group of patients with pAMI after heart valve surgery with cardiopulmonary bypass was 18.2% vs 2.7%, p<0.001.

Conclusions: The incidence of pAMI after heart valve surgery in our study population was 9.1%. Main complications observed were prolonged stay in the ICU, AKIN 2, prolonged invasive mechanical ventilation >48 hours, cardiogenic shock, the requirement of IABP, excessive mediastinal bleeding and cardiac arrest. The 30-day mortality rate in patients with pAMI after heart valve surgery with cardiopulmonary bypass was 18.2%.

P803

Timely surgical intervention in patients with infective endocarditis: still a key to survival

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Introduction: Patients with infective endocarditis (IE) often present indication for valve surgery, yet some have a high operative risk, so it is important to assess and characterize the prognosis of these patients. This study aims to evaluate the long-term prognosis and to determine mortality predictors in patients with surgical indication in the setting of IE.

Methods: Single-center prospective observational study of consecutive patients (pts) admitted to the Cardiology Department of a University Hospital between 2001 and 2015 with IE diagnosis (established by the modified criteria of the European Society of Cardiology 2015 and the modified Duke criteria) and with surgical indication. Clinical and laboratory parameters were analyzed and its relationship with in-hospital mortality was evaluated by Cox regression analysis.

Results: From a population of 120 patients with IE, 74 (61.1%) had an indication for valve surgery (67.5% male; age 65±14 years; follow-up 31.9±38.4months). During hospitalization, 43 (58.1%) of these patients underwent valve surgery, while the remaining 31 died prior to surgery or were considered to have a very high operative risk. The mortality rate of patients with surgical indication was 33.8%.

The presence of surgical indication was associated with increased mortality ($p=0.012$) and it was an independent predictor factor (hazard ratio (HR)=3.36; CI 95%, 1.37 to 8.25, $p=0.008$). The parameters identified as predictors of mortality in this group were the occurrence of syncope ($p=0.013$), age > 80years ($p=0.016$), C-reactive protein >11mg/dL ($p=0.011$), ventricular tachycardia ($p<0.001$), bradydysrhythmias ($p=0.043$), shock ($p<0.001$), acute renal failure ($p=0.026$), creatinine >1.7mg/dL ($p<0.001$), the need for renal replacement therapy ($p<0.001$), disseminated intravascular coagulation ($p<0.001$), valve graft dysfunction ($p=0.045$) and the need for mechanical invasive ventilation ($p<0.001$). By multivariate Cox regression analysis the only independent predictor of mortality was the occurrence of shock (HR=3.81; 95% CI 1.50-9.67; $p=0.005$).

On the other hand, surgically intervened patients presented better prognosis ($p<0.001$) and performing valve surgery was an independent predictor of long-term survival in the group of patients with IE (HR=0.06; 95%CI, 0.02 to 0.22, $p<0.001$). The same is true when analyzing the subgroup of patients with surgical indication (HR= 0.15; 95% CI, 0.04-0.49; $p=0.002$).

Conclusions: In this study the presence of surgical indication per se was associated with increased in-hospital mortality and the occurrence of shock was an independent

predictor of poor prognosis in this group of patients. However, patients undergoing valve surgery showed reduced mortality comparing to the general population of patients with IE. Therefore, timely surgical intervention is crucial in the management of infectious endocarditis.

P804

Influence of valve culture in prognosis of left-sided infective endocarditis

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Introduction: growing cardiac tissues removed during cardiac surgery, is a common practice. In the context of infective endocarditis (IE), it is known its importance as diagnostic criteria and antibiotic treatment guide, nevertheless, its importance as outcome marker has not been explored.

Objective: to define the importance of the cardiac tissue culture's result in the outcome of patients with left-side infective endocarditis.

Methods: along 732 cases of IE consecutively diagnosed in two tertiary centres between 1996 and 2016, we selected those with positive blood cultures, who underwent surgery during active phase of the disease and in whom surgical biological tissues were cultured (n=254). From microbiology results we constructed 2 groups: negative valve culture (n=176) and positive valve culture (n=60). Those with positive valve culture with different microorganism from blood culture (n=18) were excluded because contamination could not be rule out. We compared main features of patients with positive and negative valve cultures and performed a multivariate analysis to assess the influence of valve culture's result in short term outcome.

Results: there were no epidemiologically significant differences, apart from the presence of more prosthesis in positive culture group (45 vs 30%, $p=0.035$). Clinically, they had more septic shock at admission (12 vs 3%, $p=0.021$) and during hospitalization (23 vs 9%, $p=0.004$). Blood cultures persisted positive at 48-72 hours from antibiotic onset more frequently (76 vs 33%, $p<0.001$). Streptococcus spp were less frequent in valve culture (10 vs 42%, $p<0.001$) in contrary to Staphylococcus spp (63 vs 44%, $p=0.011$). There were no differences in echocardiographic findings, but in short outcomes, with earlier surgery in positive valve group (6 [1-6.5] vs 16 [6-17] days from admission, $p<0.001$) and higher in-hospital mortality (37 vs 21%, $p=0.012$). Multivariate analysis showed as independent factors of in-hospital mortality: positive valve culture (OR 1.99, CI 95% 1.01-3.93), heart failure (OR 1.95, CI 95%

1.02-3.72), renal failure (OR 3.09 CI 95% 1.54-6.22) and Staphylococcus aureus (OR 2.09, CI 95% 1.04-4.22), with an area under ROC curve of 0.723.

Conclusions: a positive result in valve culture of IE patients operated during active phase of the disease, is a marker of bad clinical evolution due to non controlled infection and an independent predictor which duplicate in-hospital mortality.

P805

The combination of preoperative variables with euroscore increase the predictive ability of the risk in cardiac surgery patients

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Background: Exist different risk scores to stratify the risk perfil of patients undergoing cardiac surgery procedures. Of these the most used in Europe is the EuroSCORE. It is known that these scores have certain limitations in their predictive ability.

Purpose: The aim of this study was to design a risk score that combined cardiac surgery peri operative variables with the EuroSCORE in order to improve the estimation of surgical risk.

Methods: We designed a prospective open cohort study carried out in a level III health care medical center. All patients (≥ 18 years) underwent to cardiac surgery between january 2011 to january 2013 were included. Patients were classified as survival at 30 days or not survivals. We included a total of 807 patients. A second data set of 798 patients was recorded as a validation cohort between march 2013 to march 2015. Several parameters were recorded pre-operatively, intraoperatively, and at intensive care unit admission, looking for a univariate and multivariate analyses Variables significant in the univariate analysis were subsequently tested for accuracy with a receiver operating characteristic (ROC) curve analysis, with the area under the curve (AUC) as a measurement of accuracy. The variables with the best AUC values (AUC > 0.7) were used in a subsequent multivariable logistic analysis.

Results: During the periodo of the study 62 (7.7%) patients died. The variables independent associated with hospital mortality was EuroSCORE (odds ratio [OR], 1.49; 95% confidence interval [CI], 1.34-1.66; $p < 0.001$), cardiopulmonary by pass time (OR, 1.01; CI, 1.00-1.02; $p < 0.001$), procalcitonine (OR, 1.1; CI, 1.06- 1.15; $p < 0.001$). The accuracy of the model was good, with an area under the

curve of 0.89 (CI, 0.85-0.95) better than EuroSCORE 0.82 (IC 95% 0.75-0.89).

Conclusions: The results of this study confirmed the validity of the intraoperative variables in addition to EuroSCORE in the estimation of the risk for cardiac surgery procedures.

P806

Antiplatelet therapy in patients with acute coronary syndrome who underwent coronary artery bypass graft: what is the best strategy?

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Background: The guidelines recommend the use of dual antiplatelet therapy in acute coronary syndrome (ACS) for prevention of ischemic events and mortality. However, for those patients who requiring coronary artery bypass graft (CABG) surgery the postoperative bleeding risk may be increased by this therapeutic strategy. The published results on this topic have been controversial.

Purpose: To compare the use of dual antiplatelet therapy versus acetylsalicylic acid (ASA) alone prior to cardiac surgery and their influence on outcomes of patients presenting with ACS and require CABG.

Methods: Retrospective study of single-centre that included 95 consecutive patients with acute coronary syndrome who underwent CABG surgery between June 2013 and June 2015 (mean age 67.2 ± 9.8 years; 78.9% men; 60 % with 3 vessel disease 3). Patients were divided into 2 groups: under therapy with aspirin plus clopidogrel prior to surgery (73.7%) or only with ASA (23.2%).

The endpoints analysed were major bleeding according to the TIMI criteria and composite endpoint of death, re-infarction and stroke.

Results: During the postoperative period (in average 2.6 days in intensive care unit and 10.1 days of hospital stay) major bleeding occurred in 14.7% of the patients and the primary endpoint in 9.5% (2 deaths, 6 re-infarction and 3 strokes). There was no significant difference between the antiplatelet groups regarding bleeding (86% vs 74%, $p = 0.51$, respectively) and the combined endpoint (8.7 vs 13.6%, $p = 0.68$, respectively).

In multivariate analysis the strategy of antiplatelet therapy prior to surgery was not a predictor of major bleeding (HR 2.6; 95% CI 0.52 to 12.7, $p = 0.25$) or of the combined endpoint (HR 1.1; 95% 0.14 to 7.8, $p = 0.96$).

Conclusion: In this population of patients with ACS that underwent CABG surgery, of which the majority of the patients was under dual antiplatelet, antithrombotic

strategy prior to surgery showed no significant differences in bleeding events or in ischemic events.

P807

Diagnosis of perioperative acute myocardial infarction (pAMI) after heart valve surgery with high-sensitivity troponin T and new ECG or echocardiogram changes

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Introduction: Criteria for diagnosing perioperative acute myocardial infarction (pAMI) after heart valve surgery are controversial. The cutoff point for cardiac troponin (cTn) to consider the diagnosis of pAMI after coronary artery bypass grafting (CABG) is arbitrarily defined by elevation of cardiac biomarker values >10×99th percentile upper reference limit (URL) in patients with normal baseline cTn values (≤99th percentile URL). There are no studies of high-sensitivity cardiac troponin (hs-cTnT) after heart valve surgery.

Purpose: We aimed to define the cutoff point for hs-cTnT above the URL to diagnose the pAMI after heart valve surgery, adding to the troponin criteria new Q-waves, new left bundle branch block (LBBB) or imaging evidence of new wall motion abnormality by echocardiogram as suggested in the Third Universal Definition of Myocardial Infarction (MI).

Methods: heart valve surgery was performed in 803 patients from June 2012 to January 2016 and hs-cTnT was measured at admission to the intensive care unit (ICU) and 8, 16, and 24 hours after surgery. Two independent cardiologists, blind to the outcomes, analyzed ECGs and echocardiograms before and after heart valve surgery. Patients included were divided into two groups: patients with ECG or echocardiogram changes after heart valve surgery and patients without these changes. We conducted a Receiver Operating Characteristic (ROC) analysis for hs-cTnT in the group of patients who had new ECG or echocardiogram changes after heart valve surgery. The cutoff point for hs-cTnT was estimated with the highest Youden index. We calculated the sensitivity and specificity of hs-cTnT values at each point of the ROC curves.

Results: Mean follow up was 2 years. Data from 803 patients were analyzed. 88 patients had new Q-waves, new LBBB or imaging evidence of new wall motion abnormality by echocardiogram. ROC analysis for hs-cTnT in the group of patients who had new ECG or echocardiogram changes after heart valve surgery showed a hs-cTnT level of 1008 pg/mL at 8 hours after heart valve surgery with a sensitivity of 95.5%, a specificity of 84.2% and an area

under the curve (AUC) of 0.968 (p<0.001); a hs-cTnT level of 1057 pg/mL at 16 hours after heart valve surgery with a sensitivity of 97.7%, a specificity of 93.3%, and an AUC of 0.986 (p<0.001); a hs-cTnT level of 958.3 pg/mL at 24 hours after heart valve surgery with a sensitivity of 92%, a specificity of 94.8% and an AUC of 0.985 (p<0.001).

Conclusions: The cutoff point above the URL of hs-cTnT to consider the diagnosis of pAMI after heart valve surgery could be 1057 pg/mL, determined at 16 hours after heart valve surgery, with the highest sensitivity and specificity in patients with new Q-waves, new LBBB or imaging evidence of new wall motion abnormality by echocardiogram. These findings show higher values of hs-cTnT for the diagnosis of pAMI after heart valve surgery than the Third Universal Definition of MI for MI type 5 (after CABG).

P808

Coronary artery bypass grafting improve ejection fraction in pacientes with low preoperative FEVI

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Objective: To observe if there is any improvement in the left ventricular ejection fraction at two years after performance of coronary artery bypass grafting in patients with low preoperative ejection fraction.

Methods: A retrospective observational study was performed comparing the variability of ejection fraction in patients who had low preoperative ejection fraction (less than 45 percent) versus the left ventricular ejection fraction at one year follow-up in all patients who underwent coronary artery bypass grafting in the period from 2010 to 2014. Variability at two years was divided in 5 degrees of improvement: No improvement from 0 to 4%, mild improvement from 5 to 8%, moderate improvement from 9 to 12%, great improvement if was higher than 12% and worsening if there was regression in the ejection fraction. From a total of 479 coronary artery bypass grafting done, 43 were done in patients with low ejection fraction and the follow up was available in 40 patients.

Results: From the 40 patients, 33 patients were men (82,5%) and had a mean age of 62,65 ± 3,22 years. The mean preoperative ejection fraction was 36,12 ± 2,19% been the lowest value 25%. In all patients was performed a complete revascularization. Six patients (15%) died in ICU because of multiorgan failure. 34 patients had two years of follow up with a mean ejection fraction of 45,56 ± 3,05%. The mean difference between preoperative ejection fraction and control ejection fraction was 10,44 ± 2,70% that was statistically significant (p < 0,0001).

From the 34 patients 1 had no improvement (2,94%), 8 patients had mild improvement (23,53%), 9 patients had moderate improvement (38,24%) and 13 patients had great improvement (38,24%). Three patients had a reduce in their ejection fraction (8,82%) at two years follow up, and was two deaths after two years.

Conclusion: Coronary artery bypass grafting is a safe procedure in patients with low left ventricular ejection fraction with low mortality and a great improvement of ejection fraction after the surgery with the majority being in mild to great improvement over the preoperative ejection fraction.

P809

Results of aortic valve replacement surgery in octogenarians at 12 months follow-up

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Introduction: With the population aging there are increasingly patients in need of heart surgery in old age, still there are few studies performed in this population.

Purpose: The aim of this study was to determine the rate of mortality and hospitalization for cardiovascular causes (CV) in patients underwent aortic valve replacement surgery (AVRS) aged ≥ 80 years.

Methods: One retrospective, descriptive and correlational study was conducted, covering all patients aged ≥ 80 years referred to AVRS by a Cardiology Service between 1st January 2008 and 30th September 2013. We evaluated the baseline characteristics of the patients and made telephone follow-up by a cardiologist. We performed a univariate and multivariate analysis of hospitalizations for CV causes and CV mortality during the first year after surgery. Statistical analysis was performed using SPSS 20.0.

Results: During the study period were referred to AVRS 51 patients aged ≥ 80 years, 30 of these (58.8%) were male. The mean age was 82.5 ± 1.7 years. 30 patients (58.8%) had isolated aortic valve disease, the remainder being referenced to combined surgery (coronary and valvular). The average EuroSCORE was 10.1 ± 4.7 . The average waiting time for surgery was 40.8 ± 58.4 days.

10 patients (19.6%) were hospitalized for CV reasons in the first year. These admissions were associated with surgical indication. There was no statistically significant association with other factors (including sex, cardiovascular risk factors, renal function, ejection fraction or EuroSCORE). The only independent predictor of hospitalization was the urgent surgical indication.

In the 1st year of follow-up there were 7 deaths (13.7%). There were no independent predictors of CV mortality in

this population, although the largest waiting time have shown a tendency to increased mortality ($p = 0.057$).

Conclusions: - In this department octogenarian patients referred to AVRS had a hospitalization rate one year after surgery of 19.6% that was related to the need for urgent surgery. - This study found a mortality rate of 13.7% at one year after AVRS. No predictors of mortality were found.

Circulatory support

P810

Experiences of removal of intra-aortic balloon pumps with the angio-seal

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Due to the big experience with Angio-Seal Device in our center to close femoral puncture during cardiac catheterization, we investigated whether the Angio-Seal could be used safely and could achieve hemostasis fastly when removing an IABP.

We prospectely studied 33 consecutive patients (Age: mean 64,1 years (50-83 years)) in which the Angio-Seal 8F device was planned to be used to achieve vascular hemostasis after removal of an IABP between January to December of 2015 in the Cardiac Intensive care unit of our University Hospital. IABP was implanted due to several causes (cardiogenic shock due to STEMI, after cardiac surgery, high risk PCI...). Once hemodynamic condition stabilised, heparin was stopped before the deployment of Angio-Seal, a 0,20 inch guidewire was inserted through the central lumen of the IABP, and both the IABP and sheath were removed. The Angio-Seal sheath was inserted through the attached guidewire and it was deployed with the common steps and finally we maintained controlled tension of the collagen for approximately 20 seconds and was taken off in the absence of oozing of blood.

The primary endpoint was a composite of any type of major (retroperitoneal bleeding, vessel occlusion, loss of distal pulses, vascular surgery and death) and minor vascular complication (hematoma, AV fistula or pseudoaneurism) IABP was continued for 1-7 days (mean 4 days). The device was successfully deployed in all of the patients. There were no major and only 2 minor complications (hematoma > 10 cm). No patients required additional compression although most of them were treated with antiplatelet drugs.

Removal of IABP with the Angio-Seal 8F device is a fast, effective and safe procedure that could improve the hemostasis and the confort of the patients compared with the manual compression or other compression decides. We need further

randomized studies comparing Angio-Seal with conventional methods of compression to recommend routine use.

P811

Venoarterial ECMO therapy in cardiogenic shock due to acute myocardial infarction

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Background: Venoarterial ECMO (VA-ECMO) is a promising mechanical support device in the setting of acute myocardial infarction (AMI) complicated with cardiogenic shock (CS). Moreover, peripheral percutaneous insertion can be performed in the catheterization laboratory by the interventional cardiologist offering an early treatment of this complication.

Methods: Retrospective analysis of patients suffering AMI complicated with CS rescued with VA-ECMO in our institution from July 2013 to April 2016.

Results: During the study period 16 patients were supported with VA-ECMO due to AMI complicated with CS. The insertion was peripheral and percutaneous in all cases, and was performed by the interventional cardiologist. Basal characteristics were: Age 53±6.1, Male sex 69% (11), Diabetes mellitus 44% (7), Previous cardiac arrest 50% (8), basal Lactate 6.1±3.2mmol/L. Data of results and complications of the therapy were: time to the beginning of the support 26.5±11.7 minutes, limb ischemia 12.5% (2), Ictus 6.3% (1), days on ECMO 5.4±3.4, Survival to discharge 75% (12). Two patients died from electrical storm after weaning from ECMO, 1 patient died after inferior limb ischemia and subsequent systemic inflammatory response, and 1 patient suffered anoxic encephalopathy due to cardiac arrest prior to ECMO therapy. In the survival group 8 patients were weaned from ECMO due to partial myocardial recovery and the remaining 4 cases underwent heart transplantation (1 bridged with ECMO, 2 upgraded to Levitronix and 1 upgraded to Berlin Heart Excor).

Conclusion: VA-ECMO implantation performed by the interventional cardiologist is an encouraging therapy to support AMI complicated with CS. The presence of stunned myocardium and the promptness in the beginning of the therapy in the same catheterization laboratory can be responsible for this favourable results.

P812

VA-ECMO as bridge to heart transplant: Single-Center Experience

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Background: Limited options are available for patients with severe cardiogenic shock. Peripheral veno-arterial Extracorporeal Membrane Oxygenation (VA-ECMO) has emerged as a powerful tool as a bridge for either decision, recovery or heart transplant.

Methods: Since 2011, peripheral VA-ECMO has progressively been adopted for refractory cardiogenic shock of multiple aetiologies in our center. We retrospectively reviewed the cases where VA-ECMO was implemented in our center as a successful bridge for heart transplant.

Results: 41 heart transplants were performed in our centre since 2011. We identified 9 patients where ECMO was used as a bridge to transplant. 6 patients were males and the mean age was 47,6±15,2 years (range 24 to 68 years). Ischaemic cardiomyopathy was the etiology in 5 patients, while idiopathic/familial origin was present in 2 patients; toxic and post-infectious amounted for one case each.

Six patients were in INTERMACS 1 ("crash and burn") profile while the remaining three were in INTERMACS 2 ("sliding on inotropes"). All patients were on concurrent inotropes, 8 were mechanically ventilated, 4 were on continuous renal replacement therapy and 4 were concurrently or previously had intra-aortic balloon-pump. 3 patients were blood group O+.

Mean time in ECMO was 5 days (range 2-10 days) and 8 patients were on support until the surgery. The 30 day and 6 month survival rates were 77,8% and 55,5% respectively. 5 patients are still alive after a mean of 32 months.

The median time of hospitalization after transplant was 45 days, mainly to extensive deconditioning and need for aggressive rehabilitation. One patient had a major vascular complication requiring leg amputation in the post-operative period but resumed to independent life. The post discharge follow-up of these patients has been unremarkable.

Conclusions: Peripheral VA-ECMO can successfully bridge patients with refractory cardiogenic shock to transplantation. However, the observed hospital mortality is relevant, particularly in the early post-transplant period reflecting 'accumulated' multifunction organ damage. Those who survive this early phase have an excellent outcome, but still need particular attention, namely in terms of rehabilitation.

P813

Post-transplant outcomes in patients bridged with temporary mechanical support

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Introduction: Heart transplantation is the treatment of choice in several patients with advanced heart failure not responding to medical therapy and cardiac resynchronization. The use of short and mid-term ventricular assist devices (VAD) is increasingly used as a bridge to heart transplantation due the lack of donors.

Objective: To describe our center outcomes in heart transplant patients bridged with ventricular temporary mechanical support.

Methods: We retrospectively reviewed heart transplant patients bridged with temporary VAD from April 2010 to May 2016. We excluded patients died before transplant. We analysed basal characteristics, complications and survival.

Results: A total of 91 patients were transplanted during this period. From them, 18 (19.8%) received VAD as a bridge. Mean age was 53.7 (17-66) years and 67% were male. Pre-existing heart conditions were as follows: ischemic cardiomyopathy 55% (n=10), dilated non-ischemic cardiomyopathy 33% (n=6), and postcardiotomy shock 11% (n=2). Devices used were ECMO in 9 patients, Left Levitronix in 7 (two after ECMO) and biventricular Levitronix in 2. Mean time of support was 11.9±10.9 days. In-hospital complications were infectious with secondary hemodynamic instability (mediastinitis or pneumonia) 61% (n=11), need of renal replacement therapy (RRT) 50% (n=9), neurological (ictus or cerebral anoxia) 17% (n=3), hemorrhage with need of re-intervention 17% (n=3) and peripheral vascular ischemia 11% (n=2). Severe right ventricle dysfunction evidenced by echocardiography appeared in 28% (n=5) and in 4 of them RRT was needed. Only in one case ventricular mechanical support was implanted. Four patients died (4 of 18, 22%) in the immediately post-transplant period, without no new deaths in 1-year follow-up. Mortality was higher in patients with right ventricular dysfunction (3 of 5, 60%). Also, the need of RRT is more frequent among this patients (4 of 5, 80%).

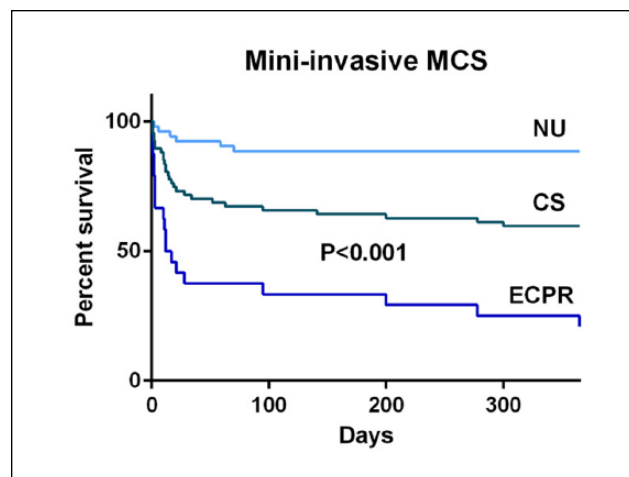
Conclusion: VAD is an effective treatment of terminal heart failure. Post transplant mortality in our series was the same as reported previously. The need of RRT and right ventricular dysfunction were related to a higher mortality.

P814

Long-term outcomes of patients treated with mini-invasive mechanical circulatory support for cardiogenic shock or refractory cardiac arrest

The study was supported by an Institutional grant MH CZ - DRO (Nemocnice Na Homolce - NNH, 00023884)

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One-year survival analysis

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Introduction: Mini-invasive mechanical circulatory support (MCS) systems are increasingly used in patients suffering from severe or rapidly progressing cardiogenic shock and from refractory cardiac arrest. However, current evidence on long-term outcomes of this therapeutic approach is still insufficient.

Purpose: The aim of our study was to assess one-year mortality in patients treated with MCS for severe circulatory collapse.

Methods: We analyzed data from a group of patients treated with mini-invasive MCS in our center from March 2008 until March 2015. One-year survival data were obtained from all subjects. Mortality of patients with severe or rapidly progressing cardiogenic shock (CS group), subjects with refractory cardiac arrest treated by extracorporeal cardiopulmonary resuscitation (ECPR group) and patients with non-urgent MCS insertions for support of high-risk interventions (NU group) was compared using log-rank test.

Results: One-hundred-and-twenty-nine individuals were enrolled into the study. TandemHeart system was used in 16 patients, PulseCath in 14 subjects, Impella 2.5 in 2 individuals and extracorporeal membrane oxygenation in veno-arterial configuration (VA-ECMO) in 97 patients. One-year mortality in the CS group (N=77) was 40%, in the ECPR group (N=29) 76% and in the NU group (N=23) 9%, $P < 0.001$. In a subgroup of VA-ECMO treated patients, on-year mortality in CS individuals (N=61) reached 44%, mortality of ECPR (N=29) was 76% and mortality in NU subjects (N=7) was 14%, $P < 0.001$.

Conclusion: Mini-invasive MCS represents often last chance to survive severe circulatory collapse. The highest survival rate was found in patients with non-urgent MCS use, followed by CS patients and the worst survival was

observed in the ECPR group. Nevertheless, our data indicate that this therapeutic option offers considerable long-term survival in these patients with extremely high predicted mortality.

P815

Intra-aortic Balloon Pump as a bridge to transplant therapy. The end of a stage?

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Background: The number of patients needing cardiac transplantation increases as number of donors is decreasing in the last times. This situation has conditioned the development of new devices as a bridge to transplant therapy (BTT). After the publication of 'IABP – Shock II' trial results, the use of intra-aortic balloon pump (IABP) in patients with cardiogenic shock is controversial. However, doubts remain about its usefulness in some scenarios, being the bridge to transplant one of them.

Methods: This is a retrospective study of the patients who received IABP as a BTT in the acute cardiac care unit of a referral centre for cardiac transplant.

Results: From 2010 to March 2016, 219 patients in our centre received an IABP, 21 of them as BTT. Of those, 18 (85.7%) were males and the mean age was 47.43 years (SD: 13.03).

5 patients suffered ischemic dilated cardiomyopathy, 11 idiopathic dilated cardiomyopathy, 2 of them restrictive cardiomyopathy, other 2 dilated cardiomyopathy after anthracyclines therapy and 1 cardiomyopathy secondary to dystrophinopathy. 9 patients had significant mitral regurgitation. The mean left ventricular ejection fraction was 22.38% (SD: 6.87) and 13 patients presented right ventricle dysfunction.

19 patients received IABP as a consequence of cardiogenic shock or pulmonary congestion refractory to medical therapy. 2 patients received it due to electrical storm.

The median time under support with IABP was 168 hours (Q25: 96, Q75: 240). 4 patients presented ischemic complications (in one of them mesenteric ischemia caused death and in other one, lower limb ischemia required IABP withdrawal and hemodynamic support with ECMO with fatal outcome).

12 patients received cardiac transplant, 3 required ECMO (2 of whom died), and 5 died before heart transplant or upgrade of hemodynamic support. In one patient, the hemodynamic status improved so IABP could be removed and elective transplant without hemodynamic support was performed.

Conclusions: Despite its limitations, IABP remains a safe and little aggressive therapy for hemodynamic support of patients on the waiting list for urgent heart transplant. However, close evaluation of the patient is necessary to anticipate bad outcomes and guarantee quick upgrading to higher support devices.

P816

Prediction of mortality in the patients with refractory cardiac arrest and extracorporeal life support

The study was supported by an Institutional grant MH CZ - DRO (Nemocnice Na Homolce - NNH, 00023884)

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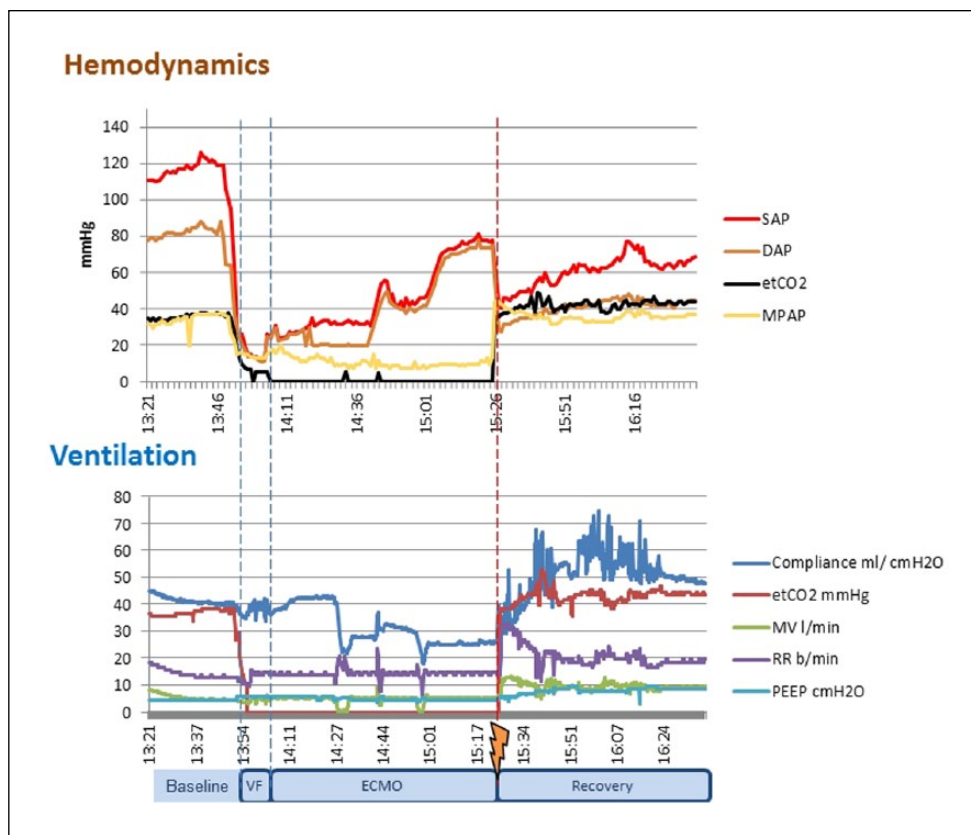
Introduction: Substantial proportion of patients who suffered cardiac arrest do not respond to conventional cardiopulmonary resuscitation. Recently, extracorporeal cardiopulmonary resuscitation (ECPR) has been introduced as a potentially life-saving procedure in refractory cardiac arrest.

Objectives: The aim of our study was to evaluate the relation between ECPR survival, lactate levels and blood pH.

Methods: Eligible patients for this analysis had to undergo ECPR after at least ten minutes of unsuccessful cardiopulmonary resuscitation with a minimum of three defibrillation attempts. For extracorporeal life support (ECLS) we used Cardiohelp system or Levitronix CentriMag blood pump. LUCAS II system was used for chest compressions during ECLS insertion and cannulas were placed with percutaneous puncture under fluoroscopy or ultrasound control. Blood lactate and pH levels measured before ECLS insertion and after 24 hours were used for this study.

Results: We analyzed data from 29 patients treated with ECPR for refractory cardiac arrest. The mean age of our patients was 57 years (31-81). Out-of-hospital cardiac arrest occurred in 16 patients, 13 patients suffered from in-hospital arrest. Thirty-day mortality in our group was 57% and 32% of patients recovered with good neurological outcome. Percutaneous coronary intervention was performed in 18 (67%) patients. Baseline value of lactate was 11.52 ± 5.42 mmol/l, initial pH 6.97 ± 0.21 . In comparison with survivors, patients who died had significantly higher initial lactate levels (15.05 ± 1.56 vs. 10.01 ± 1.03 ; $P < 0.05$) and lower baseline pH (6.87 ± 0.06 vs 7.04 ± 0.04 ; $P < 0.05$). Moreover, survivors had significantly lower lactate levels after 24 hours.

Conclusion: ECPR represents virtually the last chance to survive refractory cardiac arrest. The levels of blood lactate and pH are significantly associated with clinical outcomes of ECPR.



Hemodynamics and ventilation

P817

Pulmonary circulation during VA ECMO: could it predict lung damage?

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Extracorporeal membrane oxygenation (ECMO) is a temporary support of respiratory and cardiac functions. Due to the growing use, there are some often discussed complications. One of the most feared complications is pulmonary oedema, some authors report about 10 – 20 % incidence. Pathophysiology and predictors have not been well recognised yet. Our retrospective work presents experience with experimental veno-arterial ECMO on porcine biomodels with acute myocardial dysfunction or ventricular fibrillation.

In healthy female pigs heart failure was induced by coronary occlusion or ventricular fibrillation. In the group VF15 (n = 5), ventricular fibrillation

was electrically induced and lasted for 15 minutes, followed by 100 minutes of ECMO flow (100 ml/kg/min). Similarly, in the group VF20 (n = 9), 20 minutes of ventricular fibrillation were followed by 60 minutes of ECMO flow (100 ml/kg/min). In the latter group pulmonary ventilation was omitted. In the group HF (n = 9), myocardial dysfunction was established by coronary occlusion. Hemodynamic and ventilation parameters were followed up during at least 4 hours. Static lung compliance decrease below 30 ml/cm H₂O or decrease of more than 40 % was considered a significant sign of lung damage. In the groups VF15 and VF20, cardiopulmonary resuscitation was performed and the rate of cardiopulmonary resuscitation success was assessed by hemodynamic parameters.

In all groups lung damage occurred in 40 % of animals. Cardiopulmonary resuscitation was successful in 100 % (VF15 group) and in 78 % (VF20 group). Decrease in pulmonary compliance did not significantly correlate with the duration of ECMO or with the mode of mechanical ventilation during ECMO.

We proved that delayed introduction of ECMO could help during cardiopulmonary resuscitation. Nevertheless, pulmonary functions could limit patients' prognosis and it should be monitored closely.

DVT and pulmonary embolism

P818

Acute pulmonary embolism: comparing prognostic risk scores in patients requiring invasive mechanical ventilation

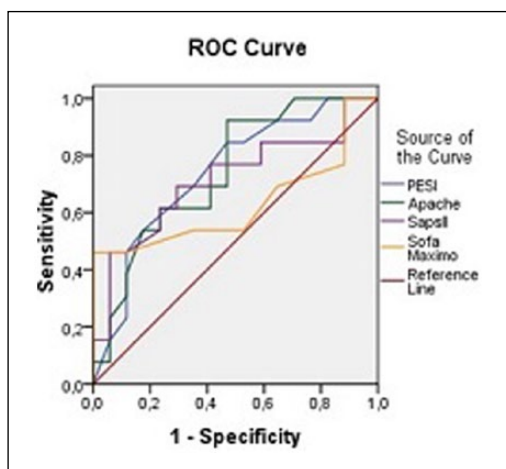
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Purpose: Venous thromboembolism (VTE) is the third most frequent cardiovascular disease. Pulmonary Embolism (PE) represents the most serious presentation of VTE, possibly being lethal in the acute phase or leading to chronic debilitating disease. The objective is to find out which prognostic risk score is best at predicting in-hospital mortality in a specific population of patients requiring invasive mechanical ventilation.

Methods: Retrospective study of the patients admitted in a General Intensive Care Unit from 1997 to 2015 with a diagnosis of PE and in need of invasive ventilation. Clinical, analytical and imaging parameters were evaluated. The PESI, Apache II, SAPS II and maximum SOFA were obtained and a ROC curve was performed to ascertain the relationship between the risks scores and in-hospital mortality.

Results: The study population included 33 patients, 54.5% male, mean age of 59.1±16 years old. Mean values for each risk score were: PESI 138±51, Apache II 23±9, SAPS II 49±23 and maximum SOFA 8±3. The in-hospital mortality was 45.4%.



ROC Curve

The following ROC curve in the picture was obtained. Statistical significance was found in the PESI (AUC 0.740, $p=0.027$), Apache II (AUC 0.742, $p=0.025$) and SAPS II (AUC 0.715, $p=0.047$) scales, but not in maximum SOFA (AUC 0.629, $p=0.233$). The following cut-off values were obtained: PESI value of 130 (Sens 84.6% and Esp 52.9%), Apache value of 26 (Sens 61.5% and Esp 76.5%) and SAPS II value of 51.5 (Sens 69.2% and Esp 70.2%).

Conclusion: In this population, the PESI, the Apache II and the SAPS II scales were statistically significant at predicting in-hospital mortality, with a cut-off value of 130, 26 and 51.5 respectively, above which there is higher mortality risk. The same does not apply to maximum SOFA score.

P819

Reduction of major bleeding complication in patients hospitalized due to acute pulmonary embolism in reference cardiology center after introduction the 2008 ESC guidelines into clinical practice

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Acute pulmonary embolism (PE) is the most serious clinical presentation of venous thromboembolic disease, being one of the major cause of morbidity and mortality in European countries. In 2008 the major update to treatment strategy was done in the ESC guidelines followed by changes in 2012. The aim of our study was to compare treatment, early outcomes and 2-year mortality in patients hospitalized for acute PE before and after 2008 ESC guidelines were published.

Methods: The data of consecutive 204 patients with acute PE confirmed by CT scan or pulmonary angiography, hospitalized in regional reference cardiology center in 2001 to 2012 were analyzed. Two time periods were compared: years 2001-2008, 116 (57%) patients before, and 2009-2012, 86 (43%) patients after 2008 ESC guidelines were published. Follow-up mortality was obtained from the government database and was available for all patients.

Results: Mean age (54 vs. 55) and gender (52% vs. 50% men) was similar in both time periods 2001-2008 and 2009-2012, respectively. Risk factors for PE were similar in both groups except for obesity, which was more frequent in 2001-2008 (82% vs. 63%, $p=0.005$) and chemotherapy, which was more frequent in 2009-2012 (1% vs. 7%, $p=0.044$). The most frequent risk factor for PE in

Table 1.

| | Years 2001-2008 | Years 2009-2012 | P value |
|--|-----------------|-----------------|---------|
| Thrombolytic therapy | 37 (32%) | 5 (6%) | <0.0001 |
| Inferior vena cava filter implantation | 37 (32%) | 13 (15%) | 0.0063 |
| Cardiogenic shock during hospitalization | 6 (5%) | 1 (1%) | 0.12 |
| Major bleeding | 14 (12%) | 2 (2%) | 0.011 |
| Cardiac arrest | 12 (10%) | 3 (3%) | 0.066 |
| In-hospital mortality | 9 (8%) | 4 (5%) | 0.37 |
| 30-day mortality | 12 (10%) | 5 (6%) | 0.25 |
| 12-month mortality | 20 (17%) | 11 (13%) | 0.39 |
| 24-month mortality | 24 (21%) | 15 (17%) | 0.56 |

both groups were deep venous thrombosis (68% vs. 64%, $p=0.57$). Thrombolytic therapy as well as inferior vena cava filters were significantly less frequently used after 2008 ESC guidelines has been published (table). Both early and late mortality did not differ significantly between analyzed time periods.

Conclusion: Introduction of the 2008 ESC guidelines for acute PE into clinical practice significantly decreased the usage of fibrinolytic treatment, which did not significantly affect mortality but substantially reduced the number of major bleeding complications during hospitalization.

P820

Risk factors of short-term complications in patients with pulmonary embolism of high and intermediate risk

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Introduction: Despite of recent findings in diagnosis and treatment, pulmonary embolism (PE) remains a major cause of mortality in Europe. The most number of complications occurs in 30-days period after confirmation the diagnosis.

Purpose: Our aim is to investigate clinical, laboratory and ECHO parameters as risk factors of short-term complications.

Methods: 112 patients (40 men, 72 women, mean age $66,4 \pm 1,5$ y.o.) with confirmed by CT PE of high and intermediate risk were divided into 2 groups with complicated (obstructive shock, need for resuscitation or emergency thrombolysis, recurrent PE/DVT or death) or uncomplicated course of PE during 30 days follow-up period. On admission anamnesis, signs of obstructive shock, PESI scale, troponin T, heart type fatty acid binding

protein (h-FABP), brain natriuretic peptide (BNP), ECHO-signs of right ventricle (RV) dysfunction were evaluated.

Results: 70 patients (62.5%) had favourable course of PE, while 42 patients (37.5%) had different complications. Signs of obstructive shock/hypotension on admission were presented in 26 patients (23%), in 32 (29%) thrombolysis (TL) due to different indications. Age, gender, body mass index, previous stroke, episodes of venous thromboembolism (VTE), angina pectoris, chronic lung diseases, level of occlusion of pulmonary artery (PA), absence of DVT signs had no significant negative impact on clinical course of PE. Complications developed more often in patients with pre-existed diabetes mellitus (DM) (38% vs 14%, $p=0.01$, OR 3.7 CI 95% 1.5-9.2), chronic heart failure (62% vs 36%, $p=0.01$ OR 2.9 CI 95% 1.3-6.5), atrial fibrillation (AF) (45% vs 9%, $p<0,001$, OR 8.8 CI 95% 3.1-24.8), previous myocardial infarction (31% vs 7%, $p=0.02$ OR 3.5 CI 95% 1.3-9.3), permanent risk factors of VTE (89% vs 74%, $p<0,001$, OR 2,6 CI 95% 0,9-7,5). In patients with poor outcome the rate of shock/hypotension on admission (45% vs 10%, $p<0.001$, OR 7.4 CI 95% 2.8-19.9), frequency of intermediate class of PESI scale (93% vs 53%, $p<0.001$, OR 11.6 CI 95% 3.3-41.1) and TL (48% vs 17%, $p<0.001$, OR 3.3 CI 95% 1.4-7.8) were higher, than with favourable one. H-FABP test was positive in 88% patients with poor outcome, compared to 47% in patients with uncomplicated course ($p<0.001$, OR 8.3 CI 95% 2.9-23.6). Levels of troponin T, D-dimer and BNP, evaluated ECHO-signs of RV dysfunction (RV and right atrium diameters, RV/LV index, systolic blood pressure in PA, hypokinesis of RV free wall, shift of intraventricular septum and LV ejection fraction) did not differ significantly between groups.

Conclusion: Risk factors of 30-days complications are: pre-existed DM, MI, AF, chronic heart failure, permanent VTE risk factors, positive hFABP test, intermediate class of PESI scale, hypotension evaluated on admission.

P821

Trends in the incidence and prognosis in acute pulmonary embolism in the population of silesia region - the results from the silesian cardiovascular database

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Pulmonary embolism (PE) is the most dangerous and most serious manifestation of venous thromboembolism (VTE). It is estimated that annually falls on VTE 1-2 per 1000 people, including 1/3 to patients with PE. The risk of early death in PE in patients with signs of right ventricular dysfunction is 3-15%, while more than 15% if the PE colleague symptoms of shock or hypotension. The aim was to assess the incidence of hospitalization and early and 12-month prognosis in acute PE of the patients hospitalized in the Silesian population in Poland.

Methods: Silesian Cardiovascular Database covers a population of 4.5 million inhabitants in Silesian region in Poland and concerns all cardiovascular diseases and procedures performed in the years 2006-2014. The reported data come from: 310 hospital entities, 1,863 outpatient entities and contain information about 487,518 patients and 956,634 cardiology hospitalisations. In this analysis consecutive patients with acute PE (I26 code according to ICD -10) were enrolled. Database management and statistical evaluation was performed by The Institute of Biostatistics.

Results: A total of 7946 patients with acute PE were included in the analysis. The clinical characteristics and

prognosis are presented in table 1. Over the years it has been shown that the number of hospitalisations due to PE increased, in-hospital mortality and percentage of rehospitalisation in 12-month follow-up decreased while 12-month mortality remained practically the same level of 13-15 %. It is essential that the long-term mortality of patients diagnosed with cancer was twice as high compared to patients without cancer.

Conclusion: The incidence of hospitalization of patients with PE is the consistent growth and long-term prognosis remains unfavourable.

P822

Manchester triage system in acute pulmonary embolism

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Introduction: Early diagnosis of acute pulmonary embolism (PE) is a challenge in Emergency Departments (ED), because of its non-specific and diverse clinical presentation. The Manchester triage system (MTS) is implemented in most of our Emergency Departments (ED). It is dependent on the initial presentation of the patient and aims to assign higher priority to urgent cases.

Aim: To assess the influence of MTS in the time from admission to diagnosis (TAD) of PE in the ED and to determine its predictive value in in-hospital mortality (IHM).

Methods: Retrospective study of patients admitted to our ED and assessed by MTS between January 2011 and December 2015, with the final diagnosis of acute EP. Demographic, clinical and triage data were analyzed.

Results: We included 367 patients, predominantly women (60,8%), with a mean age of 71,6±16.4 years. Most patients

Table 1.

| YEAR | Number of hospitalisation | Mean age [years] | Female [%] | Length of hospitalization [days] | In-hospital mortality [%] | Rehospitalisation in the 12-month follow-up[%] | 12-month mortality [%] |
|------|---------------------------|------------------|------------|----------------------------------|---------------------------|--|------------------------|
| 2006 | 532 | 64.5 | 51.7 | 14 | 19.9 | 4.7 | 33.3 |
| 2007 | 614 | 65.6 | 51.3 | 14 | 19.9 | 4.4 | 32.5 |
| 2008 | 721 | 64.9 | 54.1 | 13 | 18.4 | 4.0 | 32.0 |
| 2009 | 939 | 65.6 | 52.4 | 13 | 17.4 | 3.6 | 30.2 |
| 2010 | 982 | 66.1 | 54.6 | 13 | 17.1 | 2.9 | 32.5 |
| 2011 | 970 | 66.0 | 50.2 | 13 | 18.1 | 3.2 | 34.6 |
| 2012 | 1016 | 66.8 | 49.7 | 11 | 17.8 | 2.9 | 33.8 |
| 2013 | 1117 | 66.4 | 53.9 | 11 | 14.6 | 2.4 | 30.7 |
| 2014 | 1295 | 66.8 | 54.7 | 11 | 15.4 | | |

were triaged as orange (very urgent - 51,5%), followed by yellow (urgent - 47,1%), red (emergent - 0,8%) and green (standard - 0,5%). The three most common main complaints were 'adult indisposition' (38,7%), 'dyspnea' (30,8%) and 'thoracic pain' (20,4%). The most frequent flow chart was 'adult indisposition' with 'sudden onset' (20,2%).

Computed tomography pulmonary angiogram was performed in the first 24h in 73,6% of the cases. In these patients, the median TAD was 6:46h (25th percentile - 4:58h; 75th percentile - 9:32h). Orange or red triage (target time for first medical observation \leq 10 min) was associated with faster PE imaging confirmation (median 6:14 vs 7:34h; $p=0,004$), but there was no significant difference between main complaints.

IHM was seen in 10,6%. Patients who died were older (78,6 vs 70,7 years; $p=0,004$). Those with dyspnea as main complaint had higher IHM (13,5 vs 6,1%; $p=0,048$). Patients with orange or red triage had higher IHM (14,7 vs 6,2%; odds ratio (OR) 2,58 (1,24–5,35); $p=0,009$). Patients who performed CT in the first 24h had less IHM (8,1% vs 17,5%, OR 2,151 (1,194–3,876); $p=0,010$).

Conclusion: MTS has high sensitivity for the detection of patients with acute PE with higher risk of IHM, allowing for a quicker diagnosis in more urgent cases. Initial presentation of PE patients greatly influences MTS but, despite having low specificity, it is a helpful tool to recognize those in need of urgent assessment and treatment.

P823

Single center experience with thrombolysis in high- and intermediate-risk pulmonary embolism

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Background: Pulmonary embolism (PE) is a potentially life-threatening acute cardiovascular syndrome. While thrombolysis is the guideline-recommended standard of care treatment for high-risk patients (in shock), it may be considered in a subset of intermediate-risk patients (at risk for shock). The individual bleeding risk must be considered in the decision-making.

Aims: We report single center registry data with 30-day mortality to evaluate guideline-recommended treatment algorithms.

Methods: We followed 61 patients with pulmonary embolism either at high- or intermediate risk (all-comers, 2013-2016). Patients at intermediate risk were treated with alteplase (rtPA), either full- (100 mg) or low-dose (0.6mg/kg, 50mg max) at the treating physician's discretion when

these patients were considered at especially high risk or had already signs of decompensation.

Results: 23 (38%) of the 61 patients were at intermediate risk. The average age of the patients at intermediate risk was 66,5 years vs. 64,4 years in the patients at high risk. Of the 23 patients at intermediate risk, 13 patients (57%) received thrombolysis. 6 were treated at full dose and 7 with low dose. All patients at high risk received full-dose thrombolysis. The survival in the intermediate risk group was 100%, compared to 53% (20 patients) in the high risk group. In the intermediate risk group relevant bleedings occurred in 2 patients (9%, one case of pulmonary and one case of intraarticular bleeding) while in the high risk group in 19 patients (50%) had relevant bleedings. There was no intracerebral bleeding in patients at intermediate risk compared to 2 (5%) in patients at high risk.

Conclusion: The 30-day survival of patients at intermediate risk PE was 100%, after half of these patients had received thrombolysis. The risk of relevant bleedings in patients at intermediate risk receiving thrombolysis was relatively low – possibly because 54% received low-dose alteplase. According to current guideline recommendations, the choice for thrombolysis in intermediate-risk PE patients needs to take into account each individual patient's risk for bleeding and PE-related death and these data reinforce this approach. Patients with a low bleeding risk and at younger age appeared to benefit from thrombolysis and low-dose alteplase was safe.

P824

Biomarkers and imaging as prognosis impact factors in pulmonary embolism

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Introduction: Acute pulmonary thromboembolism (EP) is a pathology whose morbi-mortality remains high and, as such, its early risk stratification is vital. There are few validated prognostic models and the majority of studies are limited to short periods of follow-up.

Objective: Evaluating the impact of NT-proBNP, Troponin I (TnT I), right ventricular (RV) dilatation, and the presence of thrombus in the pulmonary artery's (PA) trunk and its proximal branches in the prognosis of individuals with EP at 12 months.

Methods: Retrospective, descriptive and correlation study extended to all patients (P) with PE hospitalized in our hospital during two years. The values of TnT I and NT-proBNP used were the highest during hospitalization. The RV evaluation was performed by trans-thoracic echocardiography and the presence of thrombus was documented by computerized angio-tomography. Uni

and multivariate analysis of 12 months recurrence, re-hospitalization and overall mortality was performed.

Results: A population of 113 P (67.3% female; 67.2±15,5 years) was analysed. Regarding TnT I and NT-proBNP elevation, statistically significant differences in mortality at 6 months and at 12 months were not found. Similarly, none of the biomarkers was correlated to the re-hospitalization rate during the follow-up period.

Thrombus presence in the PA trunk and its proximal branches was also not linked to a higher mortality nor to a higher re-hospitalization rate.

Lastly, RV dilatation during hospitalization was linked to a higher mortality at 6 months (28.6% vs 10.4%, p 0.043), as well as at 12 months (32.1% vs 12.5%, p 0.038). In turn, it was not statistically significantly correlated to the re-hospitalization rate.

Conclusion: In our sample, right ventricular dilatation was linked to a higher mortality at 6 months, and 12 months. The remaining analysed factors did not appear to impact the prognosis of patients with PE.

General intensive care

P825

Atrial fibrillation as a risk marker in the critically ill patient: an exploratory observation

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Introduction: The association between atrial fibrillation (AF) and mortality (M) has been studied in non-critically

ill patients, but few studies reflect the reality of critically ill patients in general intensive care units (ICU). In these patients, hemodynamic and metabolic disorders and inotropic drugs create a pro-arrhythmogenic environment, with periods of AF that otherwise could not occur. This study sought to investigate the relationship between AF during ICU stay and M.

Methods: We retrospectively analyzed a consecutive series of patients admitted for more than 48 hours in an ICU, with 12 months follow-up (FU). Two groups were identified, with AF (wAF) or not (nAF). Groups were compared, with special interest regarding in-hospital diagnosis of heart failure (HF), APACHE-II index, BNP value in the first 48 hours after admission and main reason for admission (AdmR, medical or surgical). M rate and re-hospitalization during FU were compared.

Results: 119 patients were included, 59% male, mean age 66±15years. Mean APACHE II was 22.4 and average length of stay was 15.8 days. 47.1%(n=56) of patients were included in the wAF group, and 57.1% of them (n=32) had no previous history of AF. Overall M rate was 42.9% (n=51), with in-hospital M at 16.8% (n=20). Main results are presented in Table 1. After logistic regression, APACHE II score (OR=1.14, CI95:1.03-1.25, p=0.008) and AF (OR=4.11, CI95:1.56-10.83, p=0.004) were identified as independent predictors of death.

Conclusion: The present study shows that AF in critically ill patients is not a trivial phenomenon but is closely related to the risk of death within the first 12 months after admission.

P826

Feasibility and safety of evaluating patients with prior coronary artery disease using an accelerated diagnostic algorithm via a chest pain unit

Table 1. Table I - Statistical analysis

| | nAF (n=63, 52.9%) | wAF (n=56, 47.1%) | P-value |
|--------------------------------------|-------------------|-------------------|---------|
| Age (years, $\mu\pm$ sd) | 61.9 \pm 12 | 71.0 \pm 17 | 0,001 |
| Female gender (%) | 34.9 | 49.2 | 0,190 |
| APACHE II ($\mu\pm$ sd) | 21.6 \pm 1.1 | 23.4 \pm 0.7 | 0,041 |
| AdmR medical (%) | 44.4 | 64.3 | 0,042 |
| Length of stay - days ($\mu\pm$ sd) | 11.5 \pm 8.4 | 20.8 \pm 17.5 | 0,001 |
| Heart failure (%) | 13.0 | 31.1 | 0,045 |
| BNP (pg/mL, $\mu\pm$ sd) | 238 \pm 375 | 662 \pm 679 | 0,004 |
| Re-hospitalization (%) | 14.3 | 50 | <0,001 |
| Global mortality (%) | 27 | 60.7 | <0,001 |
| In-hospital mortality (%) | 9.5 | 25 | 0,029 |
| Follow-up mortality (%) | 17.5 | 35.7 | 0,036 |

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Background: An accelerated diagnostic protocol of evaluating low risk patients with Acute Chest Pain (ACP) in cardiologist-based Chest Pain Unit (CPU) has shown its safety and cost-effectiveness and is widely employed today. However, there is limited data regarding the safety of applying such a protocol for patients with a history of prior coronary artery disease (CAD).

Purpose: To assess the feasibility and safety of evaluating patients with a history of prior CAD via a CPU.

Methods: We evaluated 1,220 consecutive patients who presented with ACP, hospitalized in our CPU, and underwent evaluation using an accelerated diagnostic algorithm. Patients were stratified according to whether they had a history of prior CAD or not. The Primary outcome was defined as a composite of readmission due to chest pain, acute coronary syndrome, revascularization, or death during a 60 day follow up period.

Results: Overall, 268 (22%) patients had a history of prior CAD. Patients with a history of prior CAD were older, more likely to be male, and to suffer from hypertension, diabetes mellitus, dyslipidemia, peripheral vascular disease, and have had a prior stroke when compared to those without prior CAD. Non-invasive evaluation was performed in 1,112 (91%) patients. The two study groups were similar regarding hospitalization rates, coronary angiography, and revascularization performed during CPU evaluation. During a 60-day follow up period the primary endpoint occurred in 12 (1.6%) and 6 (3.2%) patients without and with a history of prior CAD respectively (p value = 0.836) with no mortalities recorded.

Conclusion: Patients with a history of prior CAD can be safely and expeditiously evaluated using an accelerated diagnostic protocol via a CPU with outcomes not differing from those without such a history.

P827

Orofacial complaints in ICU: imperative care

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Introduction: Patients in Intensity Care Unity (ICU) can present undiagnosed dental diseases. These diseases and their symptoms may be exacerbated during hospitalization, interfering with recovery and patients' quality of life.

Objectives: To evaluate oral complaints in ICU patients of the general hospital Albert Sabin, Juiz de Fora, Minas Gerais, Brazil, classifying the quality of life related to oral health and the level socioeconomic of patient.

Methods: Were evaluated 60 patients, aged 18 to 91 years old, with a low degree of vulnerability and mindful, in ICU. A dentist performed a complete evaluation: clinical questionnaire (SIQUEIRA, 2001); oral health impact profile OHIP-14 (SLADE, 1997); socioeconomic evaluation ABA-ABIPEMI questionnaire (ALMEIDA, WICKERHAUSER, 1991). The local ethical committee approved this study, and an informed consent was obtained.

Results: The mean age of patients was 65 years (± 17.32), and 34 (56.67%) were male. The average length of stay in the coronary care unit was 3.17 (± 2.17) days. At the time of evaluation, 14 (23.33%) patients had an initial dental complaint; other 46 patients did not report complaints. However, 43 of these patients, when asked about the presence of symptoms related to dental disease, responded affirmatively. Only 3 (5%) patients reported no complaints and/or orofacial symptoms. The main symptoms reported were dry mouth in 46 (80.71%) patients, lip dryness in 40 (70.17%) and halitosis in 22 (38.60%) patients. The higher level socioeconomic (class B) was found. The quality of life related to oral health show mean of 5.82 (± 5.24) for patients with complaints / symptoms and 3.43 (± 4.94) for patients without complaints / symptoms.

Conclusion: To the best of our knowledge, this is the first study that performed a global systematic dental assessment to identify orofacial complaints in UTI. Most of patients reported any complaints and/or orofacial symptoms, but only 23.3% expressed a complaint initially, demonstrating that many dental conditions can be insidious and consequently, underdiagnosed. The intensity of the complaints reported and the impact of quality of life related to oral health in these patients are indicative to requirement of dental care in ICU patients.

P828

Is age an influencing factor on delirium in patients with cardiac pathology?

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Background: Although delirium is quite common amongst cardiac intensive care unit (CICU) senior patients, it poses the biggest threat to the well-being of those under age of 65.

Purpose: To identify characteristics of delirium within different ages groups in CICU.

Methods: A retrospective analysis of all patients with delirium (F05, ICD-10-AM) treated during 2011-2015 in VUHSK CICU. Out of 19,007 hospitalized patients, 656 (3.5%) had a psychiatric consultation, of which 337 (1.8%) developed F05. Patients were categorised into four age groups: 1. <65 y., 2. 65-74 y. 3. 75-84 y., and 4. \geq 85 y., hereafter termed groups G1, G2, G3 and G4 respectively. The analysis was conducted using Microsoft Excel 2013, SPSS 21.0 software. Discrete variables were compared using the χ^2 test of significance, unless frequencies were small, in which case the Fisher exact test was used. Continuous variables were compared using nonparametric Mann-Whitney-Wilcoxon rank sum test. It was considered statistical significant when $p \leq 0.05$.

Results: The first group consisted of 46 (13.6%) patients, G2 71 (21.1%), G3 131 (38.9%) and G4 89 (26.4%). Patients in the G2 were treated on average 13.4 days longer (23.39 ± 6.176) than in the G4 9.97 ± 0.973 ($p < 0.000$). The smallest percentage of patients with coronary heart disease (CHD) were diagnosed in the youngest group (37%) and the highest percentage of patients (55.1%) in the oldest group ($p = 0.046$); although acute myocardial infarction (MI) was mostly (69.6%) diagnosed amongst the youngest patients and more rarely (56.2%) amongst seniors ($p = 0.131$). STEMI was most common in the G1 (52.2%) and the least common in the G3 (38.2%) ($p = 0.098$). 4Killip class was diagnosed most frequently in the G1 – 21.7% and most sparsely in the G2 – 8.5% ($p = 0.041$). 2-vessel coronary artery disease was most frequent in the G3 (14.5%) and least common in the G4 (4.5%, $p = 0.017$). 3-vessel CAD (3CAD) was mostly found in the G2 (35.2%) and most infrequently in the G3 (20.6%, $p = 0.023$). Cardiac rhythm and conduction disorders (I44-49) became more frequent with age: from 43.5% in the G1 to 86.5% in the G4 ($p < 0.000$). Dementia in most cases was observed in the G4 (12.4%) and was not diagnosed for those under the age of 75 y. ($p < 0.000$). The highest mortality of patients with F05 was observed in the youngest group (10.9%) and the lowest in the oldest group (6.7%, $p = 0.509$).

Conclusions: Age-related differences were identified for CICU patients with F05: MI, STEMI, 4Killip class and mortality are more frequent for patients less than 65 years of age. At the age 65-74 patients are mostly diagnosed with 3CAD and have the longest duration of treatment. At the age ≥ 85 patients are mostly diagnosed with CHD, I44-49, dementia and have the shortest duration of treatment and the lowest rates of mortality. Special attention should be paid to patients younger than 65 years who develop delirium since these patients have more serious forms of disorders and poorer prognosis.

P829

Are standard acute kidney injury (AKI) diagnostic criteria sufficiently used?

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Background: AKI is related to high morbidity and mortality after both transcatheter (TAVR) and surgical (SAVR) aortic valve replacement (AVR). Urine output criteria (UOC) are often neglected in studies and practice. While widely used creatinine criteria (CC) have their limitations such as lack of details on the timing of the tests.

Purpose: To assess impact of creatinine measurement frequency and OUC on AKI rate after TAVR and SAVR.

Methods: Eighty over 70-year-old consecutive patients (pts) with severe aortic stenosis undergoing TAVR (n=40) and SAVR (n=40) were enrolled in prospective, observational single-centre study. Creatinine was measured by investigator before AVR and after 6, 12, 18, 24, 36 and 48h (study mode) independently of physicians' testing (standard mode): on average once a day. OUC were followed up to 48h. AKI was defined according to VARC-2 criteria.

Results: TAVR patients were older (80.13 ± 5.26 vs 74.45 ± 3.95 ; $p < 0.001$) with lower eGFR (57.04 ± 15.95 vs 66.60 ± 17.04 ; $p = 0.011$) and higher perioperative risk according to logistic EuroSCORE (17.88 ± 12.64 vs 7.4 ± 3.25 ; $p < 0.001$). AKI was more prevalent after SAVR (47.5% [n=19] vs 72.5% [n=29]; $p = 0.022$).

In the first 48 hours 4 TAVR pts followed CC in the standard mode vs 12 pts in the study mode ($p = 0.005$). The difference was already significant in the first 24h (1 vs 6 in the study mode; $p = 0.025$). In SAVR group AKI rate was also higher in the study mode (21 in the standard mode vs 28; $p = 0.008$) including first 24h (15 vs 21 in the study mode; $p = 0.034$).

OUC were followed by 9 TAVR and 1 SAVR pt. By adding OUC number of AKI cases in TAVR group increased by 8 (4 vs 12; $p = 0.005$) in standard mode and by 7 (12 vs 19; $p = 0.008$) in the study mode as one and two pts, respectively, followed also CC. OUC did not change AKI rate after SAVR. Of note, mean furosemide dose in the first 48h was similar after SAVR and TAVR ($p = 0.546$).

In the end there were 19 AKI cases after TAVR: 10 (53%) diagnosed only by CC, 7 (37%) only by OUC and 2 (11%) by both of them. By adding OUC and additional creatinine measurements as by study protocol AKI detection increased over 4-times from 4 to 19 cases ($p < 0.001$) after TAVR. AKI cases following only OUC were diagnosed earlier (22.3 ± 8.3 h) when compared to cases following only CC ($31.3 \text{h} \pm 15.5$) but the difference was insignificant

($p=0.159$). In the SAVR group the overall number of AKI increased to 29 when creatinine measurements from both modes were taken together.

Conclusion: We showed that compared to standard measurements additional creatinine testing could increase number of AKI cases diagnosed after TAVR and SAVR. OUC identified additional AKI cases after TAVR. Such differences may affect practice and reliable comparison of results between studies which vary in testing frequency.

P830

Prolonged hospital stay in patients with acute coronary syndrome: prevalence and clinical determinants

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Background: Hospital stay is a good indicator of quality of management of patients admitted to a hospital. A prolonged stay involves greater expense and a higher incidence of hospital complications.

Purpose: The aim of this work was to study the frequency and associated clinical determinants to a prolonged stay in patients admitted with acute coronary syndrome (ACS).

Methods: 1158 consecutive admissions of 1051 patients (68 ± 13 years, 75% male) with ACS were analyzed (64% ACS without ST elevation, 32% ST elevation ACS, 4% undetermined SCA). We defined prolonged stay (PS) as a hospital stay longer than 5 days according to previous studies. Prolonged stay predictors were studied using a multivariate logistic regression analysis. We excluded patients whose final therapy was surgical revascularization and those which died in the first 4 days.

Results: The average stay was 7.2 ± 5.2 days (interquartile range 1-67 days). A total of 823 (71%) patients had PS. The percentage of PS did not changed throughout the study period in neither the general population nor subgroup analysis by type of ACS. In the multivariate regression analysis, the glomerular filtration rate (CKD-EPI) (OR per ml/min/1.73m²: 0.99; 95% CI 0.98-0.99; $p = 0.005$), Killip>1 (OR: 2.78, 95% CI 1.85 to 4.17; $p < 0.001$), atrial fibrillation / atrial flutter (OR: 1.66, 95% CI 1.01-2.58; $p = 0.025$), peripheral vascular disease (OR: 2.13, 95% CI 1.19- 3.82; $p = 0.011$) and reperfusion therapy (OR: 3.78, 95% CI 2.50-5.71; $p < 0.001$) were independent predictors

of PS. The best prediction model, based on the principle of parsimony, presented a C-index 0.67 and Hosmer-Lemeshow 0.42. The final model included the following parameters: peripheral vascular disease, atrial fibrillation or flutter, LV ejection fraction, glomerular filtration rate and reperfusion strategy.

Conclusion: Despite numerous diagnostic and therapeutic advances, a high percentage of patients admitted for ACS continue to require prolonged hospitalization. The identified factors should be taken into account in the design of future studies that propose new strategies to reduce the length of hospital stay

Interventional cardiology, Coronary

P831

Intra-arterial verapamil: audit of effects on heart rate and blood pressure

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Verapamil is often used as part of a 'radial cocktail' to prevent radial spasm during coronary procedures done by the radial approach. It is sometimes avoided in bradycardic or hypotensive patients because of concern that it will have systemic effects. It was therefore decided to audit our local practice, recording whether radial artery verapamil administration was associated with change in heart rate, systemic blood pressure or PR interval.

Methods: Prospective audit from a single centre, looking at a series of 50 patients undergoing radial coronary angiography and/or intervention, with verapamil use at the operator's discretion. Data collected included age and sex of patient, type of procedure, dose of verapamil and use of other drugs during the procedure, and heart rate, blood pressure and PR interval before verapamil, at the end of the procedure, and the lowest heart rate and blood pressure/ longest PR interval documented during the procedure. Data on complications and need for atropine or pacing was also collected.

Results: 32 men and 18 women included. 26 elective and 24 acute coronary syndrome cases. 48 right radial and 2 left radial cases; 1 case where it was necessary to switch from right radial to right femoral access. Dose of verapamil was 2.5 or 5mg at operator discretion. Mean (standard deviation) starting mean BP in mmHg 92(14), starting HR 71(13), mean starting PR interval (ms) 175(30). Lowest mean BP 84(13), HR 65(12) and longest PR interval during procedure 185(35). Mean BP 91(13), HR 70(13) and PR interval 182 (35) at the end of the procedure.

No patients required atropine or temporary pacing. 2 patients required IV fluids because of hypotension not thought to be due to verapamil (a vasovagal response and an unwell STEMI patient respectively).

Conclusion: Verapamil did not appear to have clinically significant effects on heart rate, blood pressure or PR interval, in a group of patients where the operator felt it was safe to use this drug. Clearly this audit does not allow us to extrapolate to all patients, as this was not a randomised trial and verapamil may have been avoided in patients who were already significantly bradycardic – however it reassures us that our current practice is safe and that we can afford to be less concerned about the risk of verapamil given into the radial artery having significant systemic effects. This may encourage more operators to use a ‘radial cocktail’ and thus facilitate radial access with its known safety benefits.

P832

Prognostic role of routine follow-up coronary angiography after percutaneous coronary intervention with drug-eluting stent

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Background: The prognostic role of restenosis after drug-eluting stent (DES) implantation is still controversial. Routine follow-up coronary angiography (RFU-CAG) is used to ensure stent patency after percutaneous coronary intervention (PCI). Here, this study investigated restenosis in patients undergoing RFU-CAG after PCI with DES and evaluated its association.

Methods: This study retrospectively investigated 554 consecutive patients who underwent PCI with DES and RFU-CAG for assessing de novo lesions after PCI between March 2006 and October 2014 (mean follow-up period, 1,191 days). Primary composite endpoints were all-cause death, fatal myocardial infarction, revascularization at de novo lesions, stroke and admission due to heart failure.

Results: Of the 80 restenosis cases, 50 cases (19.7%) were found in the patients treated with the 1st generation DES and 30 cases (10.3%) were found in those treated with the 2nd generation DES ($p=0.002$). In the multiple variate analysis, PCI procedural times ≥ 2 was associated with poor outcome {odds ratio (OR), 2.06; 95% confidence interval (CI), 1.08-3.93; $p=0.03$ }, whereas the 2nd generation DES was associated with favorable outcome (OR, 0.41; 95% CI, 0.21-0.81, vs. 1st DES, $p=0.01$) after the adjustment of potential cofounders.

Conclusions: The presence of restenosis at DES-deployed lesions might be a surrogate marker of cardiac events in patients undergoing RFU-CAG. Larger trials are required for investigating the usefulness of RFU-CAG after PCI with DES.

P833

Prognostic utility of the clinical syntax score in an ‘all comers’ population treated with coronary angioplasty

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Introduction: The CSS (clinical syntax score) has improved the ability of the SS (Syntax Score) in predicting MACE after PTCA in patients with multivessel and / or left main coronary artery disease. Several retrospective studies have analyzed the prognostic value of CSS on all-comers populations treated with PTCA and demonstrated its ability to predict MACE. Our objective was to analyze in our series, if the CSS predicted MACE (composite of death, MI and any revascularization) in an all-comers population, regardless of the clinical setting, percutaneous revascularization procedure and type of stent.

Table 1. Table 1.

| | | | 1-year mortality | 1-year cardiac death | 1-year new revascularization | 1-year MACE | 2-year mortality | 2-year cardiac death | 2-year new revascularization | 2-year; MACE death |
|--------------|-----|-------------------------|------------------|----------------------|------------------------------|-------------|------------------|----------------------|------------------------------|--------------------|
| Spearman Rho | SS | Correlation Coefficient | ,119 | ,113 | ,091 | ,138 | ,122 | ,135 | ,054 | ,083 |
| | | Sig. (bilateral) | ,012 | ,017 | ,057 | ,004 | ,011 | ,005 | ,270 | ,089 |
| | CSS | Correlation Coefficient | ,218 | ,180 | ,105 | ,208 | ,256 | ,209 | ,071 | ,195 |
| | | Sig. (bilateral) | ,000 | ,000 | ,029 | ,000 | ,000 | ,000 | ,144 | ,000 |

Rho Spearman correlation between SS and CSS with endpoints

Methods: Retrospective analysis of 459 consecutive patients treated with PTCA in our center between January 2011 and May 2012. Patients with previous surgical revascularization were excluded. 1 and 2 years follow-up of MACE, death and repeat revascularization were obtained. CSS is calculated using the formula: $SS \cdot ((AGE / LVEF) + 1 \text{ pt per } 10 \text{ ml / min reduction CrCl (creatinine clearance) below } 60 \text{ ml / min})$. Continuous and discrete variables were analyzed using the Spearman correlation coefficient and, according to the results, ROC curves were obtained.

Results: We observed a better association between CSS and the variables studied (Death from any cause, cardiac death and MACE at 1 and 2 years old) that between the SS and these variables.

Higher CSS were associated with higher rate of 1-year death from any cause (AUC 0.81; 95% CI: 0.77 to 0.85 $p < 0.001$) with a cut-off point of 26.76 (sensitivity 74% and specificity of 87%), and 2 year-death from any cause (AUC 0.81; 95% CI: 0.77 to 0.85 $p < 0.001$) with a cut-off point of 16.44 (sensitivity 81%, specificity 75%). In addition, higher CSS were associated with 1 year-MACE (AUC 0.70; 95% CI: 0.66 to 0.75 $p < 0.001$) with a cut-off point of 20.46 (sensitivity 54% and specificity 82%) and 2 year-MACE (AUC 0.68; 95% CI: 0.64 to .73 $p < 0.001$) with a cut-off point of 15.04 (sensitivity 62%, specificity 72%).

Conclusions: Our results confirm that adding clinical variables for the SS calculation, makes an improve in the ability of this one in predicting death and MACE in an all comers population.

P834

Zotarolimus eluting stent vs first generation eluting stent in left main coronary artery disease percutaneous coronary intervention. Clinical results at 10 years follow-up

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Introduction: New generation drug eluting stents (DES) have shown more safety and effectiveness with lower rate of in-stent restenosis than first generation of DES in percutaneous coronary intervention (PCI). Nowadays, their results in left main coronary artery (LMCA) disease treated with PCI are unclear.

Purpose: The main objective of this study was to evaluate the efficacy and safety of zotarolimus eluting stent (ZES) vs first generation DES in LMCA disease treated with PCI at 10 years follow-up.

Methods: We prospectively included 251 consecutive patients (69 ± 12 years, 73.4% male) with LMCA disease treated with PCI and ZES (220 patients) or first generation DES (31 patients) between June 2006 and April 2015. We evaluated the occurrence of major adverse cardiovascular events (MACE) defined as cardiac death, nonfatal myocardial infarction, target lesion revascularization (TLR) and stent thrombosis after 10 years clinical follow-up (median 42.6 months).

Results: There were no significant differences regarding baseline clinical characteristics neither in Syntax score between two groups. 50% of patients had acute coronary syndrome and 35-40% were diabetics. The most frequently bifurcation technique employed in LMCA was 'provisional stenting' in both groups with an angiographic success of 99.1% in ZES group and in 100% of first generation DES group ($p=0.57$). Complication rate in the procedure was 3.7% in ZES group and 3.2% in first generation DES group ($p=0.94$). During follow-up at 10 years, we observed significant differences in the occurrence of MACE (13.2% in ZES group vs 32.3% in first generation DES group $p=0.007$) and TLR (4.5% in ZES group vs 19.2% in first generation DES $p=0.003$) between two groups. Multivariate analysis showed that ZES use was a protective factor against TLR (OR, 0.2; 95% CI, 0.06-0.64; $p=0.007$). 23.1% of patients had an angiographic follow-up.

Conclusions: PCI treatment with ZES in LMCA disease is safe and effective with a significant lower rate of MACE and TLR than first generation DES. Potentially, ZES use is a protective factor against TLR.

P835

Long-term outcomes of patients undergoing percutaneous coronary intervention (PCI) in a tertiary centre in the UK

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Background: Short-term outcomes following PCI are often recorded and generally report positive results. Long-term outcomes more closely reflect the ultimate benefit of the procedure but are less frequently recorded in the real-world setting.

Purpose: A nurse-led PCI follow-up service has been in operation in this tertiary cardiac centre since 2001. The majority of patients who have undergone primary, emergency and elective PCI are followed-up in this clinic. The exact format of the service has varied over the years but patients are seen in the clinic setting for a minimum of 1 year and were then followed for up to five years by telephone. However telephone follow-up was found to be an unreliable method of obtaining long-term data.

Methods: In 2012 a purpose-made questionnaire was developed and has since been sent to patients at 3 and 5 years post PCI to provide a measure of the long-term outcome. Patients are informed that this is not a clinical review and that if they have on-going problems they should seek medical advice from their GP as they may need to be referred back to the cardiac centre.

Results: Data are available from 3-year follow-up from patients who underwent PCI in 2007, 2008 and 2009 and 5-year follow-up from patients treated in 2009, 2010 and 2011.

A total of 1943 questionnaires were sent out with a return rate of 75.84% and 74.97% for 3 and 5 years post PCI respectively. 74.97% of patients were male in the 3-year and 73.87% in the 5-year surveys. Just less than half the patients had undergone primary PCI in the 5-year cohort and two thirds in the 3-year group. Symptom control in this long-term follow-up group was generally good with an average of 65.06% of patients reporting being free of angina at 3-years in 2009 and 2010 and 58.51% at 5-years from all three audits. In 2011 only 15.76% of patients reported no angina however 51.68% said they had no angina on normal activity. It is unknown why this figure was so much less than in the previous audits. 68.48% and 66.61% of patients were free of MACE events at 3 and 5 years respectively. The majority of the MACE events were non-cardiac hospitalisations. The need for further intervention was low in both groups with 87.68% and 88.33% of patients at 3 and 5 years not requiring any additional interventional procedure.

Conclusion: PCI results in a good outcome in the long-term as well as the short-term. It is important that data are collected on quality of life issues as well as mortality and MACE events to provide a clearer picture of the benefit of such procedures to both patients and healthcare professionals.

Limitations: There are likely to be some inaccuracies in the data as it is collected from self-reported questionnaires from patients and results are not verified by checking in medical notes or with the patient's GP.

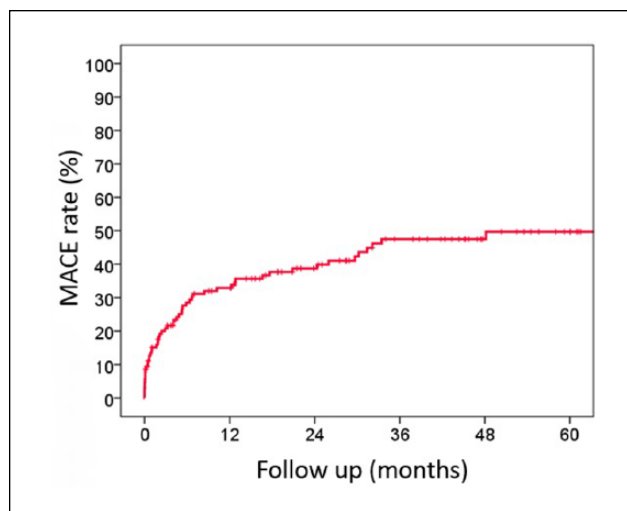
P836

Therapeutic management and prognosis of percutaneous coronary intervention in the left main coronary artery during acute coronary syndrome

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Introduction: There is little information on complications and events associated to percutaneous coronary intervention (PCI) at unprotected left main coronary artery (LMCA)



MACE rate during follow up

during an acute coronary syndrome (ACS). The aim of this study was to evaluate the management and clinical events in this group of patients in a contemporary cohort .

Methodology: There were retrospectively analyzed all the patients who consecutively underwent PCI to LMCA in context of an ACS from 2010 to 2015 at our Hospital, excluding those patients who had previously underwent coronary artery bypass surgery or PCI to LMCA. Hospital treatment, discharge antithrombotic strategy and clinical events during follow-up were collected.

Results: Only 127 of all the patients (n=6530) with an ACS that underwent PCI during that period were performed to unprotected LMCA (1.9%). The mean age was 70.5 ± 12.4 years, 31.5% women. 7.1% with unstable angina, 59.1% NSTEMI and 33.9% STEMI. 32.7% with Killip \geq II class and 29.8% with LVEF \leq 40%. Femoral access was the approaching strategy in 27.6% of the patients. 32.1% of patients presented involvement of the distal LMCA and 9.4% presented just an LMCA disease. Counterpulsation balloon was used in 12% of the patients, and a 23.4% required amines. Drug-eluting stents were used on a 90.6% (48.7% of them everolimus, 40.9% zotarolimus, 7.8% paclitaxel). All patients received a dual antiplatelet therapy (84.9% clopidogrel). Dual antiplatelet therapy was maintained in 53.5% of patients for 12 months. It was suspended before 12 months in 12.6% of patients and remained beyond the first year on the 33.9% (18.9% over 2 years). During the follow-up (median 22.4 months, IQR 4.1 to 47.1) 39 patients died (30.7%), 16 of them (12.6%) during admission. 18 patients (16.2%) had a new ACS (11.7% reinfarction), 17 (15.3%) had heart failure, 5 (4.5%) stroke and 19 patients (18.0%) had bleeding (TIMI major / minor). If we consider the combination of deaths, ReACS, HF and stroke, 42.5% of patients presented some event, 74.1% of them in the first year.

Conclusions: The realization of PCI to LMCA during ACS is rare. It is done in patients at very high cardiovascular risk, which usually maintain dual antiplatelet therapy beyond the first year, with high intrahospital mortality and from medium to long term.

P837

Outcomes after percutaneous coronary intervention versus coronary artery bypass surgery in octogenarians

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Introduction: Coronary artery disease is the cause of death for 52% of people over 80 years old in Lithuania. There is limited data on long-term outcomes for elderly patients with coronary artery disease who undergoes percutaneous coronary artery intervention (PCI) or coronary artery bypass grafting (CABG). This study aimed to assess the long term outcomes for patients over 80 years old who underwent one of the procedures from a single center.

Methods: It is a retrospective study performed in our Hospital from 2012 to 2014. We analyzed octogenarian patients (≥ 80 years old) who underwent coronary angiography. 411 out of 590 patients were diagnosed with significant stenosis of left main coronary artery ($\geq 50\%$) and/or ≥ 2 coronary vessel disease ($\geq 70\%$) and were included in the study. Baseline patient characteristics, demographics, comorbidities, survival and mortality rates were analyzed. Groups were divided according to the type of revascularization: PCI or CABG. Statistical analysis of data was performed using IBM SPSS 21.0 software.

Results: 369 (89,8%) patients underwent PCI and 42 (10,2%) had CABG. Age in PCI group was 83 ± 3 vs. 82 ± 2 years in CABG; $p=0,006$. In PCI group 49,9% were male versus 66,7% in CABG group; $p=0,039$. In PCI group 46,1% had STEMI, 22,5% NSTEMI, 19% stable angina and 12,5% unstable angina. In CABG group 38,1% had unstable angina, 26,2% stable angina, 21,4% STEMI and 14,3% NSTEMI. 24,4% of patients in PCI group and 57,1% in CABG group ($p<0,001$) had a significant left main coronary artery stenosis. Significant differences between groups were detected in heart failure (PCI – 51,2% vs. CABG – 78,6%, $p=0,001$), previous CABG (PCI – 11,4% vs. CABG – 0%, $p=0,014$), cardiogenic shock (PCI – 12,2% vs. CABG – 0%, $p=0,008$). No significant difference was detected in the occurrence of hypertension (PCI – 93,5% vs. CABG – 100%; $p=0,155$), COPD (PCI-3,8% vs. CABG – 4,8%; $p=0,67$), dyslipidemia (PCI-59,1% vs. CABG-66,7%; $p=0,342$), diabetes mellitus (PCI – 16,8% vs. CABG – 7,1%; $p=0,104$), atrial fibrillation (PCI-30,9% vs. CABG – 26,2%; $p=0,063$), previous PCI (PCI-23,0% vs. CABG

– 23,8%; $p=0,91$), previous myocardial infarction (PCI-34,1% vs. CABG-28,6%; $p=0,469$). Hospital mortality rate in PCI group – 10,6%, CABG – 7,1%; $p=0,787$. A medium 3 year survival rate in PCI group – 66,1%, CABG – 66,7%; $p=0,944$.

Conclusions: Among elderly patients, there was no significant difference in hospital mortality and survival rates between patients who underwent PCI or CABG. Patients who underwent PCI appeared to have more frequently cardiogenic shock. Patients were more likely to be selected for CABG if they were male, had heart failure and significant left main coronary artery stenosis.

Pulmonary hypertension and the right ventricle

P838

Right ventricular strain as predictor of the pulmonary complication in patient with femur fracture

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Background: After femur fracture as long bone trauma, medullary fat enters the systemic circulation and altered pulmonary hemodynamics may contribute to pulmonary complication.

Purpose: This study evaluated the association between pulmonary complication and right ventricle (RV) function in patients with femur fracture.

Methods: A total 100 patients who undergone transthoracic echocardiography in patients who visited hospital for femur fracture were evaluated retrospectively between March 2015 and February 2016. Of these, 22 patients who had an inadequate echocardiographic image quality for quantitative analysis were excluded from the study. RV peak global longitudinal strain (RV GLS) was evaluated using two-dimensional speckle tracking echocardiography. Pulmonary complication was defined as development of pneumonia or pulmonary thromboembolism during the 30-day follow-up period after admission for femur fracture.

Results: Out of a total of 78 patients (age 80.1 ± 9.1 years; female 59 (75.6 %); mean hospital day 18.4 ± 7.8), pulmonary complication were developed in seven patients (9.0 %; pulmonary embolism 1, pneumonia 6). Among those patients, two patients (2.6 %) were died. RV GLS of all patients were decreased ($-16.7 \pm 5.9\%$) compared with the range of normal values. In addition, RV GLS of patient with pulmonary complication was significantly lower than

that of patient without pulmonary complication (-12.4 ± 6.4 % vs. -17.1 ± 5.7 %, $p = 0.036$). In univariate analyses, worse RV GLS was significant risk factor of pulmonary complication [HR 1.17, 95% CI 1.007-1.369, $p = 0.040$]. In multivariate logistic regression analyses, worse RV GLS was also an independent predictor of the pulmonary complication after adjustment of other relevant variables [HR 2.09, 95% CI 1.047-4.151, $p = 0.037$]. In addition, longer hospital day was an independent predictor [HR 1.64, 95% CI 1.053-2.560, $p = 0.029$]. In ROC curve analysis, RV GLS -14.85 % was the best cut-off value predicting development of pulmonary complication with a sensitivity of 75.0% and specificity of 62.9% in patient with femur fracture. Moreover, the log-rank test of the survival curves produced a value of $p = 0.027$ for differences between patients with RV GLS > -14.85 % and with RV GLS ≤ -14.85 %. Therefore, RV GLS > -14.85 was a good predictor for pulmonary complication development.

Conclusion: In patients with femur fracture, decreased RV GLS would be a useful predictor for detecting pulmonary complication during short term follow-up period. Because of high incidence of pulmonary complication in femur fracture, patients with RV GLS worse than -14.85 will be need to close monitor before and after operation.

P839

Characteristics of cardiopulmonary exercise tests in patients with borderline pulmonary arterial pressure

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Aim: Resting mean pulmonary artery pressure of 21-24 mmHg are above normal but do not fulfill the criteria for pulmonary hypertension (PH). The characteristic of cardiopulmonary exercise tests (CPET) of borderline PH remains a matter of discussion.

Methods: We focused on patients who underwent right-sided heart catheterization during rest and exercise for symptoms indicative of PH or due to underlying disease associated with an increased risk for PH and characterized the patients according to their resting mPAP. Patients with manifest PH (mPAP ≥ 25 mm Hg) were excluded.

Results: Compared with control subjects, borderline patients had significantly increased heart rate@PEAK(152.3 ± 27.9 beats/min vs. 133.6 ± 35.2 beats/min, $P = 0.044$) and low oxygen pulse@PEAK(7.2 ± 2.4 ml/beat vs. 9.1 ± 2.4 ml/beat, $P = 0.020$). Neither could minute ventilation nor carbon dioxide output distinguish at

warm-up stage. Oxygen uptake was significantly lower in borderline patients at rest, AT and peak stage (251.8 ± 53.8 ml/min vs. 302.5 ± 61.7 ml/min, $P = 0.005$, 752.9 ± 242.9 ml/min vs. 1080.4 ± 378.0 ml/min, $P = 0.004$, 981.5 ± 356.4 ml/min vs. 1443.0 ± 470.0 ml/min, $P = 0.001$). Work load were both lower in borderline patients (47.2 ± 26.2 Wt vs. 77.8 ± 38.1 Wt, $P = 0.003$). A trend of increased difference in ventilatory equivalent for CO₂ was observed from AT to peak (37.4 ± 7.7 L/min/L/min vs. 34.0 ± 5.0 L/min/L/min, $P = 0.08$; 37.1 ± 7.9 L/min/L/min vs. 33.6 ± 5.0 L/min/L/min, $P = 0.07$, respectively). Lower oxygen uptake efficiency slope (1.58 ± 0.646 l/ml/log (l/min) vs. 1.96 ± 0.65 l/ml/log (l/min), $P = 0.001$) indicated impaired O₂ extraction or utilization in borderline patients.

Conclusions: Borderline PH is associated with abnormal exercise tolerance, ventilation efficiency, cardiac function and submaximal exercise tolerance.

P840

Can the right ventricular diastolic function and the arterial pulmonary hypertension in patients with end stage renal disease be improved by hemodialysis?

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Objective: There is few data concerning the right ventricular diastolic performance in end stage chronic renal failure patients and even less data concerning the effect of hemodialysis on right ventricular performance in these patients. In the present study we tried to document if hemodialysis in end stage renal failure patients can improve right ventricular dysfunction and influence the degree of arterial pulmonary hypertension..

Methods: Sixty-six end stage renal failure patients with altered RV diastolic performance but preserved RV ejection fraction, were included in our study, before starting hemodialysis. The patients were studied by echo doppler before and after 6 months of hemodialysis. RV diastolic function was evaluated in all 66 patients.. We measured the transtricuspid inflow parameters: maximal velocities of E (Emax) and A waves (Amax), E wave pressure half time (PHT) and E wave deceleration time (DT). The ejection fraction was measured by using the 2D Simpson method. The systolic arterial pulmonary pressure was measured by using the velocity of the tricuspid regurgitation flow.

Results: We documented altered RV diastolic filling parameters in all our patients at the start of hemodialysis, but also at 6 months of hemodialysis.. Emax was decreased at the start and at 6 months of study (34.4 ± 6.6 , versus $35.4 \pm$

8.8 cm/sec), while A max was increased (49.6 ± 12.2 versus 48.4 ± 12 . cm/sec) . E wave PHT was found prolonged at the start and end of study (63.3 ± 9.2 versus 62.4 ± 6.2 msec.) and also E wave DT (130.6 ± 30.3 versus 128.4 ± 28.6). The right ventricular ejection fraction remained in normal limits at the start and at the end of study. We documented a moderate arterial pulmonary hypertension in all our patients, which was not ameliorated by regular hemodialysis. Systolic arterial pulmonary pressure did not improve during hemodialysis (33.6 ± 9.1 at the start of study, versus 31.4 ± 6.2 at 6 months).

Conclusion: In spite of regular hemodialysis the RV diastolic performance remains altered in patients with end stage renal failure. Also the arterial pulmonary hypertension was not influenced in these patients, in spite of hemodialysis.

P841

Effect of mitral valve surgery on the pulmonary blood pressure in patients with preoperative diagnosis of pulmonary hyperthension

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Introduction: The affection of the left side of the heart results in retrograde damage, especially on pulmonary vessels, leading to the development of pulmonary hypertension. The mitral surgery may improve this condition or at least prevent its progression.

Methods: A retrospective observational study was performed comparing the variability between preoperative pulmonary blood pressure (measured by echocardiography) and its control at one year follow-up in patients undergoing mitral valve surgery who had preoperative diagnosis of pulmonary arterial hypertension (PHT) in the period from 2010 to 2015. A variability analysis was performed by subdividing patients according to the type of surgery to which the patients underwent. 234 mitral valve surgeries were performed, 57 were in patients with pulmonary hypertension and follow-up was available in 51 patients.

Results: From the total of 51 patients, 32 were women (62.75%) with a mean age of 65.91 ± 2.5 years. Mean preoperative pulmonary arterial pressure was $53.72 \pm 3,46$ mmHg . At one year follow-up, mean pulmonary arterial pressure was $34.16 \pm 3,94$ mmHg with a mean difference compared to preoperative pressure of $18.33 \pm 4,12$ mmHg ($p < 0.0001$). In the subdivision according to type of surgery the observed variability was: $22.2 \pm 8,88$ mmHg with mitral repair; $18.43 \pm 5,57$ mmHg with mechanical prostheses; and $10.75 \pm 9,4$ mmHg with biological prosthesis

Conclusions: Mitral valve surgery improves substantially the pulmonary blood pressure in patients with pulmonary hypertension at one year follow-up. We achieve better improvement in patients who underwent valve repair over replacement.

Risk Stratification

P842

Fragmented QRS complex as a predictor of coronary artery disease in patients with acute coronary syndrome

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Purpose: to detect if the presence of fQRS can predict the presence of coronary artery disease (CAD) and to which extent in Egyptian patients with acute coronary syndrome (ACS).

Methods: seventy four patients with ACS , were divided into two groups according to the presence of fQRS in the initial and follow up ECG, they underwent clinical examination, full history for CAD risks, echocardiographic study, cardiac enzymes, lipid profile estimation and coronary angiographic study.

Results: fQRS, when compared with pathological Q wave & ST-segment depression for diagnosis CAD; it has higher sensitivity (49.0% vs. 36.7% and 17.3%) for LAD, (66.7% vs. 14.3% and 9.5%) for LCX, (67.5% vs. 27.5% and 12.5%) for RCA, more specific (92.00% vs. 78.2% and 80%) for LAD, higher positive predictive value (45% vs. 39.2% and 35.9%) for LAD, (77% vs. 50% and 22%) for LCX, (90% vs. 73.3% and 38.5%) for RCA and more accuracy(63.5% vs. 51.4% and 41.9%) for LAD, (85.1% vs. 71.6% and 64.8%) for LCX & (78.4% vs. 55.4% and 41.9%)for RCA with a statistically significant differences ($P < 0.05$).

Conclusions: the presence of fQRS in ECG is a good , simple , applicable positive test to predict the presence of significant CAD in the Egyptian patient with ACS in the emergency room (ER) to decide whether to be ready and prepare the patients for PCI or not, even in those without enzyme elevation but carry an ECG with 'fQRS'. fQRS, needs to be energetically promoted in routine clinical practice, where it is a neglected entity at present.

P843

Long-term effect of antihypertensive drugs on the risk of new onset diabetes after ST-segment elevation myocardial infarction- A population-based longitudinal cohort study

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Background: Antihypertensive drugs have been linked to new-onset diabetes (NOD); however, data on the effect of these drugs on the development of NOD after ST-segment myocardial infarction patients has not been well determined.

Purpose: To investigate the association between antihypertensive drugs and NOD after ST-segment myocardial infarction patients.

Methods: Our data were taken from claim forms provided to the National Health Insurance in Taiwan from January 2007 to December 2012. Prescriptions for antihypertensive drugs before the index date were retrieved from a prescription database. The risk of NOD was estimated using adjusted Cox regression models with the hazards ratio (HR) of NOD associated with antihypertensive drug use after ST-segment myocardial infarction patients; non-NOD subjects served as the reference group.

Results: A total of 156 NOD cases were identified among 936 ST-segment myocardial infarction patients during the study period. The mean age of NOD group was 65.5 years and that of non-NOD was 62.1 years. There was a significant difference in age between the two groups of patients ($P = 0.0019$). The risk of NOD after adjusting for sex, age, comorbidities, and concurrent medication was lower among users of angiotensin receptor blockers [HR, 0.30; 95% confidence interval (CI), 0.09-0.95] and alpha-blockers (HR, 0.36; 95% CI, 0.13-1.00) than among non-users. Angiotensin converting enzyme inhibitors (HR, 0.92; 95% CI, 0.44-1.93), loop diuretics (HR, 0.40; 95% CI, 0.10-1.63), thiazides (HR, 0.24; 95% CI, 0.03-1.74), beta-blockers (HR, 0.57; 95% CI, 0.31-1.05), dihydropyridine (DHP) calcium channel blockers (HR, 0.79; 95% CI, 0.44-1.42), and non-DHP calcium channel blockers (HR, 0.51; 95% CI, 0.19-1.39) were not associated with risk of NOD.

Conclusion: The results of this study suggest that after ST-segment myocardial infarction patients who take angiotensin receptor blockers and alpha-blockers are at lower risk of NOD.

P844

Severity of acute coronary syndrome after percutaneous coronary intervention in non-diabetic patients with postprandial hyperglycemia

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Background: Impaired glucose tolerance as well as diabetes mellitus is well-known risk factor for coronary artery disease. The prevalence of postprandial hyperglycemia newly detected in patients treated with percutaneous coronary intervention (PCI) in acute coronary syndrome (ACS) is high. However, severity of ACS after PCI in non-diabetic patients with postprandial hyperglycemia has not been researched.

Purpose: The aim of this study is to compare severity of ACS after PCI in patients with postprandial hyperglycemia with normal glucose tolerance.

Methods: The patients with no previous diagnosis of diabetes mellitus who underwent PCI in ACS were enrolled in this study. An oral glucose tolerance test was performed in the patients with glycated hemoglobin (HbA1c) <6.5%. Severity of ACS including disease complications and maximum creatine kinase during hospitalization after PCI was compared between the patients with postprandial hyperglycemia which was defined as 2-h plasma glucose concentration of 140 mg/dl or greater after a 75g glucose load and normal glucose tolerance. We compared total stent length, fluoroscopy time, and total contrast volume during PCI as complexity of PCI procedures.

Results: Out of consecutive 60 patients, 45 (75%) had postprandial hyperglycemia and 15 (25%) had normal glucose tolerance. The mean HbA1c in patients with postprandial hyperglycemia was significantly greater than normal glucose tolerance ($5.9 \pm 0.3\%$ versus $5.6 \pm 0.3\%$; $p < 0.01$). The mean 1, 5-anhydroglucitol was 21.9 ± 1.8 $\mu\text{g/dl}$ versus 23.5 ± 3.1 $\mu\text{g/dl}$ ($p = 0.67$). Insulin index was 0.9 ± 1.2 versus 1.4 ± 1.0 ($p < 0.01$). The incidence of major complications was 3 (6.7%) including 1 ventricular fibrillation, 1 acute heart failure and 1 atrioventricular block versus 1 (6.7%) including 1 ventricular fibrillation ($p = 1.0$). The average peak CK was 2025 ± 342 U/l versus 2183 ± 593 U/l ($p = 0.82$). The total stent length, fluoroscopy time, and total contrast volume during PCI were not significantly different between 2 groups.

Conclusion: Severity of ACS during hospitalization and complexity of PCI procedure between patients with postprandial hyperglycemia and normal glucose tolerance was not significantly different.

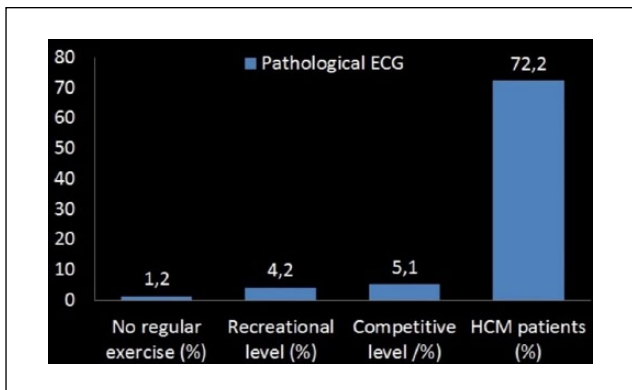
P845

'Veteran athlete' electrocardiogram: comparison with hypertrophic cardiomyopathy patients

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Introduction: Electrocardiogram (ECG) is essential in the athletes' pre-competitive screening, especially in early



Pathological ECG (%) according to groups

detection of cardiac disease. Recently it has been proposed more restrictive criteria for ECG interpretation in athletes, such as Refined Criteria, but only validated in young athletes. The objective of this study was to characterize the veteran athlete' ECG according to the level of sport performed (recreational or competitive) and to compare them with individuals without regular exercise and patients with hypertrophic cardiomyopathy (HCM) with diagnosis in adulthood.

Methods: Selection of asymptomatic military personnel with ≥ 35 years, that consecutively underwent routine evaluation including clinical history and ECG, interpreted according to the Refined Criteria. The sample was divided into three groups: individuals without regular exercise (≤ 3 hours/weekly/training), recreational level and competitive level. The same ECG criteria were applied to a population with HCM diagnosed after 35 or more years of age.

Results: We included 438 individuals (mean age 46 ± 10 years, 82.2% male, 98.6% caucasian): 172 (39.3%) without regular exercise; 144 (32.9%) recreational sport; 39 (8.9%) competitive sport practitioners and 83 (18.9%) HCM patients. ECG was pathological in 72.2% of HCM patients, 1.2% of individuals without regular exercise, 4.2% of recreational and 5.1% of competitive sports practitioners. Despite the higher frequency of pathological ECG changes in competitive compared with recreational level, the difference was not statistically significant ($p=0.497$). The most common pathological change was T wave inversion (respectively 56.6%, 0.6%, 2.8% and 5.1%). Further investigation did not diagnosed cardiac disease in any of the individuals without regular exercise or in the athletes groups.

Conclusion: In this population of 'veteran athletes', pathological ECGs according to the Refined Criteria was relatively low, corresponding to false positive cases. When applied to patients with HCM diagnosed in adulthood, these criteria were present in the majority of patients.

P846

CRUSADE score using distinct renal formulas in the prediction of hemorrhagic risk

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Introduction: CRUSADE is a score supported by 8 variables that estimates the hemorrhagic risk in patients with non-ST elevation myocardial infarction (NSTEMI). One of the variables is Glomerular Filtration Rate (GFR). There are multiple formulas used to estimate GFR, with no consensus regarding which is the best.

Purpose: This study intends to evaluate which of the three renal formulas being used to calculate CRUSADE score best predicts a poor outcome.

Methods: Prospective data of 599 patients consecutively admitted between 1st October 2009 and 30th September 2014, diagnosed with NSTEMI. CRUSADE was calculated for each patient using three renal formulas [Chronic Kidney Disease Epidemiology Collaboration (EPI), Modification of Diet in Renal Disease (MDRD) e Cockcroft-Gault (CG)] and they were compared according to the presence of poor outcomes in 1-year follow-up: hemorrhagic complication and composite primary endpoint (CPE) (death, re-infarction, stroke).

Results: The prevalence of high-grade CRUSADE score (considered >40) was 33.2% using CG, 34.7% using MDRD and 33.6% using EPI. All formulas had good discriminatory potential in the prediction of CPE within 1 year. Even if significant statistical differences were not found, CG presented better predictive potential with ROC curves analysis [AUC (CG): 0.777 vs AUC (MDRD): 0.746 vs AUC (EPI): 0.754]. The result was similar in the prediction of total mortality [AUC (CG): 0.796 vs AUC (MDRD): 0.756 vs AUC (EPI): 0.768] and hemorrhagic complications [AUC (CG): 0.722 vs AUC (MDRD): 0.701] within 1 year.

Conclusion: In the population studied, all the three formulas were valuable in predicting poor outcomes in 1-year follow-up. Even if significant statistical differences were not found, CG presented the best results.

P847

Risk factors of early death after discharge in acute myocardial infarction patients treated invasively (analysis from PL-ACS and AMI-PL registries)

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| | 12-month mortality after discharge | | P value | Time in days to 50% of 12-month deaths | |
|------------------------------|------------------------------------|---------------|---------|--|---------------|
| | Factor PRESENT | Factor ABSENT | | Factor PRESENT | Factor ABSENT |
| NSTEMI | 8.0% | 5.8% | <0.0001 | 124 | 116 |
| Age ≥ 75 years, % | 13.6% | 4.8% | <0.0001 | 119 | 123 |
| Females, % | 8.0% | 6.1% | <0.0001 | 116 | 123 |
| Diabetes mellitus, % | 11.0% | 5.4% | <0.0001 | 117 | 124 |
| Prior MI, % | 10.5% | 6.1% | <0.0001 | 133 | 117 |
| History of heart failure, % | 17.9% | 6.1% | <0.0001 | 112 | 123 |
| History of renal failure, % | 20.5% | 6.1% | <0.0001 | 120 | 123 |
| LBAB, % | 15.7% | 6.4% | <0.0001 | 120 | 122 |
| Killip 4 on admission, % | 15.4% | 6.6% | <0.0001 | 76 | 123 |
| Cardiac arrest during AMI, % | 17.6% | 6.6% | <0.0001 | 38 | 124 |
| Multivessel disease, % | 8.4% | 4.7% | <0.0001 | 121 | 124 |
| LM as IRA, % | 14.1% | 6.7% | <0.0001 | 103 | 121 |
| LVEF ≤ 35%, % | 19.4% | 4.9% | <0.0001 | 112 | 126 |
| PCI, % | 6.0% | 10.8% | <0.0001 | 124 | 116 |
| Unsuccessful PCI (TIMI < 3) | 9.7% | 5.8% | <0.0001 | 119 | 121 |
| Bleeding complications, % | 10.3% | 6.7% | 0.023 | 99 | 122 |

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Significant number of patients discharged from the hospital after acute myocardial infarction (AMI) die early in following month. The aim of this analysis was to assess the risk factors of early death after discharge in AMI patients treated invasively.

Methods: We used the Polish Registry of Acute Coronary Syndromes (PL-ACS) database (for baseline characteristics of AMI patients from year 2009) linked to the database from the only health insurer in Poland (National Health Fund) for follow-up mortality after discharge from the index MI hospitalization up to 1 year. From 19797 patients with AMI (45% NSTEMI and 55% STEMI), 1059 (5.3%) died during hospitalization. During next 1 year 1274 (6.8%) from 18738 survivors died. We calculated, for each risk factor, time (in days) when 50% of total number of 12-month deaths after discharge appears. The shorter the time calculated – the earlier the deaths occurs in an analyzed subgroup of patients.

Results: In the table selected significant predictors of 12-month death after discharge were presented together with the time in days to 50% of 12-month deaths. The average time to 50% of 12-month death in the whole group was 121 days (4 months). Factors associated with markedly shorter time to 50% of 12-month death were: cardiac arrest during AMI (38 days), Killip 4 on admission (76 days), bleeding complications (99 days), and LM as IRA (103 days).

Conclusion: AMI patients who are at risk of early death after hospital discharge are those with resuscitated cardiac arrest or cardiogenic shock during acute phase of MI. There is a need to create integrated post-infarction care program, with team cooperation of specialists, and with predefined paths for further treatment as the patient is discharge home after AMI.

P848

Prehospital troponin and NT-proBNP predicts outcome in patients with suspected AMI

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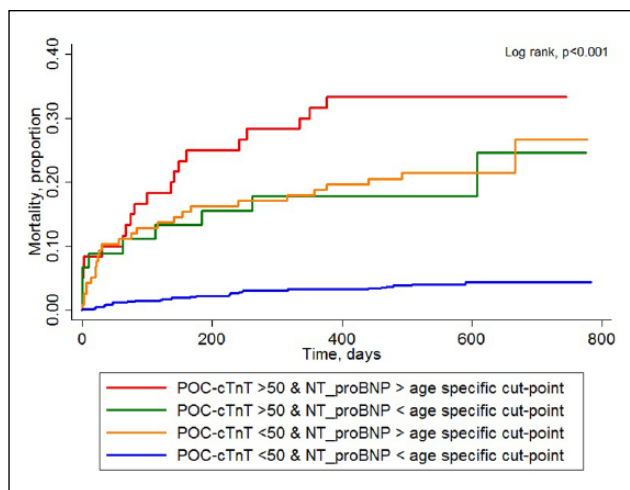
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Purpose: Prehospital biomarker measurement may improve triage of patients with suspected AMI. We studied the predictive value of combined prehospital point-of-care troponin T (TnT) and N-terminal pro brain natriuretic peptide (NT-proBNP) analysis.

Methods: A prehospital TnT measurement was made in 915 patients with a suspected AMI. Remaining prehospital blood was stored in a prehospital biobank and analyzed using an NT-proBNP assay. The diagnosis of AMI was made in accordance with the Universal MI definition. Survival data were obtained from The Danish Civil Registration System. We constructed Kaplan-Meier curves for groups of patients with prehospital TnT values above or below the detection level of 50ng/L in combination with prehospital NT-proBNP values above or below the established age specific heart failure diagnostic cut points (<50y: <450ng/L; 50-75y: >900ng/L; >75y: >1800ng/L). Multivariable cox regression models were established to estimate the individual and combined predictive value of both biomarkers.

Results: 177 patients (19%) had NT-proBNP values above the age specific cut-points and 60 patients (6.6%) had elevated values of both TnT and age specific NT-proBNP. An elevated prehospital TnT combined with elevated NT-proBNP was



highly significantly associated with mortality, Kaplan-Meier Log-rank: $P < 0.001$. Both biomarkers held strong independent prognostic value in multivariable cox regression analysis when incorporated individually: $TnT > 50\text{ng/L}$: HR = 3.0 ($P < 0.001$), NT-proBNP $>$ age specific cut-points: HR = 2.8 ($P < 0.001$). Both biomarkers maintained independent highly significant predictive value when they were incorporated in the same cox regression model: $TnT > 50\text{ng/L}$: HR = 2.3 ($P = 0.003$); NT-proBNP $>$ age specific cut-points: HR = 2.2 ($P = 0.004$)

Conclusion: Patients with a suspected AMI and elevated values of both prehospital TnT and prehospital NT-proBNP have a poor prognosis. The combined measurement of TnT and NT-proBNP, performed in the ambulance, may be used to identify high-risk patients even before hospital arrival.

P849

Non-ST-elevation acute coronary syndromes and in-hospital mortality - Score GRACE vs real mortality

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Introduction: The Non-ST-Elevation Acute Coronary Syndromes (NSTEMI-ACS) comprise a heterogeneous group of patients with different characteristics and different prognosis. The GRACE score was created to predict the risk of in-hospital mortality in patients hospitalized for NSTEMI-ACS.

Purpose: Compare the in-hospital mortality of patients with NSTEMI-ACS a cardiology department with expected mortality by GRACE score.

Methods: It was performed a retrospective study encompassing all patients admitted by NSTEMI-ACS a

cardiology department of 1 October 2010 to 31 August 2014. Embedded variables in GRACE score and in-hospital mortality were evaluated by univariate and multivariate analysis comparing the in-hospital mortality rate expected by GRACE score with that verified in the population in study. For statistical analysis was used the SPSS 20.0.

Results: In study period were admitted 2818 patients with acute coronary syndrome, 1566 with NSTEMI-ACS (56%). In group of NSTEMI-ACS patients 71,8% were male with an average age of 67 years and an left ventricle ejection fraction average of 58%. Evaluating the vascular risk factors: 25,3% were smokers, 73,8% had arterial hypertension, 32,2% had diabetes mellitus, 65,6% had dyslipidemia and 7,8% had familiar history of coronary artery disease. 93,4% of patients with NSTEMI-ACS were admitted with acute myocardial infarction and the remaining for unstable angina. 66% of patients were submitted to invasive strategy with coronary angiography.

In our population: 414 patients (26,5%) had GRACE score 1-108 (low risk) with in-hospital mortality rate of 0,0% (expected $< 1\%$); 511 patients (32,7%) had GRACE score 109-139 (intermediate risk) with in-hospital mortality rate of 0,6% (expected of 1-3%); 640 patients (40,9%) had score GRACE > 140 (high risk) with a in-hospital mortality rate of 5,3% (expected $> 3\%$).

It was found that increase of GRACE score was associated with an increase in in-hospital mortality ($p < 0.01$). The in-hospital mortality rate in the population in study was 2,4% when the expected rate by GRACE score was 3,24% ($p = 0.01$).

Conclusions: In the group of patients with NSTEMI-ACS:

- 1 - In-hospital mortality rate expected by GRACE score for the population in study was 3,24%.
- 2 - Increase of the GRACE score was associated with an increase in in-hospital mortality.
- 3 - In-hospital mortality rate verified in the study population was lower than expected by GRACE score (2,4% vs 3,24%).
- 4 - In-hospital mortality rate expected by GRACE score suited to the high risk and low risk patients, but the expected mortality rate was higher than the real mortality in the intermediate risk group.
- 5 - The in-hospital mortality rate expected by GRACE score probably do not portray the risk of death in patients with intermediate risk score.

Secondary prevention

P850

Survival of acute myocardial infarction patients under optimal medical therapy: our experience

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Background: Secondary prevention, including optimal medical therapy, has a major impact on long-term outcomes in acute myocardial infarction (AMI). Lipid-lowering treatment, beta-blocker (BB) and angiotensin (AT) antagonists have been shown to improve prognosis in these patients.

Purpose: We aimed to describe and analyze survival of a population of AMI patients regarding optimal medical therapy used.

Methods: Between January 2014 and July 2014, 276 AMI patients admitted in a coronary unit were retrospectively enrolled and followed up for a median 20 months [interquartile range (IQR) 17-21]. Clinical data, including initial medical therapy, as well as clinical outcomes (combined endpoint of all-cause death and AMI) were collected. Kaplan-Meier survival analysis was used to estimate 1- and 2-year survival.

Results: The mean age was 64±12 years and 75.4% were male. About thirty percent of patients (27.3%, n= 66) had had a previous AMI and 17.8% (n= 49) had been submitted to a previous revascularization procedure. About forty percent of patients (39.8%) were previously medicated with statins, 23.2% with BB and 27.5% with AT antagonists. There was no difference in total cholesterol levels between patients previously taking statins and patients not taking statins (158.1 ± 36.3 mg.dL⁻¹ vs 168.2 ± 47.8 mg.dL⁻¹, p= 0.17). Also, there was no difference in left ventricular ejection fraction values between patients taking BB (49.3 ± 1.7% vs 51.9 ± 1.1%, p = 0.17) or ATA (51.8±11.7% vs 50.5±1.2%, p=0.52) and those not taking any BB. At discharge, 60.5% of patients were taking AT antagonists, 72.1% BB and 82% statins. Survival rates at 1 and 2 years were 94.6% and 93.2% for patients taking angiotensin-converting enzyme inhibitors (ACEIs) and 94.4% and 83.9% for those taking angiotensin II receptor blockers (ARBs), with no statistically significant difference (Log rank p=0.3). Concerning BB use, survival rates at 1 and 2 years were 93.7% and 89.6% for patients taking carvedilol. Regarding atorvastatin dose, survival rates at 1 and 2 years were 90.0% and 72.0% for those taking 20mg and 93.9% and 89.6% for those taking 40mg, with no statistically significant difference (Log rank p=0.18).

Conclusion: At discharge, the majority of patients were taking a BB, an AT antagonist and a statin. Survival did not differ among AT antagonist classes or statin doses.

P851

Successful lifestyle changes: influence of educational level

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Background and purpose: A successful cardiac rehabilitation program relies on a multidisciplinary approach. The pivotal goal is to achieve major lifestyle changes. Our study aimed to assess the influence of years of education on adequate cardiovascular risk factors (CVRF) control.

Methods: We analysed data from a registry of 433 consecutive patients enrolled in a cardiac rehabilitation program after an acute coronary syndrome, between January 2009 and December 2015. Sociodemographic and clinical information was prospectively collected. Patients were divided in three groups according to their educational level: less than 4 years of education, 5-9 years and more than 10 years of education. Patients were assessed at baseline and after completing cardiac rehabilitation.

Results: Participants were mostly male (85.2%) with mean age of 54.5±9.7 years old. Regarding CVRF at program entry: 63.4% were dyslipidemic, 45.7% hypertensive, 19.3% diabetic, 18.2% obese and more than half were active smokers (54.9%). The most frequent diagnosis at admission was ST segment elevation myocardial infarction (STEMI), present in 51% of the cases, followed by non-STEMI in 37.1% and unstable angina in 11.8%. The majority of the patients were submitted to percutaneous coronary intervention (84%); coronary artery bypass grafting (CABG) was performed in 4.6% of the cases. Regarding educational level, 28.6% had less than 4 years of education, 35.8% had between 5-9 years and 35.6% had more than 10 years of education. We found no differences between educational levels regarding gender, but lower education was associated with older age (p<0,001) and diabetes (29% vs 19.5% vs 11%, p=0,001). The middle education level was the group with the higher proportion of smokers (p=0.006). The other risk factors were not significantly different between the three groups. At the end of the program, the proportion of patients that achieved successful control of each risk factor was not significantly different across distinct educational levels (p>0.05).

Conclusion: Our study showed that the educational degree is not a determinant factor in the achievement of cardiovascular risk factors control. Moreover, the importance of clinical investigation in this field cannot be underestimated in order to improve the success of cardiac rehabilitation programs.

P852

Use and misuse of statins in patients after an acute coronary syndrome (ACS) data from a large community setting of 2,989,512 subjects of the Italian National Health Service (NHS)

The analysis was partially supported by Sanofi

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Background/Introduction: In several controlled trials and overviews, statin use in patients after an ACS has been shown to substantially improve patients' outcomes. However, gaps in evidence may exist on the safety and effectiveness of drugs in the real world practice where drugs may be often underused or prescribed in inappropriate dosages. Further, adherence to treatments can be suboptimal if compared with their use in controlled trials. Therefore, the evaluation in a real-world setting of the prescription rate, dosages, and adherence to statin treatment after an ACS deserves to be explored.

Purpose: To assess in a community setting how patients discharged alive after an ACS

are treated with statins. Specifically, the rate of prescription, the dosages, and 3-year prescription continuity have been evaluated.

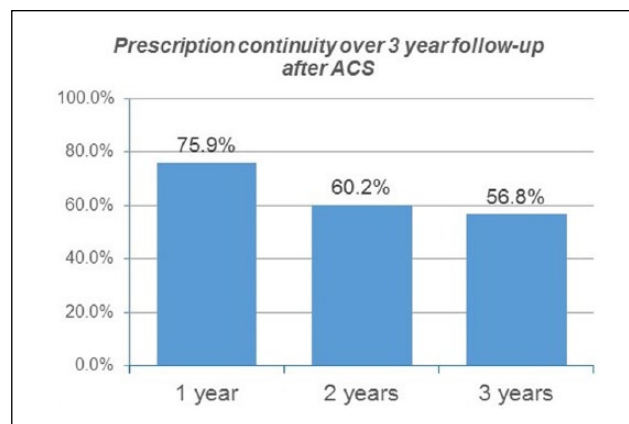
Methods: From the ARNO Observatory, we carried out a record linkage analysis of discharge records for ACSs (as a primary diagnosis) and prescription databases, which included 2,989,512 subjects of 7 Local Health Authorities from Northern to Southern Italy. The accrual period lasted from January 1 to December 31, 2011. Prescription patterns were analyzed over 1 year before and 3 years after the accrual period to identify the clinical events occurring in the study population.

Prescription continuity to statin therapy was defined as a prescription of an amount of statins during the whole year of follow-up consistent with a daily treatment for at least 300 out of 365 days.

Results: Of the 2,989,512 subjects, 6,226 (2.1%) were hospitalized for ACS in year 2011. Female gender accounted for 35.5% of the cases. Mean age was 71±13 (68±13 in males, 77±12 in females). History of diabetes, hypertension, COPD and depression was reported respectively in 30.8, 71.4, 9.5 and 14.6% of the cases.

Of the patients discharged alive, 69.9% received a statin treatment at the time of discharge (69.1% in patients with diabetes). Atorvastatin, simvastatin and rosuvastatin accounted for more than 95% of the total statin prescriptions. High dosages of statins were used in 71.1% of cases at discharge.

After 1, 2 and 3 years of follow-up, prescription continuity of statin treatment was observed respectively in 75.9, 60.2 and 56.8% of patients (figure). Conclusion(s). In a large Italian community setting, the rate of prescription of statins seems to be suboptimal. The dosages of prescribed statins suggest that the recommendation to use intensive statin treatment was followed in about 2/3 of the patients. Further,



the continuity of treatment over time is confirmed to be at least suboptimal. These findings show that there is still a gap between evidence-based recommendations and what actually happens in routine clinical practice.

P853

Clinical efficiency of the outpatient stage of physical rehabilitation in patients with acute coronary syndrome without ST segment elevation with percutaneous coronary intervention on a symptom-related

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Relevance: At the present time there are no clinical guidelines of Russian authors on how to carry out the outpatient stage of physical rehabilitation in patients with acute coronary syndrome without ST segment elevation with percutaneous coronary intervention on a symptom-related artery.

Objective: To assess clinical efficiency of the outpatient stage of physical rehabilitation in patients with acute coronary syndrome without ST segment elevation with percutaneous coronary intervention on a symptom-related artery by means of load testing.

Materials and methods: The prospective study included 35 patients (aged 57,9 ± 9,7; 80% male, 20% female), who suffered from acute coronary syndrome with percutaneous coronary intervention on a symptom-related artery with uncomplicated postoperative period. In the course of 3 months the patients participated in a physical rehabilitation programme at a consultative and diagnostic center for rehabilitation. The programme included a training performed 3 times a week. It consisted of 15 minutes of warming up (gymnastics) and veloergometry and / or treadmill training as follows: 3 minutes — 25% of the peak heart rate; 30 minutes — 50-60% of the peak heart rate; 5 minutes — 30% of the peak heart rate.

All the patients before and after the programme of physical rehabilitation underwent load testing (treadmill test, standard Bruce protocol) with the following parameters assessed: heart rate and artery blood pressure at rest, with load and during recovery; load time; time of heart rate and artery blood pressure recovery; exercise capacity (MET).

Results: After the course of rehabilitation a significant decrease in the average heart rate at rest (from $72,9 \pm 10,3$ bpm to $67,9 \pm 6,1$ bpm; $P = 0.04$) was observed. A downward trend was also revealed for the average recovery time of heart rate (from 4.1 ± 1.2 to $3,8 \pm 1$ min, $P = 0.03$) and artery blood pressure (from 4.2 ± 1.1 to $3,8 \pm 1$ min, $P = 0.013$) after load testing. A significant increase in exercise tolerance (from $4,0 \pm 1,5$ to $5,0 \pm 1,7$ MET; $P < 0.001$) and the probe load time (from $5,0 \pm 1,9$ to $6,7 \pm 2$ min; $P \leq 0.001$) was registered. No significant difference between the average blood pressure values before, during and after the training in the patients before and after the course of physical rehabilitation was revealed.

Conclusion: The described methods of physical rehabilitation in patients with acute coronary syndrome with percutaneous coronary intervention on a symptom-related artery resulted in a substantial increase in exercise tolerance: load time increase, MET rise, the average recovery time reduction of heart rate and blood pressure. No statistically relevant influence of the programme on the average blood pressure values was revealed.

Special population: diabetes, elderly and renal failure

P854

What are the predictors of adverse cardiovascular events after renal transplant?

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Background: Pre-operative cardiac evaluation in kidney transplant should identify existing cardiac conditions amenable to risk modification. The purpose of the present investigation was to explore the best method and benefit of cardiac evaluation of asymptomatic renal transplant patients.

Methods: We reviewed retrospectively the medical records of 226 consecutive patients who underwent renal transplantation from January 2009 to December 2010. We excluded 10 patients who had history of coronary artery disease (CAD). Demographic findings, clinical variables and laboratory results including invasive and noninvasive cardiologic tests were recorded. Electrocardiogram

(ECG) was considered abnormal in the presence of left ventricular (LV) hypertrophy, left bundle branch block or ST changes. Abnormal echocardiogram was defined as left atrial diameter > 50 mm, LV hypertrophy/dilatation, mitral/aortic calcification, moderate/severe valvular disease or wall motion abnormality. Post-transplantation clinical notes were examined for MACE (all-cause death, stroke, acute coronary syndrome, surgical or percutaneous revascularization and admission for heart failure). Kaplan-Meier survival curve was performed. The median follow-up was 2035 (1820 - 2286) days.

Results: Median age was of 57 (52 - 62) years ($n=216$). The median duration of dialysis was 47 (31 - 77) months. According to American Society of Transplantation and the European Renal Association - European Dialyses and Transplant Association, 187 patients (87.4%) were considered as intermediate to high risk probability of CAD. The majority of patients were transplanted with a deceased donor kidney (98.6%). The percentage of patients treated with antiplatelet drug was 54.9%, beta blocker 26.4% and statin 24.4%. Following transplantation, 25.5% patients experienced MACE.

Abnormal ECG (22.1%) was associated with higher risk of events (HR=2.40, 95% CI 1.23-4.27, $p=0.008$) as well as abnormal echocardiogram (65.8%) (HR=2.06, 95% CI 1.00-4.30, $p = 0.05$).

Abnormal ECG and/or echocardiogram (72%) was predictor of MACE (HR=2.55, 95% CI 1.08-6.05, $p=0.03$).

Conclusions: Preoperative electrocardiogram and echocardiography identify patients at higher risk for MACE. This approach might be useful to identify patients requiring more aggressive long-term treatment of modifiable vascular risk factors.

P855

Who is the population the patients with end-stage renal disease undergoing renal transplantation?

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Background: The inextricable link between the heart and the kidneys predestines that significant cardiovascular disease (CVD) ensues in the face of end-stage renal disease (ESRD). Despite the enormous cardiovascular burden that ESRD poses, few randomized control studies have included these patients. In this study we sought to evaluate the prevalence and the types of CVD in patients with ESRD undergoing renal transplantation.

Methods: The data of 226 consecutive patients who underwent renal transplantation from January 2009 to December 2010 were evaluated. Data regarding

demographic, clinical, blood test and echocardiographic parameters as well as myocardial perfusion scintigraphy and cardiac angiogram results were collected. Continuous data are presented as the mean \pm standard deviation (SD) or median (interquartile range), as appropriate. Categorical data are given as group percentages.

Results: The median age of patients was 57 (52 – 61) years, of whom 65.5% were male. The prevalence of major atherosclerotic risk factors was as follows: arterial hypertension 90.9%, dyslipidemia 68.3%, diabetes mellitus 32.1% and smoking 21.3%. Heart failure occurred in 4.4%, 5.5% had a history of peripheral arterial disease, 8.8% had prior stroke and 4.9% patients had previous myocardial infarction. Regarding to medication, the percentage of patients treated with antiplatelet drug was 56.5%, angiotensin-converting enzyme inhibitors 28.1%, beta blocker 28.6%, and statin 26.1%. According to American Society of Transplantation and the European Renal Association – European Dialyses and Transplant Association, 198 patients (87.6%) were considered as intermediate to high risk probability of coronary artery disease (CAD).

Electrocardiogram was performed on all patients and myocardial perfusion scintigraphy on 136 (60.2%). CAD was identified in 15 of 34 patients (44.1%) who had undergone angiography. Seven patients underwent percutaneous coronary intervention, and coronary bypass surgery was performed on four cases prior to renal transplantation. On echocardiography examination median ejection fraction was 64.5% (60-68%). Wall motion abnormality was detected in 10 patients (5.2%), left ventricular hypertrophy in 81 patients (41.8%) and mitral annulus calcification in 34 patients (16.8%). The most prevalent valvular disease was mitral regurgitation (35.8%).

Conclusions: The findings of this study indicate that CVD and atherosclerotic risk factors are common in patients with ESRD undergoing renal transplantation. As a result risk stratification is a difficult task, prospective randomized, controlled trials with long-term follow-up are needed to reach more concrete conclusions about the impact of preoperative cardiovascular disease and the best strategy able to minimize cardiovascular events in these patients.

P856

Type 2 diabetes mellitus and five-year survival for acute decompensated heart failure patients

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Background: type 2 diabetes mellitus (T2DM) is a known risk factor for hospital mortality of acute decompensated

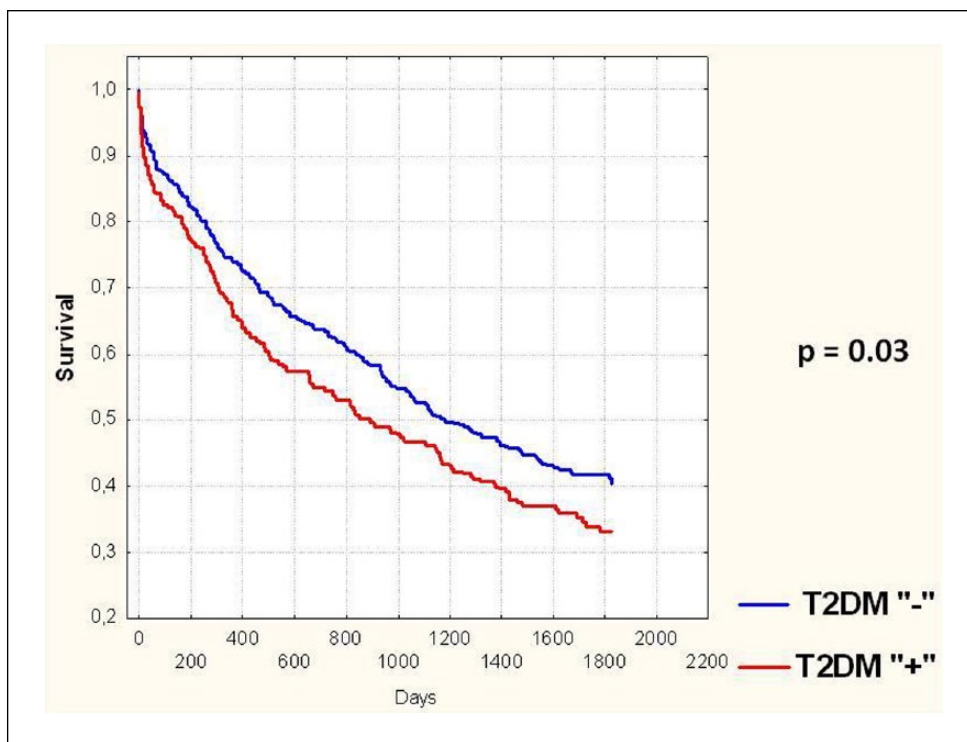
heart failure (ADHF). The impact of T2DM on the further course of the disease after discharge requires study.

Purpose: to evaluate the impact of T2DM on five-year survival for ADHF patients patients.

Material: the study of the hospital register of ADHF was performed. The register contains 735 consecutively admitted ADHF patients for 2010-2011. Median follow-up was 1790 days.

Results: 254 patients (35% of the cohort) suffered from T2DM. Diabetic patients' average age was 70 ± 9 years, nondiabetic ADHF patients age was 68 ± 12 ($p = 0.04$, Student's t-test). Women accounted for 66% of the T2DM patients vs. 45% of nondiabetic ADHF patients ($p < 0.001$ Pearson Chi-square). In the T2DM group atrial fibrillation was less common (37% vs. 51%, $p < 0.001$, Pearson Chi-square), chronic obstructive pulmonary disease was also less common (23% vs. 34%, $p = 0.003$, Pearson Chi-square). T2DM patients were characterized by more frequent hypertension (89% vs 79%, $p < 0.001$, Pearson Chi-square) and obesity (50% vs. 27%, $p < 0.001$, Pearson Chi-square). The initial creatinine level was higher in the T2DM group (114 ± 67 vs. 102 ± 51 mmol / l, $p = 0.009$, Student's t-test). Insulin was administered to 34% of diabetic patients. The other T2DM patients received oral hypoglycemic therapy. Hospital ADHF mortality rate in T2DM group was 10.2% (26 patients) versus 6.0% (29 patients), $p = 0.04$ (Pearson Chi-square). Multivariate analysis was performed: the presence of type 2 diabetes increased the risk of death during the index hospitalization due to ADHF by 2.0 times (OR 2.0, 95% CI 1.1 – 3.6, $p = 0.03$, logistic regression). Re-hospitalization due to ADHF over the next 18 months was higher in T2DM patients: 22% (51 cases) vs. 16% (74 cases), $p = 0.06$ (Pearson Chi-square). 18-month T2DM patients survival rate was 0.69 vs. 0.77 ($p = 0.03$, Kaplan-Meier). The presence of T2DM increased the risk of death within 18 months 1.4-fold ($p = 0.04$, Cox regression). 165 (65%) T2DM patients died over 5 years vs. 278 (58%) nondiabetic patients, the survival curves differed significantly ($p = 0.03$, Kaplan-Meier). In the Cox model, the presence of type 2 diabetes increased the risk of death within 5 years 1.2-fold ($p = 0.03$). The study of the causes of death (total 443 cases) revealed that in T2DM group 52% of outcomes happened due to progression of heart failure. In the absence of diabetes, only 41% of outcomes related to the progression of heart failure ($p = 0.03$, Pearson Chi-square).

Conclusions: diabetes can be considered the most common comorbidity in acute decompensated heart failure patients (up to 35% of cases). Diabetes increased demand of re-hospitalization due to heart failure over 18 months. T2DM is an independent risk factor for death during the index hospitalization and over the next 18 months and 5 years (increasing the risk of death 1.2 - 2.0-fold).



Survival for ADHF patients

P857

Is grace index a good predictor of mortality in old population with acute coronary syndrome?

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Background: GRACE index is a validated prognostic predictor in Acute Coronary Syndrome (ACS). However, the elderly population has some special features that can make this index not suitable. This population has several comorbidities to be aware of, so other scores, as Charlson index, may be used for its characterization. The aim of this study is to define GRACE index predictive power in a cohort of old patients with high-risk ACS.

Methods and Results: 125 consecutive³ 75 years patients admitted due to type 1 Myocardial Infarction were analyzed between October '13 and April'14. Patients in cardiogenic shock or with severe dementia were excluded. GRACE index was performed at admission. Charlson score was also performed at admission to evaluate comorbidity. 30-days total mortality rate was assessed. GRACE index was

Table I.

| | EXITUS (n=8) | NON EXITUS (n=117) | p |
|---|---------------|--------------------|------|
| Age (years) | 83.88 ± 6.33 | 82.50 ± 4.76 | 0,13 |
| Women (%) | 25 | 37.6 | 0.47 |
| NSTEMI (%) | 37.5 | 65.8 | 0.11 |
| Culprit vessel revascularization at admission (%) | 57.1 | 75 | 0.29 |
| Complete revascularization (%) | 0 | 41.9 | 0.02 |
| GRACE index (mean±SD) | 168.63 ± 21.1 | 145,22 ± 21 | 0.84 |
| Charlson Score (mean±SD) | 10.46 ± 3.18 | 7.00 ± 1.78 | 0.01 |

not significant correlated to mortality (p=0.85), whereas Charlson score was (p=0.01) (Table)

Conclusions: In elderly population, comorbidity has a greater impact than in general population. GRACE index seems not as accurate in this age subgroup. It might be interesting consider comorbidity for prognostic stratification.

P858

Frailty and risk of in-hospital major bleeding in elderly patients with acute coronary syndrome

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Background: In patients with acute coronary syndrome (ACS), bleeding is an independent marker of short-term cardiovascular adverse events, and the impact prognosis is even worse in elderly people (>70 years).

Purpose: We analyze whether frailty increases the risk of presenting a hemorrhagic event in elderly patients with ACS

Methods: Prospective cohort registry included 79 patients aged >70 years (30 women, age 78±6 years) admitted for ACS. Frailty of the patients was evaluated by the SHARE-FI scale. Our primary objective was to describe the association between frailty and major bleeding (hemoglobin drop>2gr/dl or transfusion requirements)

Results: Frail patients were older (79±7 vs 77±6 years, p=0.06), with worse renal function (estimated glomerular filtration rate, MDRD, 64.5±27.9 vs 76.7±22ml/min, p=0.034), higher medical comorbidities (Charlson 6.6±2.1 vs 5.6±2.1, p=0.04), more treatment with anticoagulants (22.9 vs 2.6%, p=0.01) and a higher score on the CRUSADE scale at admission (45.2±13 vs 32.4±12, p=0.001). There were no significant differences in revascularization rates (57.9 vs 67.5%, p=0.48) and prescription of dual antiplatelet therapy (clopidogrel 69.7 vs 68.6%, p=1; Ticagrelor 21.2 vs 20%, p=1; Prasugrel 3 vs 5.7%, p=1). Frailty was associated with increased incidence of major bleeding (20.5 vs 5.0% p=0.04) compared to non-frailty status. In the multivariate analysis, frailty predicted bleeding events regardless of CRUSADE scale and treatment with anticoagulants (HR=4.9, p=0.05, CI 1.0-25.5).

Conclusions: Patients >70 years admitted for ACS, biological age assessed by frailty, predicts major bleeding regardless of CRUSADE scale and treatment with anticoagulants. Frailty can play an important role in bleeding risk stratification.

P859

Percutaneous coronary intervention for nonagenarian patients with ST-segment elevation myocardial infarction: long-term follow-up experience of a single center

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Background: Percutaneous coronary intervention (PCI) for management of an ST elevation myocardial infarction (STEMI) is usually considered a high risk procedure in the elderly population. However, few data exists about the efficacy and outcomes after primary PCI in patients aged over 90 years.

Purpose: The aim of the present study was to evaluate the in-hospital and long-term outcomes of primary PCI in nonagenarian STEMI patients.

Methods: We retrospectively evaluated the clinical indices and outcomes of 36 consecutive nonagenarian patients admitted in our hospital with STEMI and treated with PCI between January 2003 and December 2015. Mean follow-up period was 34 months (range 10-75).

Results: All patients received aspirin and 300 mg clopidogrel loading dose. Mean age was 92.3 years (range 90-98). Fifty-three percent were women. Baseline characteristic were as follows: 22.2% of dyslipidemia, 16.7% diabetes and 55.6% hypertension. All patients presented a good mental status. The radial approach was performed in 25% of the cases. The mean number of vessels treated was 1.28 with an average of 1.08 stents implanted per patient (90% were BMS). In six patients was performed PCI without stent apposition. Glycoprotein IIb/IIIa inhibitors and intra-aortic balloon pump were used in one patient. TIMI flow 3 post-PCI was achieved in 91.6% of cases. One patient developed a pos PCI stroke and no cases of major bleeding were noticed. The overall in-hospital mortality rate was 33.3%. Cumulative mortality at one and three years was 4.2% and 20.8% respectively. Cardiac hospital readmissions occurred in 16.7% of surviving patients.

Conclusions: Our 'real world' data suggest that primary PCI in a nonagenarian population can be performed with an acceptable bleeding risk. Despite significant in-hospital mortality, one and 3-year survival rate was acceptable. The invasive strategy in a selected very elderly population can be offered.

P860

Independent predictors of 1-year outcome in young adults with acute coronary syndrome

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Background: Acute coronary syndrome (ACS) has a higher incidence and worse prognosis in the older population.

Table 1. Table 1

| | HR | CI | p-value |
|---------------------------------------|-------|--------------|---------|
| Arterial hypertension | 0.341 | 0.145-0.806 | 0.014 |
| Absence of classical risk factors | 4.214 | 1.294-13.722 | 0.017 |
| Triglycerides | 0.995 | 0.990-0.999 | 0.027 |
| ST-segment elevation ACS | 7.277 | 1.693-31.284 | 0.008 |
| Left ventricular systolic dysfunction | 4.395 | 1.343-14.376 | 0.014 |
| Inpatient revascularization | 0.405 | 0.179-0.195 | 0.030 |

However, young adults may also an adverse outcome and clinical data in this population is sparse.

Purpose: To identify predictors of mortality or cardiovascular readmission in young adults with ACS at 1-year follow up.

Methods: Unicentric prospective study that included 3395 consecutive patients (pts) with ACS in a hospital cardiology centre (2005-2015). Demographic, clinical, angiographic and prognostic data were collected. Composite endpoint was defined as cardiovascular readmission or all-cause mortality at 1-year follow up. Pts were divided into two age categories: < 45 and ≥ 45 years old.

Results: Young pts represented 11.8% of the studied population and 85.5% were male (vs 69.1% in the older group; p=0.000). In younger group, at 1-year follow up, mortality was 3.6% and composite endpoint of cardiovascular readmission or all-cause mortality was 20.8%, which were significantly lower when comparing to their older counterparts (10.9%, p<0.001; and 32.3%, p<0.001; respectively). Predictors of composite endpoint in younger pts are represented in table 1. After adjustment, using multivariate analysis, arterial hypertension (HR 0.227; CI 0.068-0.757; p=0.016), ST-segment elevation ACS (HR 19.937, CI 2.975-133.6; p=0.002), in patient revascularization therapy (HR 0.079, CI 0.018-0.346; p=0.001) and levels of triglycerides (HR 0.994; CI 0.988-1.000; p=0.047) remained independent predictors of cardiovascular readmission or all-cause mortality at 1-year follow up.

Conclusion: Younger pts had a better prognosis at 1-year follow up. Independent predictors of cardiovascular readmission and all-cause mortality in this population were identified.

P861

Risk factors of Myocardial Infarction in young patients: a multivariate analysis

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Background: Myocardial infarction (MI) is a major cause of death around the world, more related with older rather than young people. Probably, the mechanism of disease differ between these two groups of patients. Although major risk factors for MI are well-established in medical literature, would they have the same impact in young patients?

Purpose: The authors wanted to compare young (≤45 years old) versus elder (>45 years old) patients with MI and analyse statistically relevant information about risk factors.

Methods: Observational, retrospective study, analysing clinical data from 2530 patients entering the Cath Lab for coronary intervention. Only patients with non ST segment elevation myocardial infarction (NSTEMI), or ST segment elevation myocardial infarction (STEMI) were selected. Two groups were formed, one composed by young patients and the other by older patients. A logistic regression model was used to identify possible correlations between young patients and risk factors such as gender, body mass index (BMI), heart rate, hypertension, systolic pressure, diastolic pressure, diabetes, smoking habits and dyslipidaemia. All tests were two sided and P<0.05 was regarded significant.

Results: From 2.530 patients studied, 1.721 (68%) are male, ages between 20 and 96 years old (mean 67 years, ±12.8).

Young patient group was composed by 156 individuals (mean age 40 ± 4.6 years, 82% males). Older patient group was composed by 2374 individuals (mean age 68.9 ± 11.1 years old, 67% males). Comparing the 2 groups, we identified statistically significant correlation between young patients and male gender (82.7% vs. 67.1%, p<0.001), higher diastolic pressure (87.1 ± 14.9 vs. 79.9 ± 15.5 mmHg, p<0.001) and smoking habits (65.4% vs. 17.7%, p<0.001).

Conclusion: In conclusion, it is likely that male gender, higher diastolic pressure and smoking habits, are more present in young patients with MI rather than in older patients, and that fact, could reflect bigger impact of these factors in the pathogenesis of MI in young people.

P862

Short-term outcome in elderly patients with ST-elevation myocardial infarction and primary percutaneous coronary intervention

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Purpose: Although octogenarians constitute a fast growing portion of cardiovascular patients treated with Primary

Percutaneous Coronary Intervention (PPCI), few data are available on their short-term outcome afterwards.

Methods: A total of 529 patients (consecutively enrolled) with PPCI indication for ST-Elevation Myocardial Infarction (STEMI) were attended in our Infarct Code Program between January 2015 and January 2016. 113 of them were ≥ 80 years old. We analyzed their clinical and anatomical characteristics and in-hospital mortality comparing the group of <80 years (GR1) with the group of ≥ 80 years (GR2) old patients.

Results: The mean age of GR2 was 84 ± 5 (8% ≥ 90 years). 64.8% of the GR2 had ≥ 2 vessels disease (40,7% GR1, $p 0,000$) and in 51.8% of them LVEF was $<50\%$ (32,1% in GR1, $p 0,001$). They presented 3.5% of mayor complications during the procedure (0,7% in GR1, $p 0,04$). Procedural success was achieved in 90,1% of GR2 vs 95,3% of GR1 ($p 0,039$), with 54.4% of complete revascularization in GR2 (78,8% in GR1, $p 0,000$). They had significantly longer global hospital stay (10.2 ± 6.2 vs GR1 8.7 ± 4.7 days ($p 0,007$)). The intensive care unit stay was 3.1 ± 2 for GR2 vs 2.8 ± 1.9 days for GR1 ($p 0,245$). The GR2 had greater proportion of women (33 vs 21%, $p 0,004$), anterior infarction (54 vs 39,8%, $p 0,005$) and hemorrhagic complications (8,7 vs 1,5%, $p 0,001$) with trend toward greater percentage of mechanical ventilation (14.5 vs 9.1, $p 0,07$) and stroke (2.9 vs 0.5, $p 0,06$) during their hospitalization. GR2 patients had lower prescription of beta-blockers (82 vs 65,9%, $p 0,001$), statins (90,6 vs 79,5%, $p 0,004$) and angiotensin-converting-enzyme (ACE) inhibitors (53,9 vs 43,2%, $p 0,045$) at discharge. In 73.1% of GR2 patients the antiplatelet therapy chosen was clopidogrel with aspirin (24% GR1, $p 0,000$). In-hospital mortality for GR2 was 21.6% (6.2% for GR1, $p 0,000$) being the age an independent predictor of this outcome. Killip class ≥ 3 at admission was present in 19.5% of GR2, with in-hospital mortality of 52.2% in this group. Mean time from symptoms onset to PPCI or from the first medical contact (FMC) to PPCI were similar between groups. Mean time between Infarct Code activation and arrival to the cath lab was longer in GR2 (78.3 vs 56.7 minutes, $p 0,03$) as also was the time between arrival and the beginning of the procedure (GR1 29,2 vs GR2 32,5 minutes, $p 0,09$). The door-balloon time was <120 minutes in 56.9% of GR2 (61,6% GR1, $p 0,304$).

Conclusions: Our sample of ≥ 80 years old patients have a high risk profile with elevated in-hospital mortality. These data indicate that in this group of patients is extremely necessary to individualize the 'risks and probabilities'.

Valvular heart disease

P863

Is basal left ventricular ejection time able to predict the severity of aortic stenosis in patients with depressed ejection fraction?

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Background and Aim: Noninvasive techniques have become well established in the study of cardiovascular disease as valvular aortic disease. With these methods valuable anatomic and physiologic data may be obtained without risk or discomfort to the patient. We aimed to compare the basal left ventricular ejection time (LVET) between patients with moderate aortic stenosis and depressed ejection fraction versus patients with severe aortic stenosis and depressed ejection fraction that performed a dobutamine stress echocardiography (DSE).

Methods: We conducted a retrospective observational study that included patients with moderate to severe aortic stenosis with depressed ejection fraction that performed a DSE between September/2011 and November/2014. According to the results of the DSE patients were classified between 1) severe aortic stenosis with depressed ejection fraction and 2) moderate aortic stenosis with depressed ejection fraction. We used a Mann Whitney U test to compare the following echocardiographical variables collected at basal time: LVET, aortic flow acceleration time and ratio of aortic flow acceleration time to ejection time. A receiver operating characteristics (ROC) curve was used to obtain the best cut-off value for the aforementioned variables if they were statistically significant. Then, we transformed those variables into categorical variables with 2 groups and conducted a binary logistic regression analysis to test the strength of prediction of each variable to assess the severity of the aortic valve stenosis.

Results: We retrospectively analyzed 30 patients (24 (80,0%) males) with moderate or severe aortic stenosis with depressed ejection fraction that performed a DSE. 22 (73,3%) patients had good quality data to determine basal left ventricle ejection time. Medians of LVET were significantly different between patients with definite severe aortic stenosis (median 292 IQR 217 – 317) and patients with moderate aortic stenosis (median 309 IQR 300 - 348) (Mann Whitney U 117,500, $p=0,047$). The best cut-off value (300 msec) had an area under the curve (AUC) of 0,734 ($p=0,048$) and a sensitivity of 63% and a specificity of 80%. In a binary logistic regression model, a basal LVET below 300 msec is associated with a 6 times increase in the probability of being a definite severe aortic stenosis (OR 6,67 95%CI 1,04 – 42,43). Regarding to basal aortic flow acceleration time and basal ratio of aortic flow acceleration time to ejection time no statistically significant difference was found between the groups (Mann Whitney U 129,5 and $p=0,499$ and Mann Whitney U42 and $p=0,095$, respectively).

Conclusion: Even prior to the performance of DSE, a LVET below 300 msec is a predictor of severe aortic stenosis in patients with aortic stenosis and depressed ejection fraction.

P864

Dobutamine stress echocardiography predicts mortality in aortic stenosis

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Background and Aim: Several echocardiographic markers - left ventricle concentric remodeling, lower stroke volume, elevated LV filling pressures and mildly elevated pulmonary artery pressure - have been identified as able to predict poor survival in aortic stenosis. We aimed to evaluate the impact of left ventricle end systolic and end diastolic volumes measured at peak stress during dobutamine stress echocardiography (DSE) in all cause mortality of patients with moderate to severe aortic stenosis.

Methods: We conducted a retrospective observational study that included all patients with moderate to severe aortic stenosis that performed a DSE from September/2011 through November/2014. Data regarding DSE, invasive hemodynamics, demographic, clinical and blood tests parameters were collected in all patients. The primary endpoint was all cause mortality. We used a t-test to compare peak left ventricle volumes at end systole and end diastole between patients that died during follow up and patients that did not.

Results: We analyzed 36 patients (29 males, mean age 72 years old) with moderate or severe aortic stenosis that performed a DSE, to assess the severity of disease. A low dose dobutamine stress protocol was performed. 35 patients (97,2%) had good quality data to calculate peak end systole and end diastolic left ventricle volumes. 6 patients (17%) died at follow up. Means of peak end-systolic left ventricle volume were significantly different between patients that died at follow up (mean 116 mL, sd 43,9) and patients that did not die (mean 74 mL, sd 41,8). Means of peak end-diastolic left ventricle volume were also significantly different between patients that died (mean 182 mL, sd 45,7) and patients that survived (mean 131 mL, sd 46,8).

Conclusion: In our cohort of patients with moderate to severe aortic stenosis, left ventricle end systolic and end diastolic volumes measured at peak stress during DSE are predictors of all cause mortality.

P865

The prognostic impact of systolic blood pressure performance on dobutamine stress echocardiography in aortic stenosis

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Introduction: Systolic blood pressure (SBP) is a known risk marker in several cardiovascular diseases. There is scarce literature concerning the prognostic value of peak SBP assessed during dobutamine stress echocardiography (DSE) in patients with moderate to severe aortic stenosis. Therefore, we aimed to evaluate the impact on all cause mortality of peak SBP assessed by DSE in patients with moderate to severe aortic stenosis (AS).

Methods: We conducted a retrospective observational study that included all patients with moderate to severe AS that performed a DSE between September/2011 and November/2014. Data regarding DSE, invasive hemodynamics, demographic, clinical and analytical parameters were collected in all patients. The primary endpoint was all cause mortality.

Results: Between September/2011 and November/2014, 36 patients (29 males, mean age 72 +9,5 yr) with moderate or severe AS performed a DSE, to assess the severity of disease and/or presence of contractile reserve. 14 (39%) patients had their aortic valve substituted during follow up and only 6 (17%) patients died at follow up. 33 (92%) patients had reliable information regarding peak SBP during DSE. Means of peak SBP were significantly different between patients that died at follow up (peak SBP 107, sd 9,1) and patients that survived (peak SBP 137, sd 31,1) (Mann Whitney U 125,500, p=0,035). Area under the curve (AUC) was 0,775 (p=0,038), yielding moderate discriminate power. We considered the best cut-off point to be 110 mmHg (sensitivity 67 and specificity 78). In a Cox regression model a value of peak SBP lower than 110 mmHg was found to be associated with a lower event free survival (hazard ratio 11,8 (95% CI 1,3 – 107,9) p= 0,029).

Conclusions: Peak SBP assessed during DSE may be used as a prognostic marker in moderate to severe AS.

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Protein c reactive kinetics after transcatheter aortic valve

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Introduction: Transcatheter aortic valve implantation (TAVI) is an established option for high-risk patients with severe aortic stenosis. To date, it is unknown the impact of this intervention in the inflammatory response and its prognosis impact.

We aimed to characterize the kinetics of protein C reactive (PCR) after TAVI and its prognosis impact.

Methods: Retrospective analysis of a prospective single center including 169 consecutive patients submitted to TAVI, the majority through femoral approach (N=114; 67.5%). Daily serum values of PCR measured before and after TAVI were used. The occurrence of a higher PCR, defined as superior to the percentile 75 was correlated with characteristics of the procedure and interventions during hospital stay. The impact of PCR >p75 on the 30 day mortality was evaluated.

Results: On average, the maximum value of PCR was achieved at the third day after TAVI, with a mean value of 15 ± 9 mg/dl and a percentile 75 of 20 mg/dl. The frequency of PCR >p75 was significantly lower on the trans-femoral access (10.5% vs 54.5%, $p < 0.001$) and higher on those who were urgently intervened (30.3% vs 11.4% $p = 0.013$), when a blood transfusion was needed (34.7% vs 17.2% $p = 0.009$) and in those who died during hospital stay (66.7% vs 23.5% $p = 0.016$). The implantation of pacemaker, dialysis weren't more frequent on patients with PCR >p75. 30-days mortality rate was significantly higher on patients PCR >p75 (9.5% vs 0.8%; $p = 0.004$).

Conclusion: Transcatheter aortic valve implantation associates with an elevation of PCR, with a peak value at the third day after implantation. Higher values of this marker correlates with a higher 30-days rate of mortality.

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Maternal and fetal outcomes in pregnant women with a cardiac valve thrombosis

Table 1.

| | Age | Term of pregnancy | Thrombosis location | Thrombosis type | Clinic presentation | Atrial fibrillation | Anticoagulation when thrombosis happen | Treatment | Fetal evolution | Maternal evolution |
|---|-----|--------------------|---------------------|-----------------|--------------------------|---------------------|--|---------------------------|----------------------|----------------------------------|
| 1 | 22 | 12 days postpartum | mitral | Non obstructive | stroke | No | Calciparin | medical | favorable | Another thrombosis episode |
| 2 | 25 | 24 AW (3T) | mitral | Non obstructive | asymptomatic | Yes | Calciparin | medical | favorable | Another thrombosis episode death |
| 3 | 29 | 7 days post partum | mitral | Non obstructive | Inferior member ischemia | Yes | enoxaparin | medical | favorable | favorable |
| 4 | 31 | 37AW (3T) | mitral | Non obstructive | stroke | Yes | enoxaparin | medical | favorable | Favorable |
| 5 | 31 | 10AW (1T) | mitral | obstructive | Pulmonary oedema | No | Exnoxaparin | Medical (surgery refused) | utero fetal death °n | Maternal death |
| 6 | 32 | 32AW (3T) | mitral | Non obstructive | asymtomatic | No | Acenocoumarol | Surgery | favorable | favorable |
| 7 | 37 | 11AW (1T) | mitral | obstructive | Pulmonary oedema | yes | calciparin | Surgery | favorable | Favorable |

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Background: Valve thrombosis and thromboembolism are potentially life-threatening complications. The hypercoagulable state of pregnancy increases the risk of valve thrombus formation among women with mechanical valves.

Materials: We retrospectively included 53 episodes of prosthetic thrombosis in 50 patients, between 1991 and 2015. Among these patients, there were 7 pregnant women.

Results: Cardiac valve thrombosis had occurred at the third trimester in 3 women and at the first trimester in 2 women, and in past partum period in 2 patients. Five episodes were non obstructive thrombosis. Mitral valve was concerned in all cases. Both obstructive episodes resulted in pulmonary oedema. We suggested surgery in these two women, performed in one case and refused in the other case. The evolution was fatal in this patient. We opted for medical treatment in the other women but, we finally conducted surgery in one patient. The evolution was favorable in all these patients. A fetal death occurred in the died mother before her death.

Conclusion: Prosthetic heart valve thrombosis in pregnancy is a life-threatening complication for which management remains controversial. It can occur at any time during pregnancy. Medical treatment could be effective in non-obstructive thrombosis but not in obstructive thrombosis.

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