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Moderated Poster Session 1 - Acute Coronary Syndromes I- Saturday, 03 March 2018 - 10:00 - 11:00

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Comparison of CRUSADE, ACUITY and HAS-BLED scores in predicting major bleeding amongst patients with myocardial infarction in intensive cardiac care unit setting

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Background: Bleeding is the most frequent non-ischaemic complication observed in the management of non-ST-elevated acute coronary syndromes, as well as in other clinical settings such as ST-elevated myocardial infarction, percutaneous coronary intervention or cardiac surgery.

Purpose: Since bleeding is associated with an adverse prognosis in acute coronary syndrome, all efforts should be made to reduce bleeding whenever possible. We, therefore, aimed to assess whether there is any superiority of one bleeding score over the other.

Methods: A retrospective analysis encompassed all patients undergoing blood transfusion procedure in a tertiary hospital in 2013 – 2016. Out of 5960 patients treated with myocardial infarction, 295 (4.9%p) were diagnosed with myocardial infarction and had a blood transfusion procedure. CRUSADE ("Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines"), ACUITY ("Acute Catheterization and Urgent Intervention Triage Strategy") and HAS-BLED ("Hypertension, Abnormal Renal/Liver Function, Stroke, Bleeding History or Predisposition, Labile INR, Elderly, Drugs/Alcohol Concomitantly") bleeding scores were compared.

Results: Blood transfusion was performed in 143 patients due to severe bleeding and in 152 patients blood transfusion was performed because of other reasons. Average scores of the bleeding risk scales did not statistically differ amongst the two patient groups: CRUSADE (50.1 points [50.7 – 52] [95% Confidence Interval]), ACUITY (27.2 points [26.2 – 28.2]), HAS-BLED (1.7 points [1.6 – 1.85]). According to CRUSADE score low bleeding risk (≤30) was determined in 13.2% of patients, intermediate (31-40) – 15.3%, high (>40) – 71.5%; low risk for ACUITY (<10) was determined in 1.7%, intermediate (10-14) – 1.7%, high (>14) – 96.6% of patients, and low risk for HAS-BLED score (<2) was determined in 51.9%, intermediate (2) – 35.6%, high (>2) – 12.5%. Positive correlation between the CRUSADE / ACUITY (rho = 0.59), CRUSADE / HAS-BLED (rho = 0.332), ACUITY / HAS-BLED (rho = 0.228) scores was statistically significant ($p < 0.001$). Based on the ROC curve analysis, the prognostic values of the scales were calculated for predicting major bleeding (CRUSADE (area = 0.466, p = 0.32), ACUITY (area = 0.473, p = 0.424), HAS-BLED (area = 0.514, p = 0.687) and predicting lethal outcomes (CRUSADE (area = 0.578, p = 0.045), ACUITY (area = 0.563, p = 0.106), HAS-BLED (area = 0.502, p = 0.951)).

Conclusions: The CRUSADE and ACUITY scales indicated a higher risk of major bleeding compared to the HAS-BLED scale. Only the CRUSADE scale statistically significantly predicted worse outcomes. Unfortunately, none of the scales could accurately identify the likelihood of major bleeding in patients with myocardial infarction who had undergone blood transfusions.

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Poor adherence to guideline recommendations on blood transfusion in patients with ACS: a single centre experience

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Background: Current European and American guidelines recommend that patients with acute coronary syndrome (ACS) receive blood transfusion in case of significant bleeding or haemoglobin level < 7 g/dL.

Purpose: To explore adherence to guideline recommendations on blood transfusion in patients with ACS and to evaluate the association of the hemoglobin threshold for transfusion with all-cause mortality and with a composite endpoint of death, myocardial infarction (MI) and stroke.

Methods: As a part of a quality improvement initiative, we designed a prospective, observational study to characterize pattern of blood transfusion prescriptions, relationship with clinically relevant bleeding events (defined as Bleeding Academic Research Consortium type 3 or higher), haemoglobin threshold for transfusions, and association of blood transfusion and their hemoglobin thresholds with all-cause mortality and the composite end point of death, MI or stroke in all-comers ACS patients.

Multivariable-adjusted Cox regression analysis was used to examine association of blood transfusion and hemoglobin threshold for transfusion with time to all-cause mortality and composite endpoint. Pre-defined covariates included, due to their known association with mortality, were: age, sex, type of index ACS (STEACS vs NSTEACS), systolic blood pressure, heart rate, creatinine clearance, history of anemia, cardiac arrest (in-hospital or pre-hospital), development of heart failure during hospitalization.

All end-point events were adjudicated by a clinical event committee according to pre-specified criteria. Events occurring within 48 hours after hospitalization were not considered in the analysis.

Results: We enrolled a total of 1004 consecutive ACS patients, of which 528 STEMI (53%) and 476 NSTEMI (47%). Over a median follow up of 72 days (43, 114), 46 patients died (4.6%) while 79 patients met the composite end point of death, MI or stroke (8%). Overall, 57 patients (6%) received at least 1 blood transfusion during the index hospitalization. Of these, 17 had a clinically relevant bleeding, while 40 had not.

Median (25th, 75th p) hemoglobin threshold for blood transfusion was 8.2 (7.7, 9.2) g/dl with only 1 patient who received transfusion for a HB threshold < 7.0 (6.8 g/dL).

In multivariable analysis, blood transfusion for acute bleeding was not associated with an increased hazard of total mortality or the composite of death, MI or stroke. Blood transfusion without overt bleeding was significantly associated with both outcomes (Figure).

Conclusion: We observed an extremely low adherence to guideline recommendations on blood transfusions in patients with ACS in a real-life setting. The association of blood transfusions in the absence of overt bleeding with worse clinical outcome may have important implications.

Figure. Multivariable-adjusted Cox regression Analysis by Transfusion status

HR 3.4 (95% CI: 1.5-7.6). P= 0.002

HR 2.3 (95% CI: 1.1-4.6). P= 0.02
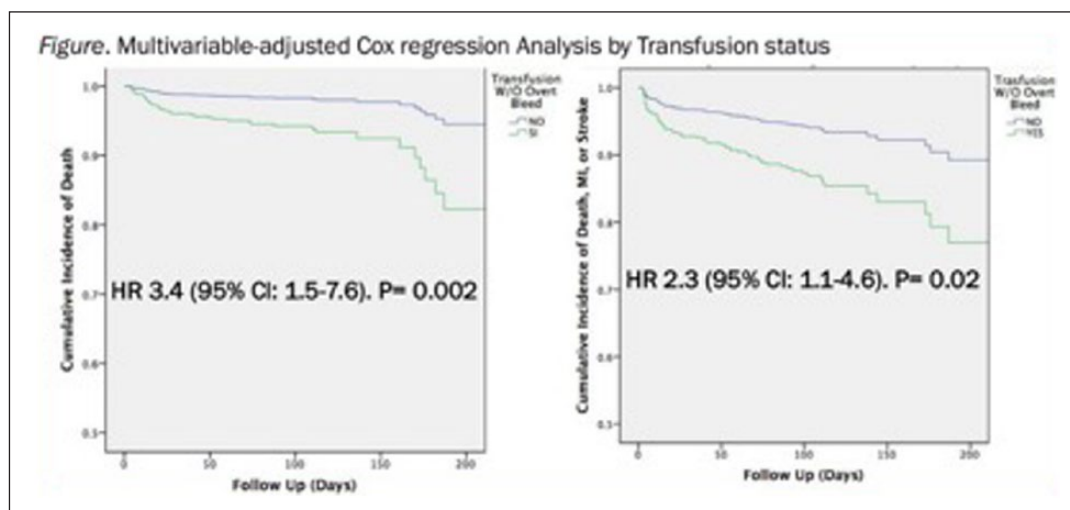
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A rare complication of non-reperfused myocardial infarction: combined presence of aneurysm, pseudoaneurysm and floating thrombotic apposition

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A 61-years-old man with a history of an antero-lateral myocardial infarction (MI) presented to our hospital with worsening dyspnoea. The ECG showed signs of subacute anterior MI. Blood tests showed a slightly positive troponin I (TNI 0.09 ng/ml) and high levels of D-Dimer (D-Dimer 6345 ng/dl). A chest angio-CT excluded the presence of

pulmonary embolism and documented pulmonary oedema and bilateral pleural effusion. Urgent coronary angiography documented the occlusion of the proximal left anterior descending artery (LDA); after multiple unsuccessful attempts to re-open the LAD the patient was transferred to the Coronary Intensive Care Unit. The transthoracic echocardiography showed a markedly enlarged left ventricle (LV), with severely reduced ejection fraction (EF) (20-25%) an aneurysm involving the apex and of all the distal portions of the LV, and a thrombotic apposition involving the LV apex and lateral wall. Anticoagulation with enoxaparin was started. Inotropic support with adrenaline and vasodilation with intravenous nitrate progressively improved the patient's haemodynamic conditions. A week after admission, the patient presented anisocoric. A cerebral CT and, after 24 hours, a cerebral magnetic resonance (MR) were performed excluding haemorragic or ischemic lesions. In order to better investigate the LV vitality and the thrombotic apposition dimensions, he underwent cardiac MR that showed marked LV dilatation (EDV 516 ml), LVEF 15%, myocardial necrosis in the territories supplied by the LAD with a large aneurysm involving the LV anterior wall, the anterior septum, all the distal portions and the apex; in addition, the images documented a small rupture (0.7 x 3.6 cm) of the ischemic antero-distal wall and the formation of a pseudoaneurysm (fig. 1A). Finally, a massive floating thrombus formation (8 x 2.5 cm), only partially adherent to the LV wall, was present. The patient underwent surgical aneurysmectomy (5 x 6 cm), thrombectomy and LV remodelling according to the Jatene-Dor technique (fig. 1B). After surgery, the echocardiography showed LV apex akinesia with preserved LV function (EF 55%). He did regular follow-up visits and, one year after surgery, he was in good clinical conditions (NYHA I).

A true aneurysm is a ballooning of scarred or fibrotic myocardial wall arising from the LV, often occurring as a result of a negative post-MI ventricular remodeling. More rarely, a contained rupture of the damaged myocardial wall may occur, leading to the formation of a pseudoaneurysm (PSA). In these rare cases, a prompt diagnosis and appropriate surgery can be life-saving and result in improved ejection fraction of the left ventricle.
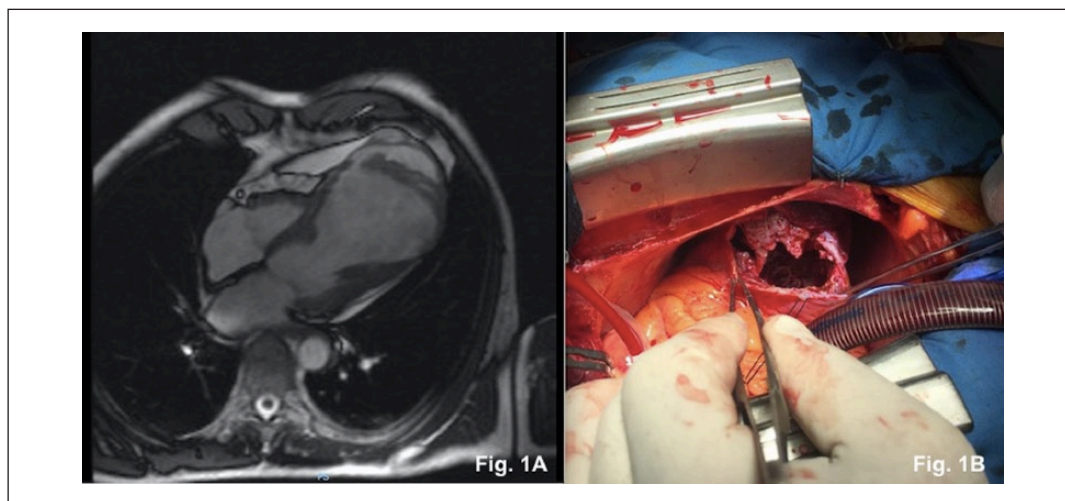
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Severe aortic stenosis is an independent predictor for mortality in patients with in-hospital cardiac arrest after acute coronary syndrome

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Background: Since In-Hospital Cardiac Arrest (IHCA) represents a rare but dreaded complication after Acute Coronary Syndrome (ACS), prognostic tools for decision-making whether to continue advanced life support or limit life sustaining interventions, remain scarce and inconclusive. As an easily assessable and feasible diagnostic tool, echocardiography gives profound information on cardiac functioning and valve morphology. In this context, aortic stenosis (AS) is the most common valvular heart disease in clinical practice. Considering a potentially smaller valve orifice area in severe AS, it seems intuitive that both central and peripheral perfusion remains poor during resuscitative attempts in cardiac arrest. However, there is no valid data in literature, that investigated the prognostic impact of severe AS on outcome after IHCA.

Methods: Out of 1367 individuals suffering from IHCA after ACS, a standardized echocardiographic diagnostic was performed in 136 patients (9.9%) prior to cardiac arrest. Binary logistic regression analysis was used to elucidate the prognostic impact of severe AS on survival and neurological outcome. The multivariate model was adjusted for age and male gender. Aortic stenosis was defined in accordance to the guidelines of

the EACVI. Favorable neurological outcome was defined as Cerebral Performance Category (CPC) of 1 and 2.

Results: Out of 136 patients with an evident pre-arrest echocardiographic diagnostic, a total of 38 patients with AS (mild AS: n=12 [8.8%]; moderate AS: n=8 [5.9%]; severe AS: n=18 [13.2%]) were identified. While 77.8% of patients (n=14) with severe AS did not survive the initial event, the mortality rate in the remaining patient population amounted to only 41.4% (n=48; p=0.004). Similarly, while only one survivor with severe AS (7.1%) showed a favorable neurological outcome, a total of 37 patients (77.1%) had a CPC of 1 or 2 within the remaining study population (p=0.021). We found that, the presence of severe AS showed a strong and independent association with mortality, with an adjusted odds ratio (OR) of 1.72 (95%CI: 1.16-2.56; p=0.007) as well with poor neurological outcome, with an adjusted OR of 1.78 (95%CI: 1.01-4.16; p=0.048).

Conclusion: The presence of a severe AS in a pre-arrest echocardiographic diagnostic proved to be a strong and independent predictor for poor outcome after IHCA. Therefore, severe AS mirrors an easily available predictive tool for risk stratification and decision making, in order to limit life-sustaining interventions.

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Impact of prescribed antidepressants in acute myocardial infarction patients on survival 1 year after discharge

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On behalf of: AMIS Plus Investigators

Background and aim: Previous studies have shown that cardiovascular disease could lead to a higher prevalence of major depressive disease and depression in turn appears to increase the probability of developing cardiovascular risk factors. Little is known on the impact of depression on outcome after acute myocardial infarction (AMI). The aim of this study was to assess the association of antidepressant prescription at discharge with the 1-year outcome of patients presenting with AMI in Switzerland.

Methods: We used data from the AMIS Plus registry including patients admitted between March 2005 and August 2016 with AMI to a Swiss hospital and who were followed up by telephone 12 months after discharge. We compared patients who received antidepressant medication (AD) at discharge (AD-receiving group) with those who did not (non-AD-receiving group) with regard to baseline characteristics and 1-year follow up outcomes including mortality, re-infarction and stroke. Multivariable logistic regression was used to analyse the association between AD description at discharge and 1-year follow-up mortality.

Results: Among 8911 AMI patients, 565 (6.3%) received AD at discharge. Compared to the non-AD-receiving group, these patients were predominantly female, older, experienced less often ST-segment elevation myocardial infarction, were in higher Killip classes, and had more frequently hypertension, diabetes, dyslipidaemia, obesity and comorbidities. They underwent less frequently percutaneous coronary intervention and stayed in hospital longer. Patients were followed up for a median of 392 (IQR: 368; 468) days after discharge and there was no significant difference in follow up duration between the groups. The rates of cerebrovascular events and re-infarction were similar. However, the AD-receiving group had significantly higher crude all-cause mortality 1-year after discharge than the non-AD-receiving group (7.4% vs 3.4%; p < 0.001) and AD prescription was an independent predictor for mortality (OR 1.66; CI: 1.16 to 2.39) (Fig.1).

Conclusion: Antidepressant medication at discharge was associated with a poorer prognosis in AMI patients at 1-year follow-up. Further research is needed to clarify the association between depression and AMI as well as to determine how mortality could be reduced after 1 year.

	OR (95% CI)
Antidepressants	1.66 (1.16-2.39)
Age per additional year	1.06 (1.05-1.08)
Female	0.59 (0.45-0.77)
Killip>2	1.48 (0.95-2.30)
Comorbidity according to CCI	3.35 (2.49-4.50)
NSTEMI	0.80 (0.62-1.02)
Complication during hospitalisation	1.79 (1.35-2.35)
PCI	0.42 (0.32-0.55)

Fig 1. Independent predictors of mortality within 1 year after discharge in acute myocardial infarction patients (N=8512).
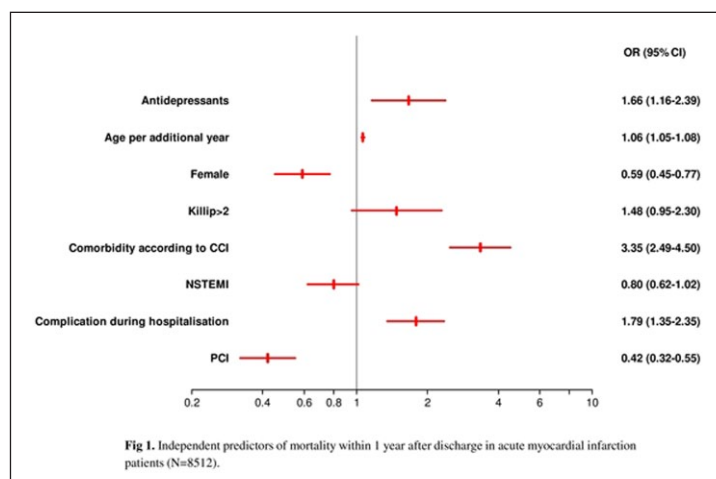
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Prediction of short term major adverse cardiac events in patients with suspected acute myocardial infarction

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Background: Accurate identification of short term mayor adverse cardiac events (MACE) in patients presenting with suspected acute myocardial infarction (AMI) is decisive for further management in clinical practice.

Methods: In a prospective multicenter diagnostic study enrolling consecutive patients presenting with suspected AMI to the emergency department, we assessed the diagnostic accuracy of two different algorithms: the ESC hs-cTn 0h/1h algorithm (troponin algorithm) and an extended algorithm combining the troponin algorithm with the likelihood for ACS (provided by the treating physician) and electrocardiography findings (extended algorithm). The co-primary outcomes were 30-day MACE with or without unstable angina (UA) or AMI, cardiogenic shock, ventricular arrhythmia, atrioventricular block, cardiac arrest or all cause death.

Results: Among 3123 patients, the troponin algorithm identified more patients for rule-out compared to the extended algorithm (60% vs. 29%) with a comparable negative predictive value (NPV; 99.4% vs. 99.8%) and a marginally lower sensitivity (97.9% vs. 99.6%) and a comparable MACE rate (0.6% vs. 0.2%). The troponin algorithm ruled-in 16% of patients (vs. 25% with the extended algorithm) resulting in a higher specificity (95.5% vs.88.3%), positive predictive value (PPV; 76.6% vs. 60.4%) and a higher MACE rate (76.6% vs. 60.4%). Including UA to MACE resulted in a lower sensitivity and NPV using the troponin algorithm, while performance of the extended algorithm remained unchanged.

Conclusion: Both algorithms allow safe rule-out of short term MACE without UA. While the extended algorithm performed better for rule-out of MACE including UA, the effectiveness was much lower compared to the troponin algorithm.

Figure 1
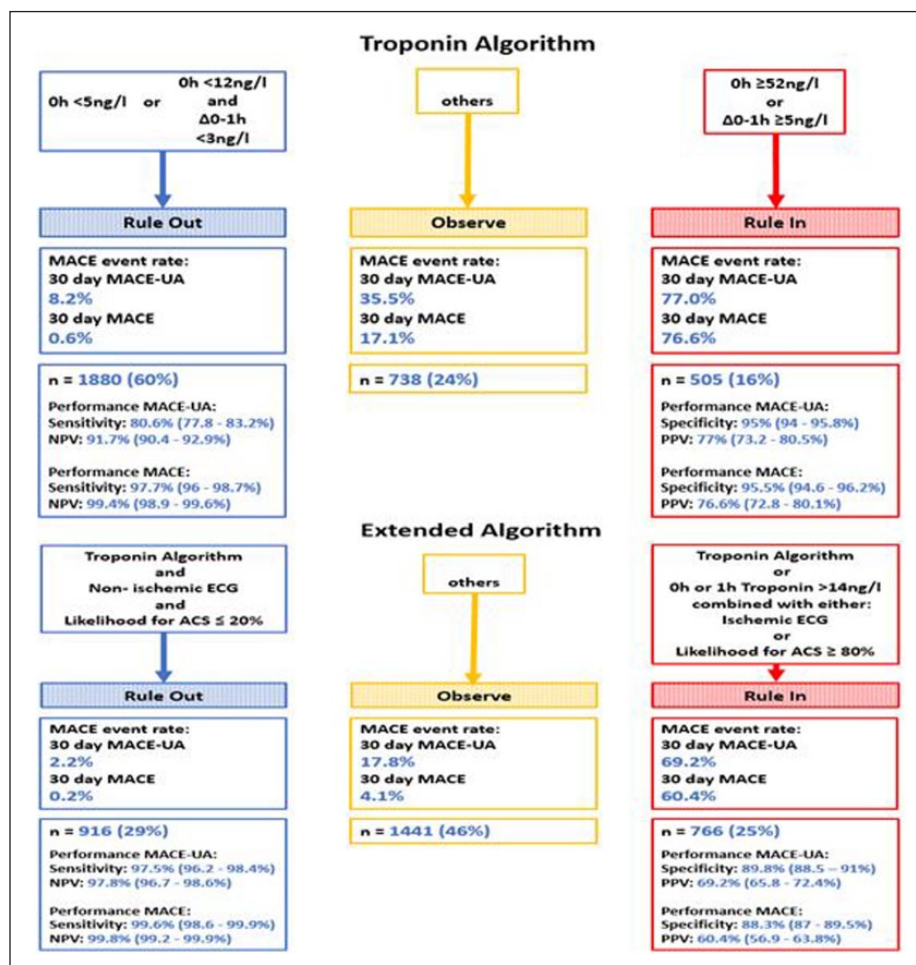
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The prognostic impact of infarct size on the development of cardiac arrest in premature acute myocardial infection

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Background: Cardiac arrhythmias resulting in cardiac arrest (CA) represent a severe complication of acute myocardial infarction (AMI). Little is known about the age-specific relevance of the prognosis from a long-term perspective. Additionally, while patients <45 years seem to be at higher risk for fatal arrhythmias in the acute phase, there are no data that explain this increased incidence in premature AMI.

Methods: To elucidate age-specific differences, we analyzed 832 patients suffering AMI. Patients were randomized and stratified into equal age groups (n=208/ group; <45, 45-64, 65-84, >85). Binary logistic regression analysis was used to assed the prognostic impact of potential risk-factors in the development of CA. The age-dependent effect of CA on long-term survival was elucidated using Cox regression hazard analysis.

Results: The total number of CA significantly differed between age groups, demonstrating the highest incidence in the youngest collective and a significantly lower incidence by increasing age. Patients <45 years presented with the highest maximum creatinkinase values (CK) and the lowest fraction of multi vessel disease (VD). Both CK values and single-VD were significantly associated with the development of CA in premature ACS. After a mean follow-up time of 5.0 years, a total of 185 patients (22.8%) died due to cardiovascular causes. While there was a significant association of CA with long-term mortality in age-groups >45 years, we observed no association within premature ACS patients <45 years.

Conclusion: Arrhythmias resulting in CA are more common in very young AMI patients compared to older counterparts. Extended cardiac ischemia due to the lack of collateral vessels, based on single VD and resulting in extensive tissue damage (mirrored by elevated CK values) could explain this finding. While CA significantly worsens outcome in AMI patients >45 years, there was no significant impact on long-term mortality within very young individuals.

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Effect of simvastatin and ezetimibe on suPAR levels and cardiovascular disease outcome in patients with mild-moderate, asymptomatic aortic stenosis

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Background: Soluble urokinase plasminogen activator receptor (suPAR) is an inflammatory marker associated with cardiovascular disease. Statins lower both low-density lipoprotein cholesterol and C-reactive protein resulting in improved outcomes. However, whether lipid-lowering therapy also lowers suPAR levels is unknown.

Methods: We studied whether Simvastatin 40 mg and Ezetimibe 10 mg lowered plasma suPAR levels in 1,838 patients with mild-moderate, asymptomatic aortic stenosis. A 1-year Cox analysis adjusted for established cardiovascular risk factors, allocation to study treatment, peak aortic valve velocity and baseline suPAR was performed to evaluate relationships between change in suPAR with all-cause mortality and the composite endpoint of major cardiovascular events (MCE) composed of ischemic cardiovascular events (ICE) and aortic valve related events (AVE).

Results: After 4.3 years of follow-up, suPAR levels had increased by 9.2% (95% confidence interval [CI]: 7.0% - 11.5%) in the placebo group, but only by 4.1% (1.9% - 6.2%) in the group with lipid-lowering treatment (P<0.001). In a multivariate 1-year analysis, 1-year suPAR was strongly associated with all-cause mortality, hazard ratio (HR) = 2.75 (1.21 - 6.24); MCE 1.57 (1.01 - 2.43); and AVE 1.57 (1.01 - 2.47) (all P<0.048) for each doubling of suPAR; but was not associated with ICE.

Conclusion: Simvastatin and Ezetimibe treatment impeded the progression of the time-related increase in plasma suPAR levels. Year-1 suPAR was associated with all-cause mortality, MCE, and AVE irrespective of baseline levels.

Kaplan-Meier suPAR all-cause mortality
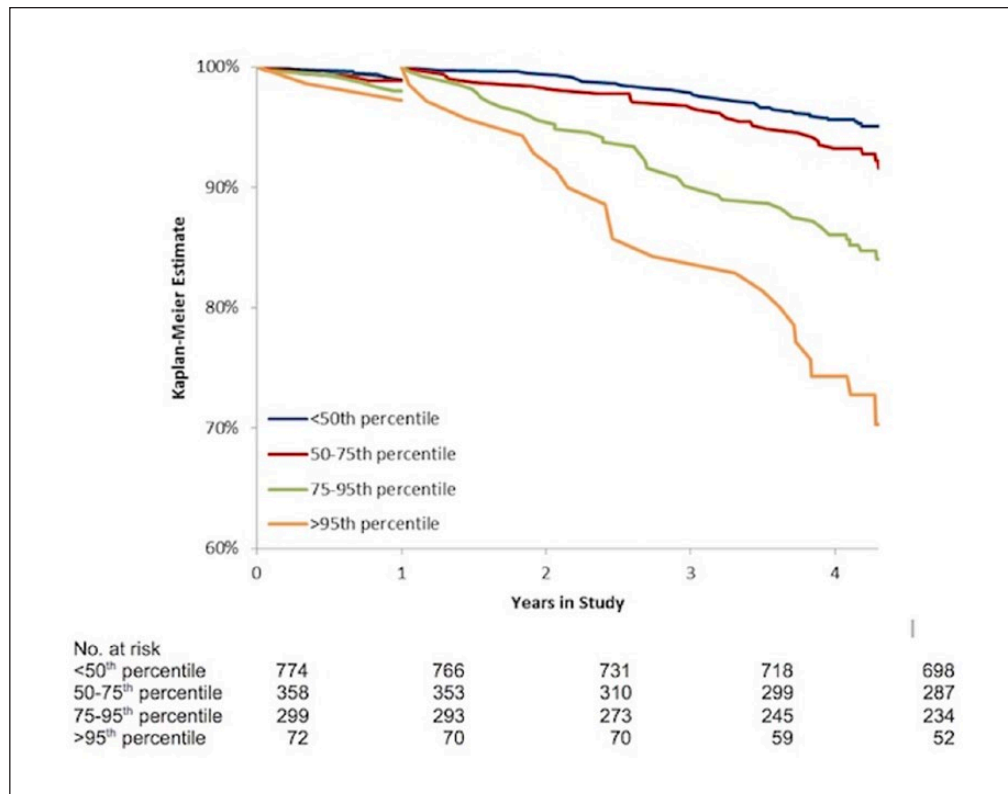
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Mid-range ejection fraction after an acute coronary syndrome: a nationwide in-hospital mortality predictors comparison

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On behalf of: Portuguese Registry Of Acute Coronary Syndrome Investigators

Introduction: Mid-range ejection fraction (mrEF – ejection fraction 40-49%) is a newly defined entity without specific therapeutic indications. Acute coronary syndromes are a major cause of heart failure (HF) with mrEF (HFmrEF) and reduced ejection fraction (rEF - ejection fraction < 40%).

Aim: To compare in-hospital mortality predictors (MP) in post acute coronary syndrome (ACS) patients with depressed EF.

Population and Methods: The authors analyzed a cohort of a multicenter national registry between 2010 and 2016, including patients with EF<50%. Patients with previously known HF or with no echocardiography EF evaluation were excluded. 3312 patients were included and classified in (1)EF 40-49% (n=1922, 58%) and (2)EF <40% (n=1390, 42%). To determine MP, multivariate logistic regression was performed, including pre-hospital, clinical and laboratorial data, ACS classification, coronary anatomy when known and pharmacological treatment.

Results: The global population had a mean age of 64±14 years. 28.4% (n=941) were females. In-hospital mortality was 2.4% (n=37) on group 1 and 11.4% (n=159) on group 2, p < 0.001. MP for both groups are presented in the graphic. The statistical model present an area under the curve > 0.90 and was validated by the Hosmer-Lemeshow test.

Conclusion: As expected, there is an increased mortality rate in lower EF patients. Meanwhile, some characteristics influence both groups in a similar way: old age, atrial fibrillation and hemodynamic instability are MP for both groups. Beta-blocker administration and an invasive strategy improved prognostic in both groups.

Graphic - Mortality Predictors
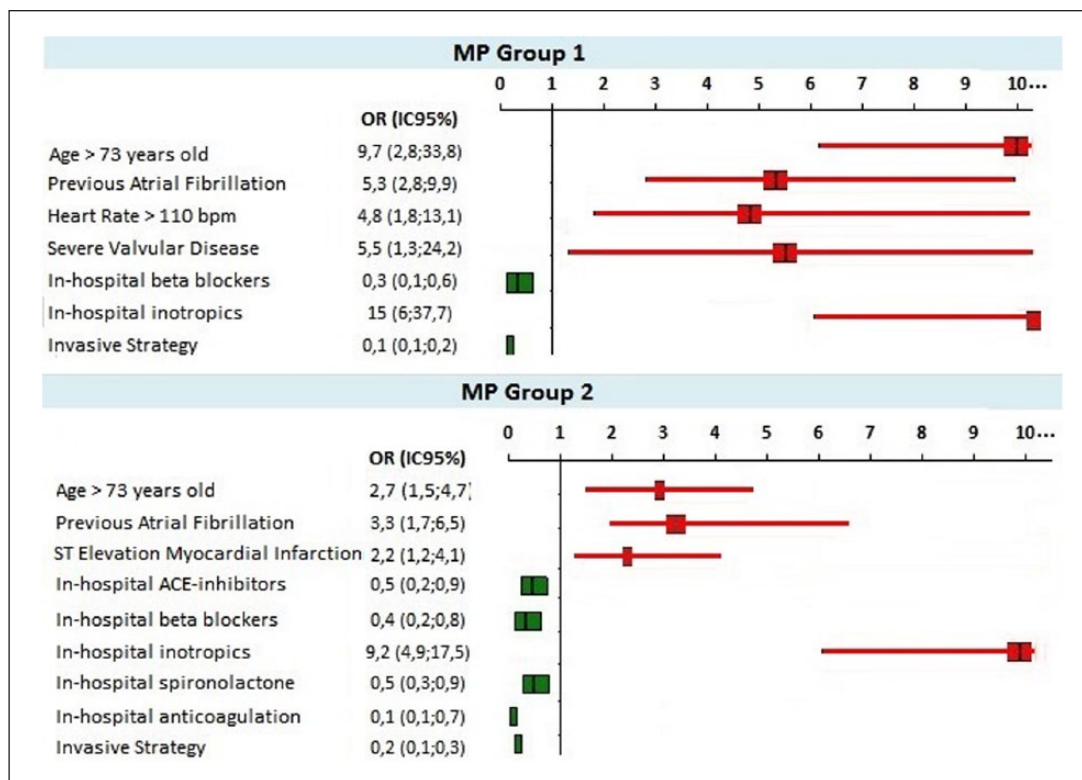
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Ticagrelor improves the microcirculation in patients with acute coronary syndrome undergoing percutaneous coronary intervention

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Background: Ticagrelor has previously been demonstrated to reduce a mortality compared with clopidogrel in patients with acute coronary syndrome (ACS). However, the mechanism for this mortality reduction remains uncertain. The objective of present study is to demonstrate the potential mechanism of mortality reduction by assessment of microvascular circulation.

Methods: The study is designed as a non-blinded, open label, randomized controlled clinical trial performed in a single center. One hundred twenty participants, aged 20-85 years with a clinical diagnosis of ACS were recruited. They were randomly allocated into ticagrelor or clopidogrel groups. To evaluate the status of microcirculation, the primary efficacy variable is a coronary microvascular dysfunction measured using an index of microcirculatory resistance (IMR) at 6 months after percutaneous coronary intervention (PCI). Physiologic measures including IMR, coronary flow reserve (CFR) and fractional flow reserve (FFR) were obtained twice, 6 months apart, from the culprit artery after PCI. We also assessed platelet function with the VerifyNow P2Y12 assay.

Results: All patients were successfully treated by PCI and follow-up for median of 12 months. The two groups were well balanced with respect to baseline characteristics. Mean platelet reactivity was 44.3 PRU for ticagrelor and 187.4 PRU for clopidogrel. Ticagrelor achieved greater inhibition of platelet reactivity than did clopidogrel in patients with ACS (P < 0.01) Following the PCI procedure, IMR of the target vessel was successfully obtained in all patients.

In physiologic measures, baseline FFR, CFR and IMR values were similar between the two groups. Six-month follow-up physiologic data were obtained in 99 patients. There was no difference in regard to FFR and CFR between the two groups. However, IMR value was significantly lower in the ticagrelor group than in the clopidogrel group. The difference of IMR during 6 months after receiving study agent also was higher in the ticagrelor group.

Conclusions: In patients with ACS treated by PCI, 6 months of therapy with ticagrelor are more effective in improving microcirculation than clopidogrel.

Moderated Poster Session 2 - Young researchers in Acute Cardiovascular Care I
Saturday, 03 March 2018 - 10:00 - 11:00

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Impact of marathon and ultra-marathon races on specific and unspecific cardiac biomarkers

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Introduction: Copeptin (Cop) and pregnancy plasma protein A (PAPP-A) are emerging but unspecific diagnostic cardiac markers, which are released very early during cardiac stress. The primary objective of this study was to investigate the differences in release of these markers in athletes after ultra-marathon and marathon in comparison to the specific sensitive cardiac troponin I (sc-TnI).

Methods: This was an observational, cross-over study including subjects performing an ultra-marathon (UM, 130 km) and marathon (M, 42.195 km) 6 months apart. Blood samples were taken before and immediately after the races. Cop and PAPP-A were measured, using the ultrasensitive KRYPTOR compact PLUS (B.R.A.H.M.S. GmbH, Thermo Scientific), sc-TnI was measured by use of Flex reagent cartridge (Dimension Vista 1500, SIEMENS).

Results: We included 15 experienced non-professional athletes (mean age 42.9 ± 8 years). When comparing baseline and post-race levels, we observed significant higher values for Cop after M (baseline median 3.8 [IQR, 2.9 – 7.3] pmol/L vs. post-race 26.3 [IQR, 16.3 – 39.0] pmol/L; $p < 0.001$) and UM (baseline median 4.1 [IQR, 2.4 – 5.6] pmol/L vs. post-race 9.8 [IQR, 6.6 – 39.4] pmol/L; $p < 0.001$), respectively. We also observed an increase after both races for sc-TnI (baseline median UM and M 0.015 [IQR 0.015 – 0.015] µg/L vs. post-race marathon 0.28 [IQR 0.015 – 0.049] µg/L and vs. post-race UM 0.56 [IQR 0.022 – 0.104] µg/L; p=0,003 and p=0,001). Regarding PAPP-A there was a significant elevation after the M (baseline median 7.3 [IQR, 6.4 -9.0] mU/L vs. post-race 9.7 [IQR, 8.2 – 11.8] mU/L; p=0.001), but not after the UM (baseline median 8.3 [IQR, 7.7 – 8.8] mU/L vs. post-race 9.0 [IQR, 8.0 – 9.8] mU/L; p=0.223). When comparing post-race levels after UM and M we detected significant higher values for Copeptin after M compared to UM (p=0.039) but no significance for PAPP-A (p=0.099) and sc-TnI (p=0.089).

Conclusion: In our hands the type of race has significant influence on unspecific and specific cardiac markers, with higher values after M compared to UM for Cop and PAPP-A, but vice versa elevated sc-TnI levels after UM. A potential explanation might be that M running reflects a higher physical stress for a shorter duration with an impact on unspecific markers, while a chronic prolonged mismatch between oxygen consumption and supply as in UM explains the higher increase in sc-TnI.

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Age-specific trends in incidence and survival of out-of-hospital cardiac arrest in Denmark 2001-2014

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Background/Introduction: Out-of-hospital cardiac arrest (OHCA) is a grave manifestation of cardiovascular disease. Whereas the general cardiovascular health has improved throughout the last few decades for middle-aged and older individuals, the incidence of several cardiovascular diseases has been reported to increase in younger people. It is unknown if OHCA has followed similar trends.

Purpose: We aimed to assess the age-specific incidence and mortality rates associated with OHCA between 2002 and 2014.

Methods: We used the Danish Cardiac Arrest Registry to identify patients suffering from OHCA with presumed cardiac aetiology. Based on the Danish population each study year, we calculated the annual incidence rates (IR) pr. 10.000 person-years and 30-day mortality rates (MR) per 10 person years of OHCA in 6 age groups (18-34 years, 35-44 years, 45-54 years, 55-64 years, 65-74 years and ≥75 years). The two youngest age groups were used as one for mortality rates. Temporal trends were assessed using Poisson regression, generating incidence rate ratios (IRR) and mortality rate ratios (MRR).

Results: Between January 1, 2002 and December 31, 2014, 31.232 adult patients had an Emergency Medical Services-attended OHCA with attempted resuscitation and presumed cardiac aetiology. Incidence rates (Figure 1, left panel) and IRR decreased slightly in the older age groups from 2002 to 2014 (18-34 years: 1.03, 95% CI: 0.997-1.06, p=0.08, 35-44 years: 1.00, CI: 0.98-1.01, p=0.71, 45-54 years: 1.00,

CI: 0.99-1.01, p=0.87, 55-64 years: 1.00, CI: 0.99-1.01, p=0.44, 65-74 years: 0.98, CI: 0.97-0.98, p<0.001, ≥75 years: 0.99, CI: 0.99-1.00, p<0.001).

1-year MR decreased from 2002 to 2014 in all age-groups, Figure 1, right panel. Corresponding MRR decreased for all age-groups: 18-44 years: 0.84, CI: 0.83-0.86, 45-54 years: 0.88, CI:

0.87-0.89, 55-64 years: CI: 0.89: 0.88-0.90, 65-74 years: 0.89, CI: 0.88-0.89, ≥75 years: 0.92, CI: 0.91-0.92, p<0.001 for all.

Conclusion: Between 2002 and 2014, incidence rates of OHCA decreased in the oldest age groups. Although mortality rates decreased significantly for all age groups, OHCA remains associated with a very grave prognosis.

Figure 1
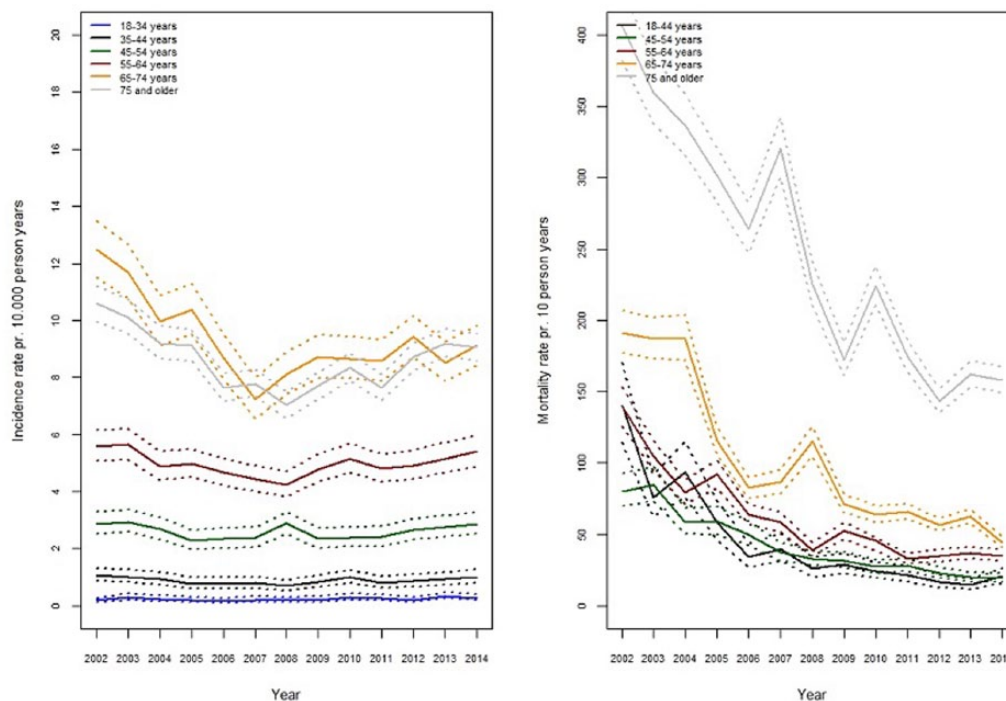
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New bedside score for identification of intermediate-high risk patients with pulmonary embolism

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Introduction: The implementation into clinical practice of the algorithm of risk stratification is a crucial step towards improving and standardizing pulmonary embolism (PE) management. However, mortality rate in patients of intermediate risk is still significantly high, while currently there is no predictive model to accurately identify the patients of intermediate-high risk among them. Thus, the establishment of effective and simple model for prediction of short-term complications in patients with intermediate risk pulmonary embolism is extremely important.

Purpose: We aimed to identify the most significant risk factors of PE complications and integrate them into a simple model, which could be used for bedside identification of intermediate-high risk PE.

Methods: 136 patients with PE of high and intermediate risk were enrolled. Study endpoints were: obstructive shock, fatal recurrent PE, need for resuscitation, thrombolysis, hemodynamic support and death during 30 days follow-up period. Patients were retrospectively divided into groups of complicated (n=44) and uncomplicated (n=92) course of PE. Clinical, laboratory, instrumental and anamnestic data were evaluated.

Results: Predictors of PE complications were: chronic heart failure (OR 1.8, CI 95% 1.1-2.9, Se 50%, Sp 71%), diabetes mellitus (DM) (OR 3.2, CI 95% 2.1-5, Se 48% , Sp 90%), atrial fibrillation (OR 2.2, CI 95% 1.4-3.5, Se 39%, Sp 86%), permanent risk factor of venous thromboembolism, (OR 2.5, CI 95% 1.3-4.6, Se 77%, Sp 51%), syncope (OR 1.9, CI 95% 1.1-3, Se 39%, Sp 80%), heart type fatty acid binding protein (hFABP) >10 ng/ml (OR 4.6, CI 95% 2.1-

10.1, Se 86%, Sp 55%), troponin I>0,2 ng/ml (OR 1.9, CI 95% 1.1-3.5, Se 68%, Sp 55%), heart rate (HR) ≥110 bpm (OR 2.3, CI 95% 1.3-3.8, Se 50%, Sp 77%), systolic blood pressure (SBP) ≤100 mmHg (OR 4.2, CI 95% 2.6-6.7, Se 55%, Sp 91%), creatinine clearance ≤70 ml/min (OR 2.9, CI 95% 2.6-6.7, Se 55%, Sp 91%). Multivariate logistic regression analysis indicated the model ROCky Score (Risk Of Complications), included HR ≥110 bpm (1.5 points), SBP ≤100 mmHg (2.5 points), positive hFABP (2 points) and presence of DM (2.5 points). Optimal cut-off levels were established: to predict all complications ≥2.5 points, obstructive shock ≥3.5 points, all-cause death ≥4.5 points. In studied population of intermediate risk patients (n=107) the combination of ROCky Score ≥2.5 points and ECHO signs of right ventricle dysfunction (RVD) seems to be effective to predict obstructive shock (p=0.0006), all-cause mortality (p=0.0006) and composite endpoint (p=0.00001).

Conclusions: The ROCky Score demonstrates strong prediction value in hemodynamically stable patients with PE and may be recommended for further investigations.

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Lactate predicts short-term mortality in acute pulmonary embolism more accurately than shock index and modified shock index

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Background: Increasing blood lactate concentrations are more closely related to outcome than blood pressure, particularly in sepsis. Shock index (SI) and modified shock index (MSI) have been shown to predict adverse prognosis in severe trauma, heart failure, and acute coronary syndromes. Data on lactate, SI and MSI as prognostic factors in acute pulmonary embolism (PE) are scarce.

Purpose: We aimed to (1) evaluate whether blood lactate, SI and MSI are associated with short-term mortality in acute PE patients; (2) determine the correlation between lactate concentration and SI and MSI; and (3) compare the prognostic accuracies for short-term mortality of lactate, SI and MSI in acute PE patients.

Methods: We retrospectively reviewed 483 consecutive patients admitted for acute PE in one single emergency department (ED) along 3 years until December 2016. Lactate concentration on arterial blood collected within the first 6 hours after ED admission was recorded. SI was defined as the ratio of heart rate to systolic blood pressure (SI=HR/SBP), and MSI was defined as the ratio of heart rate to mean arterial blood pressure (MSI=HR/MAP). Outcome was all-cause 7-day mortality. Differences in lactate, SI and MSI between non-survivors and survivors groups were analysed by χ^2 (chi-square) test. Correlation of lactate to SI and to MSI was evaluated by Pearson correlation coefficient. Prognostic accuracy for all-cause 7-day mortality of lactate, SI and MSI was performed by C-statistical analysis.

Results: Among the 483 acute PE patients comprising study population, mean age was 66.3 ± 17.6 years and 40% (n=192) were male. Mean lactate concentration was 1.65 ± 1.14 mmol/L. Mean SI was 0.73 ± 0.24 and mean MSI was 1.01 ± 0.33. All-cause 7-day mortality was 9.9% (n=48). Compared to survivors, non-survivors had significantly higher lactate concentration (6.80 ± 5.02 mmol/L in non-survivors, vs. 1.96 ± 1.59 mmol/L in survivors, p < 0.001), SI (0.97 ± 0.36 in non-survivors vs. 0.71 ± 0.23 in survivors, p < 0.001), and MSI [1.33 ± 0.55 in non-survivors vs. 0.97 ± 0.28 in survivors, p < 0.001). Lactate had a significantly positive correlation with SI (r=0.353, p < 0.001) and MSI (r=0.370, p < 0.001). Prognostic accuracy for all-cause 7-day mortality of lactate, SI and MSI was as follows: lactate (AUC=0.856, CI 95% 0.788-0.923, p < 0.001), SI (AUC=0.721, CI 95% 0.639-0.803, p < 0.001), MSI (AUC=0.720, CI 95% 0.639-0.803, p < 0.001). Lactate concentration >2.12 was the optimal cutt-off point (Youden's index) for prediction of all-cause 7-day mortality (sensitivy=81.1%, specificity=71.5%).

Conclusions: In our analysis, higher lactate concentration, SI and MSI are all associated with higher short-term mortality in acute PE patients. Lactate prognostic accuracy for short-term mortality is superior to SI and MSI prognostic accuracies. Our study supports the role of lactate, SI and MSI as prognostic factors in acute PE.

ROC curve

Diagonal segments are produced by ties.
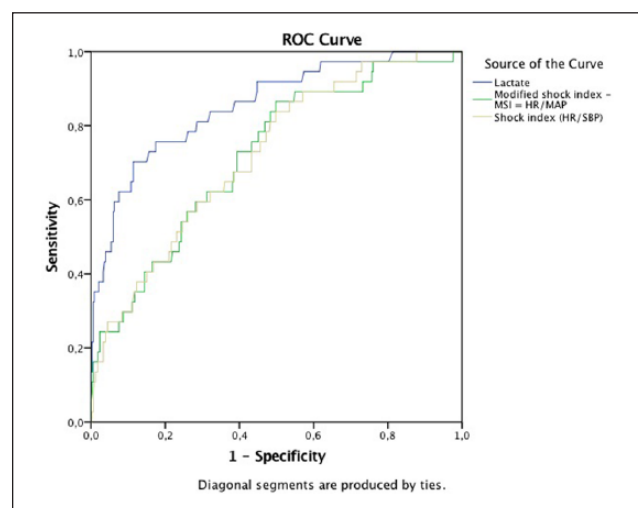
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Cardiac fibrosis rate and left ventricular diastolic function correlates with circulating relaxin-1 levels in HFrEF patients

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Introduction: Recent studies suggested that relaxin-1 (RLX-1) exerts an anti-fibrotic effect in myocardial tissue, however, these studies focused on exogenous RLX support. In our studies, we aimed to evaluate the role of endogenous, circulating RLX-1 on the diastolic function and remodeling of the left and right ventricle on ex vivo human myocardial samples from HFrEF patients with ischemic etiology.

Methods: Human myocardial samples were available from our Biobank System after ethical committee approval and informed consent (n=55). All explanted hearts are continuously biobanked in our Centre upon heart transplantation. Patients were divided into a low- and high-RLX-1-level group (measured by ELISA from serum). Myocardial fibrosis was quantified by Masson's trichrome and Picrosirius red staining in left and right ventricle with ImageJ software. All clinical parameters (medical history, drugs, laboratory results, echocardiography and hemodynamic measurements) were also evaluated. Statistics: t-tests, Spearman's correlation test, p-value of 0.05 was considered to be statistically significant.

Results: Average levels of RLX-1 were comparable with those measured in pregnant women. (702±283 pg/ml in HFrEF vs. 560-1060 pg/ml in pregnancy (literature data)). Healthy control human subjects were also evaluated and expressed low levels of circulating RLX-1)44±27pg/ml). RLX-1 proved to be independent of age, gender, hypertension, diabetes mellitus, BMI or BSA. RLX-1 levels and outcomes were independent of mechanical circulatory support (IABP+LVAD) as well (n=8). We found a moderate inverse correlation between RLX-1 levels and amount of myocardial fibrosis of both ventricles (r=-0.493, p=0.0005 in the right ventricle vs. r=-0.487, p=0.0006 in the left ventricle). In parallel with this, a moderate correlation was found in left ventricular diastolic function (E/A r=0.456, p=0.0025). There were no significant differences in the laboratory results, hemodynamics, and other echocardiography parameters. RLX-1 levels showed moderate correlation with RLX-2 levels (r=0.453, p=0.0003).

Conclusion: In our experiment, higher endogenous RLX-1 levels were accompanied by a significantly lower amount of myocardial fibrosis. Our result promotes specified biomarker role and possible therapeutic use of RLX-1 as an anti-fibrotic drug. Further studies are needed to fully understand its complex intracellular signaling.

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Development of post-myocarditis dilated cardiomyopathy: proportion, predictors and long term prognostic significance

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Background: The development of inflammatory dilated cardiomyopathy (I-DCM) from active lymphocitic myocarditis presenting with acute heart failure and severe left ventricular dysfunction is a fearsome scenario. However it is widely unexplored.

Purpose: In this study we sought to assess the prevalence, the possible predictors and prognosis of I-DCM development in a cohort of acute myocarditis with severe heart failure at admission surviving to the acute phase.

Methods: From 2000 to 2016, 47 patients with biopsy-proven active myocarditis with acute heart failure, left ventricular ejection fraction (LVEF) <40% and surviving to the acute phase were consecutively enrolled and followed for 53,8±42,4 months. All patients underwent clinical and echocardiographic evaluation at baseline and at 12 months. Development of I-DCM was defined as the presence of left ventricular ejection fraction (LVEF) <50% at 12 months follow-up. Furthermore, I-DCM prognosis was compared to a sample of genetically determined DCM.

Results: A larger left ventricular end diastolic diameter (LVEDD) was independently associated with development of I-DCM (OR 1.193, CI 1.060 – 1.341, p=0.0003), while fulminant presentation and the presence of a moderate to severe lymphocytic infiltrate were protective factors (respectively OR 0.046, CI 0.004 – 0.559, P =0.016 and OR 0.036, CI 0.002 – 0.584, P =0.02). No differences in terms of death or heart transplant rates were found between I-DCM and genetically determined DCM (11.5 % vs 17% respectively, p=0.816.).

Conclusions: Baseline LVEDD, non-fulminant presentation and features of subacute inflammatory process are important tools in predicting I-DCM evolution from lymphocytic myocarditis presenting with severe heart failure and left ventricular dysfunction.

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Percutaneous treatment for mechanical complications after myocardial infarction

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Romero Roche,[1] N Alonso Orcajo,[1] R Estevez Loureiro[1] and F Fernandez Vazquez[1]

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A 85-year-old man with a history of hypertension and dyslipidemia was admitted to our Cardiology Department due to inferior acute myocardial infarction (AMI) treated by primary angioplasty with drug-eluting stent implantation in mid right coronary artery.

In the following 48 hours, the patient presented signs of acute heart failure with a new harsh holosystolic murmur heard maximally at the left lower sternal border. Transthoracic echocardiography revealed moderately depressed left ventricular ejection fraction, a ventricular septal rupture (VSR) at the mid posterior septum and severe ischemic mitral regurgitation (MR) (Figure 1.A). In this situation, cardiac surgery was turn down due to prohibitive perioperative risk. An intra-aortic balloon pump was placed, with improvement in his hemodynamic parameters. After the patient was stabilized, a percutaneous closure of the VSR was performed at the sixth day of admission. A post-MI VSR device of 22 mm was implanted through an arteriovenous loop with a non-significant residual shunt (Figure 1.B). After the procedure, there was an immediate significant symptomatic and hemodynamic improvement allowing the patient to be discharged seven days later. A couple of weeks later, percutaneous mitral valve repair was performed leading to trace residual MR. Three months later, the patient remains in NYHA functional class I.

We present a clinical case with two mechanical complications after myocardial infarction, both with a high mortality in which the surgical risk is usually prohibitive. Nevertheless, combined percutaneous treatment might be an option in these patients.

Complications and reparation results
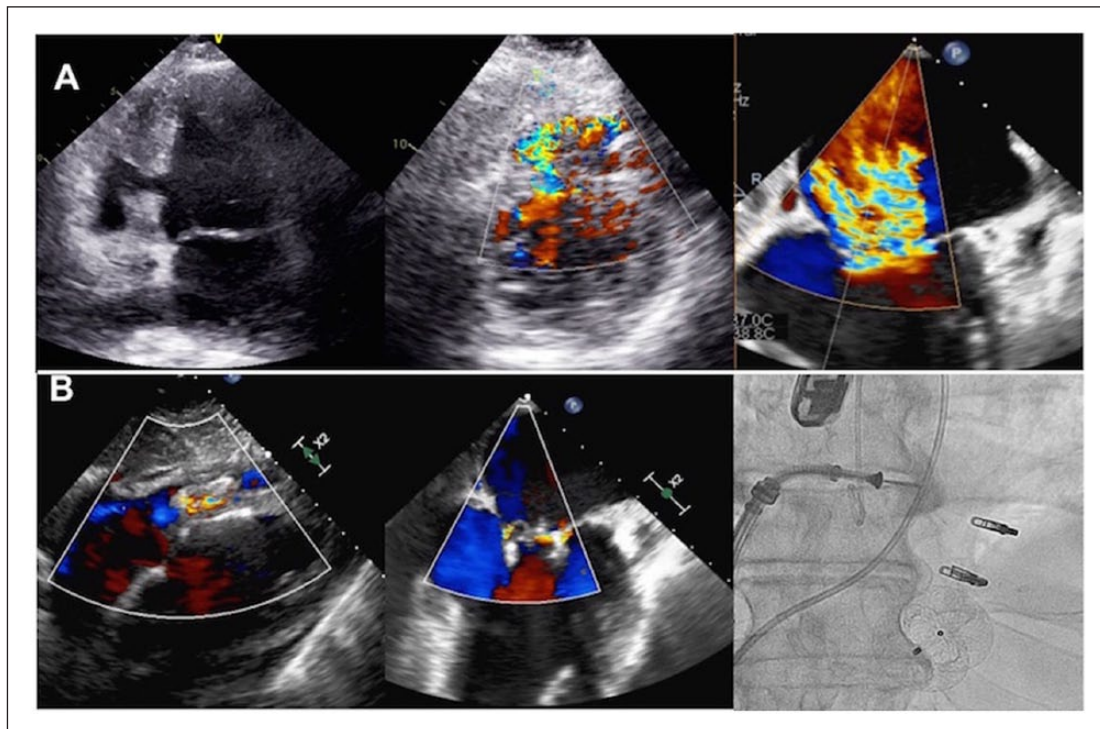
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Too much aorta

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Introduction: Congenital anomalies of the Aorta are rare disorders that result from an abnormal development of the embryonic pharyngeal arch system. Aortic arch abnormalities represent less than 1% of the congenital cardiac defects, and their clinical representation, usual in the first years of life, depend on esophageal or tracheobronchial compression or abnormal blood patterns. Such abnormalities are seldom seen in adults

Case Description: LN, 51 years old caucasian woman with clinical background of inguinal hernia and appendectomy.

Patient admitted through the Emergency Department with a history of cough, myalgia and exertion dyspnea 3 days after taking the vaccine against the Influenza virus. Patient also described complaints of chronic solid dysphagia. No relevant findings on physical examination. A simple anterior-posterior radiograph was made, displaying a mediastinal "cane-like" deformity of the aorta's arch (Picture 1. A and B)

A thoracic computerized tomography scan (CT) ensued, exhibiting an anomalous route of the thoracic aorta, with a severe sinuosity of the distal segment of the descending aorta and a relevant kinking phenomenon of the common brachio-cephalic branch (Picture 1. C and D). The caliber of all segments of the aorta were normal.

Other findings included anterior interposition of the transverse colon between the liver and the abdominal wall and type 3 hiatal hernia (Picture 1. C).

The patient's further exams, including, elective coronariography, echocardiogram, and electrocardiography were all normal. Congenital connective tissue diseases were also excluded.

Conclusion: This clinical case serves the purpose to illustrate a unique, non-described, congenital anomaly of the aortic route in an otherwise healthy middle-aged woman.

Picture 1
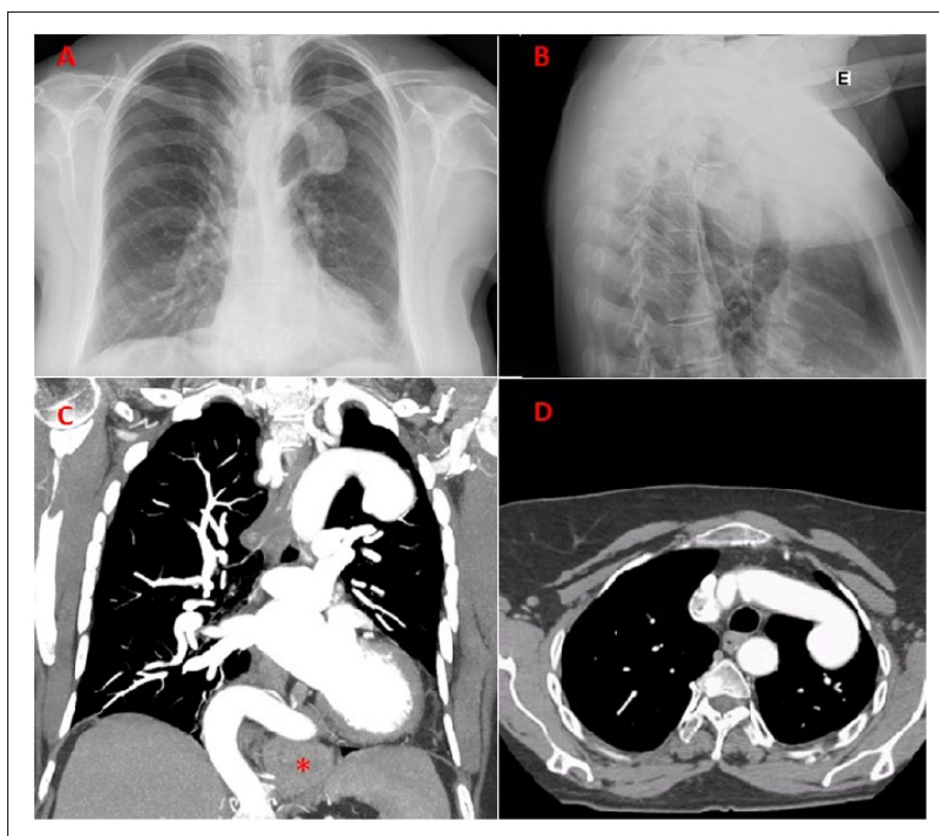
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Percutaneous closure of post-infarction ventricular septal rupture in a patient with acute cardiogenic shock; case report

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Patient who develops Post-infarction ventricular septal rupture (PIVSR) has extremely poor prognosis. Surgical repair offers reasonable outcomes in patients who survive the healing phase and percutaneous device closure may be considered as an alternative in selected patients whom are deemed unfit for surgery.

Case Report: We report a 40 years old male patient, who was an active smoker and no other cardiovascular risk factors presented to our emergency department with an acute anterior ST-segment elevation myocardial infarction (STEMI). On examination he had clear chest with normal heart sounds. He underwent primary percutaneous coronary intervention (PPCI) to the mid left anterior descending artery (LAD) using a drug eluting stent. He remained

stable through-out the procedure and was subsequently transferred to coronary care unit. After 6 hours from admission he developed an acute pulmonary edema and a new pan-systolic murmur all over the pericardium. His trans-thoracic echocardiogram (TTE) demonstrated mildly reduced systolic function with an ejection fraction of 45%, akinesia of the antero-septal and apical segments with two PIVSR noted in the apical-septum and mid antero-septum with left-to-right shunt.

Patient was immediately discussed with the cardiac surgical team, but as he was very unwell and therefore deemed unfit for surgical intervention at that time. He was started on inotropic support and an intra-aortic balloon pump (IABP) was inserted.

Patient was still hemodynamically unstable despite maximum pharmacological support and IABP. therefore, after discussing in multi-disciplinary team, we decided for percutaneous closure device. Patient underwent successful percutaneous implantation of an 18 mm Amplatzer Septal Occluder device (St. Jude Medical, Minnesota, USA) in the larger PIVSR, whilst the Small one was left alone with only minimal residual flow across.

Following procedure, there was significant improvement in patient's hemodynamics. He was weaned off from both mechanical and pharmacological support. Unfortunately on day 7 post device closure procedure, he developed acute pulmonary edema. An urgent echocardiography showed migration of Amplatzer Septal Occluder into the right ventricle with significant left to right shunt (Figure 1). The patient underwent an emergency surgical closure of ventricular septal rupture using double patch technique and the device was retrieved from the right ventricular apex (Figure 1). The patient was successfully discharged home following stormy post-operative recovery. He remained asymptomatic at six months follow up appointment.

Conclusion: Percutaneous closure of PIVSR can be performed with Septal Occluder in selected high risk patients, but there is significant risk of failure due to friable myocardium post infarction.

Figure 1
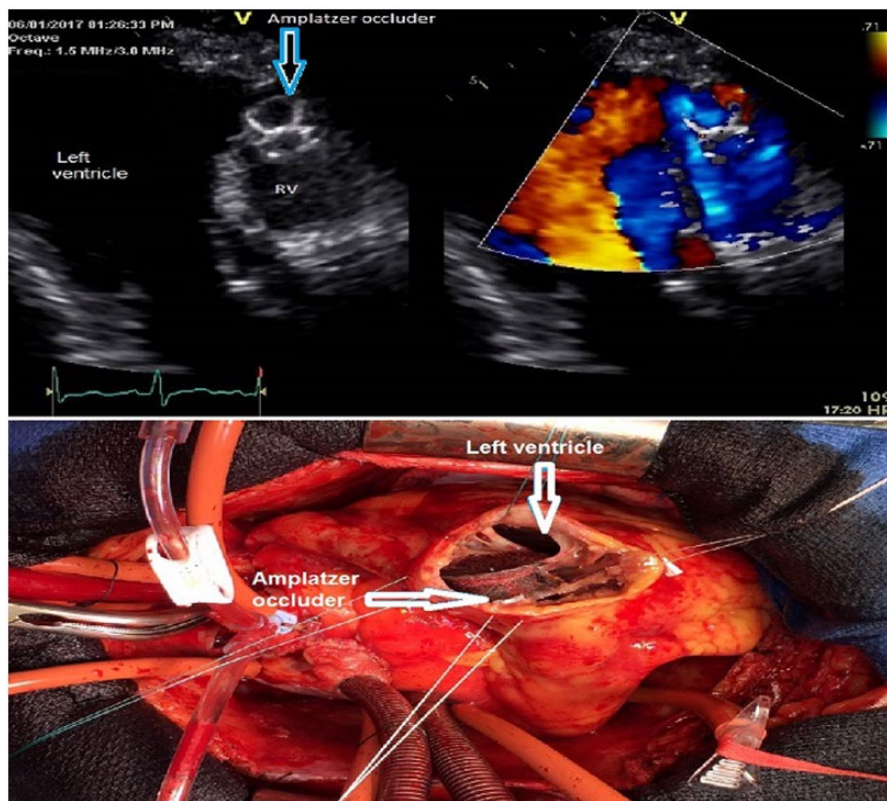
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A multi-biomarker approach to improve the prognostic stratification in pulmonary hypertension

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Background: Pulmonary hypertension (PH) covers a group of conditions characterized by an increase in pulmonary vascular resistance leading to right ventricular failure. Risk stratification is crucial for adequate prognostic and therapeutic assessment. However, the accuracy of conventional parameters is limited, especially biomarkers.

Objectives: To determine the prognostic value of new biomarkers and their combination in a multi-biomarker approach to predict outcome in patients with PH.

Methods: In this prospective cohort study, PH patients underwent clinical, echocardiographic and laboratory assessment, including quantification of serum N-terminal pro-brain natriuretic peptide (NT-proBNP) and of the following new biomarkers: mid-regional pro-adrenomedullin (MR-proADM), copeptin, endothelin-1, mid-regional pro-atrial natriuretic peptide (MR-proANP) and soluble ST2 (sST2), the interleukin-33 receptor. The accuracy of the different parameters for predicting all-cause mortality and death or hospitalization of cardiac causes was determined. The prognostic value of a multi-biomarker score based on the tertile distribution of serum NT-proBNP, MR-proANP, renin and sST2 was compared to conventional markers.

Results: Forty-three patients (72.1% female, age 59±15 years) were included, most of whom (65.1%) had group 1 PH. During a median follow-up of 34 months, 26% of the patients died and 35% were hospitalized for cardiac causes. Atrial and ventricular dimensions and right ventricular fractional area change were prognostic predictors. Log NT-proBNP (HR: 31.14; 95% CI: 3.12-310.7; p=0.003) and renin (HR: 1.02; 95% CI: 1.005-1.038; p=0.009) were independent predictors of mortality. MR-proANP (HR: 1.008; 95% CI 1.004-1.011; p<0.001) and sST2 (HR: 1.005; 95% CI 1.001-1.009; p=0.04) were predictors of death or hospitalization. The prognostic value of the multi-biomarker score was higher than any of the conventional parameters, and enabled identification of risk groups (the high-risk group had three-year mortality of 77.8%).

Conclusion: A multi-biomarker approach was superior for risk stratification to any single marker. A score that incorporates NT-proBNP, MR-proANP, renin and sST2 accurately identifies patients at low, intermediate and high risk.

Acute heart failure: mechanisms and diagnosis Saturday, 03 March 2018 - 11:00 - 12:30

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Serotonin triggered neutrophil degranulation aggravates myocardial reperfusion injury

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Background: Restoration of blood flow after acute myocardial infarction (MI) comes at the cost of reperfusion injury. This is associated with an inflammatory response accompanied by a burst of neutrophils migration. The peripheral hormone serotonin is synthesized by tryptophan hydroxylase 1 (TPH1) and mediates neutrophil recruitment during acute phase inflammation.

Purpose: To assess the contribution of platelet derived serotonin on inflammation during myocardial reperfusion injury.

Methods: MI was induced for 30 minutes, followed by 24 hours of reperfusion. Heart function and infarct size was evaluated. Heart tissue was analyzed for cytokine expression and migrated inflammatory cells. Integrins were analyzed on circulating cells using flow cytometry. Ex vivo heart function was analyzed using the isolated working heart assay.

Results: Serotonin peaked 24 hours after MI in WT mice (150 ng/mL) and reached normal levels after 2 days (90 ng/mL). Heart function in SSRI treated and Tph1-/- mice compared to WT was improved and infarct size was reduced (40 in SSRI; 35 in Tph1-/-; 53 in WT; % area at risk (AAR)). This effect was absent ex vivo. WT mice revealed increased MPO levels in the heart and neutrophil content in the AAR was reduced in Tph1-/- mice (14 vs. 28 in WT per mm² tissue). Depletion of neutrophils reduced infarct size to 37 %AAR in WT mice. Neutrophils had decreased expression of CD11b in SSRI (70%) treated and Tph1-/- mice (30%) compared to WT. In vitro stimulation with serotonin induced degranulation of neutrophils and increased CD11b expression, which was reversable by addition of a protein transport inhibitor.

Surprisingly, the protective effect in 5-HT deficient mice was additive to ticagrelor (100mg/kg loading; 50mg/kg twice afterwards) mediated cardio protection in terms of infarct size and integrin expression.

Human neutrophils revealed the same phenotype and ACS patients showed a correlation of plasma 5-HT and neutrophil CD11b (R2=0,72).

Conclusions: Serotonin directly mediates neutrophil migration during myocardial reperfusion injury by inducing degranulation and subsequent upregulation of CD11b. Since this effect was also present after treatment with ticagrelor, intervening in serotonin-neutrophil crosstalk might provide novel anti-thromboinflammatory treatment options for cardiologists.

Figure 1: TPH1 deficiency protects against myocardial reperfusion injury. (a) Infarct size (white tissue) in relation to the AAR (non-blue) was significantly reduced in TPH1 mice (shown in the blue panels) after 24 hours of reperfusion. (b) This was accompanied by a reduced amount of neutrophil (stained in red) infiltration into the heart. (c) Flow cytometry revealed reduced expression of CD11b on circulating neutrophils in absence of platelet serotonin, whereas CD11a was not affected.
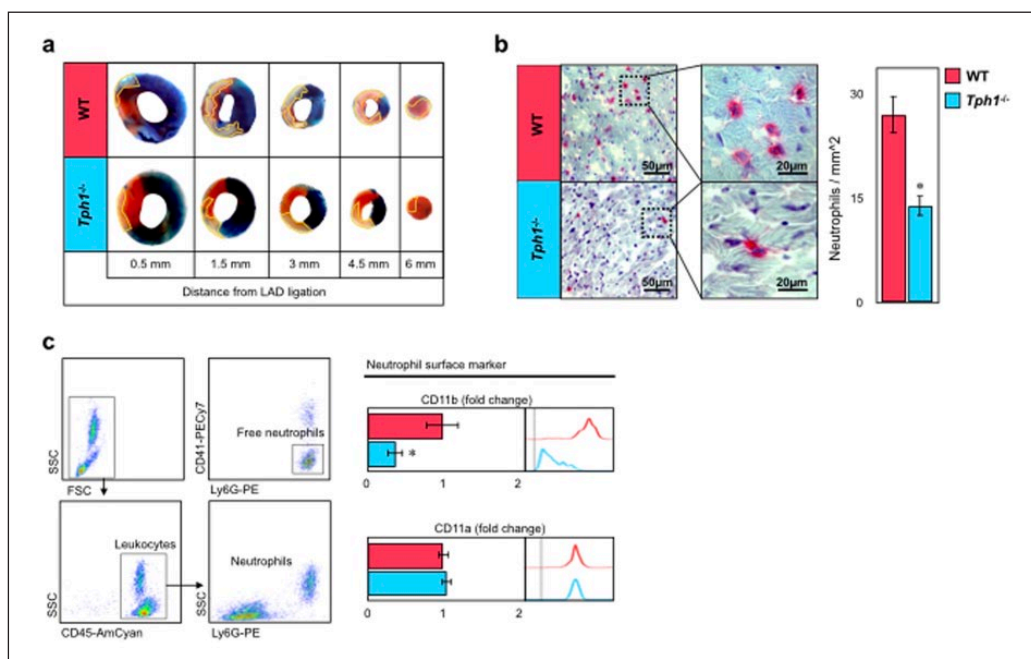
Controversies in patients with NSTEMI Saturday, 03 March 2018 - 11:00 - 12:30

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Clinical validation of a novel high-sensitivity cardiac troponin I assay for early diagnosis of acute myocardial infarction

J Boeddinghaus,[1] R Twerenbold,[1] T Nestelberger,[1] P Badertscher,[1] M Rubini Gimenez,[1] B Morawiec,[2] J Parenica,[3] FJ Martin-Sanchez,[4] Ò Miro[5] and C Mueller[1]

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On behalf of: APACE Investigators

Background: The clinical performance of the recently developed novel high-sensitivity cardiac troponin I (hs-cTnI-Centaur) assay is unknown.

Purpose: To clinically validate the novel hs-cTnI-Centaur assay.

Methods: We enrolled unselected patients presenting to the emergency department with symptoms suggestive of AMI. Final diagnoses were centrally adjudicated by two independent cardiologists using once hs-cTnT-Elecsys and once hs-cTnI-Architect measurements. Concentrations of hs-cTnI-Centaur were measured at presentation, at 1h, and 2h in a blinded fashion. The primary analysis was a direct comparison of diagnostic accuracy as quantified by the area under the receiver-operating-characteristic curve (AUC) of hs-cTnI-Centaur versus the two established hs-cTn assays (hs-cTnT-Elecsys, hs-cTnI-Architect). Secondary analysis included derivation and validation of hs-cTnI-Centaur specific 0/1h- and 0/2h-algorithms.

Results: AMI was the adjudicated final diagnosis in 318/1755 (18%) patients. The AUC at presentation for hs-cTnI-Centaur was 0.94 (95% confidence interval [CI], 0.92-0.96) and comparable to 0.95 (95%, 0.93-0.97) for hs-cTnT-Elecsys and 0.93 (95%, 0.90-0.96) for hs-cTnI-Architect. Applying the hs-cTnI-Centaur 0/1h-algorithm developed in the derivation cohort to the validation cohort, 46% of patients were ruled-out with a negative predictive value of 99.7% (95%CI, 97.8-100) and a sensitivity of 99.1% (95%CI, 95.3-100), and 18% of patients were ruled-in with a positive predictive value of 72.5% (95%CI, 65.1-78.9) and a specificity of 94.1% (95%CI, 91.8-95.9). The hs-cTnI-Centaur 0/2h-algorithm ruled-out 55% of patients with a sensitivity of 100% (95%CI, 94.1-100), and ruled-in 18% of patients with a specificity of 96.0% (95%CI, 93.1-97.9).

Conclusions: Diagnostic accuracy and clinical utility of the novel hs-cTnI assay are very high and comparable to the two established hs-cTn assays.

Performance of the 0/1h-algorithm
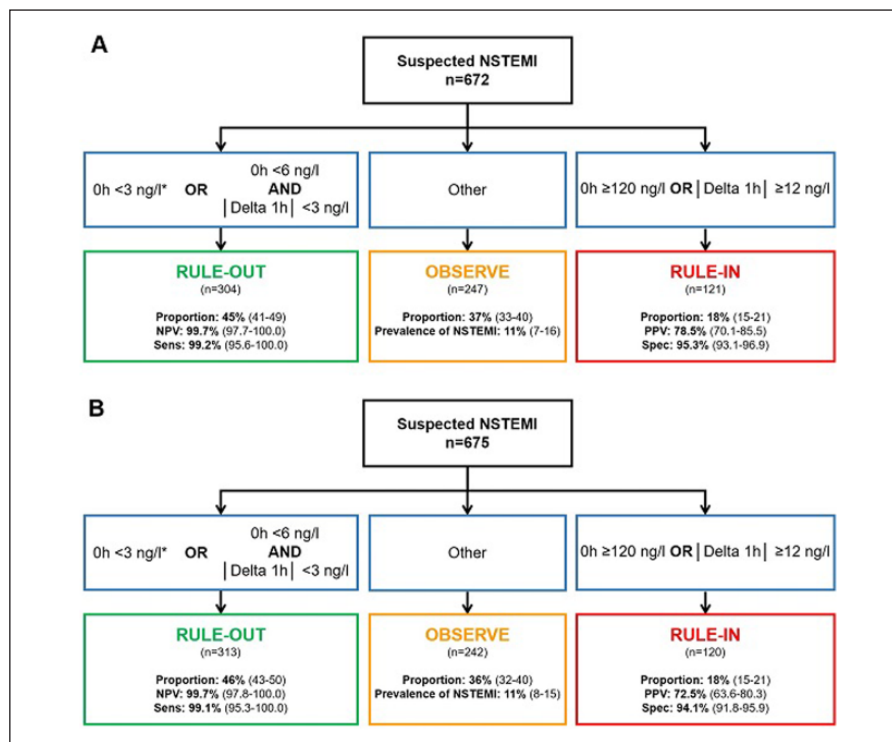
Optimisation of STEMI treatment Saturday, 03 March 2018 - 14:00 - 15:30

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Higher mortality during weekend admission for acute coronary syndromes: still a matter of concern

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Background: After few years from the publication of important studies about higher mortality rates in patients admitted for an acute myocardial infarction during weekends, some hospitals still provide only emergency or urgent care during Saturday and Sunday. The differences in staffing and in lower rates of early reperfusion therapy may result in different outcomes for patients with acute coronary syndromes. In the past two decades, several studies reported an excess of mortality risk for Acute Coronary Syndromes (ACS) admissions during weekends, but limited evidence is available regarding current clinical practice.

Rationale: The aim of this study is to assess whether the excess of mortality due to admission during weekend is still present in current clinical practice in the setting of a public healthcare system.

Methods: We retrieved ACS admissions the National Healthcare System hospitals between January 2010 and December 2014. ICD9 classification of diseases was used to assess and stratify for diagnosis of Unstable Angina (411.1), Non-ST segment Elevation Myocardial Infarction (410.70, 71) and ST-segment Elevation Myocardial Infarction (410.00, 01, 10, 11, 20, 21, 30, 31, 40, 41, 50, 51, 60, 61, 80, 81). Date of admission was used to determine the weekend (Saturday and Sunday) or weekdays exposure (Monday to Friday). The primary outcome of interest was in-hospital mortality. Epidemiological characteristics of patients (age and sex) were included in a multivariate logistic regression analysis. Analysis was performed using Stata 13.0.

Results: A total of 80,391 ACS admissions in the area of interest (21% Unstable Angina [UA], 36.8% Non ST Elevation Myocardial Infarctions [NSTEMI], 42.2% ST Elevation Myocardial Infarction [STEMI]) were identified. Mean age was 67.5 years and 69.8% were men. The in-hospital mortality was 3.05% (2,455 events). We found a significant increase in the risk of death among patients admitted during weekends (OR 1.13; 95% CI 1.03-1.24[GS1]). The variability explained by the model was of 5.3% (pseudo R-squared 0.053). Men have a lower risk of mortality as compared to women (OR 0.85, 95% C.I 0.78-0.93), but are more susceptible to increase their risk during weekends (1.15, 95% C.I 1.02-1.29). The effect of weekend admission appears to have an inverse relationship with age, being more prominent in younger patients with a progressive attenuation according to age increase (Figure 1).

Conclusions: Despite the implementation of updated guidelines, ACS patients admitted during weekends remain at higher risk of mortality as compared to those admitted during weekdays in current clinical practice. This effect appears more pronounced among men and younger patients. Quality interventions to improve logistics and patient management are needed to improve clinical outcomes of ACS patients admitted during weekends.

Figure 1

Weekend ODDS RATIO for in-hospital mortality

■ Weekend ODDS RATIO for in-hospital mortality

2,09 — age < 45; 1,78 — age < 55; 1,29 — age < 65; 1,22 — age <75; 1,05 — age > 75
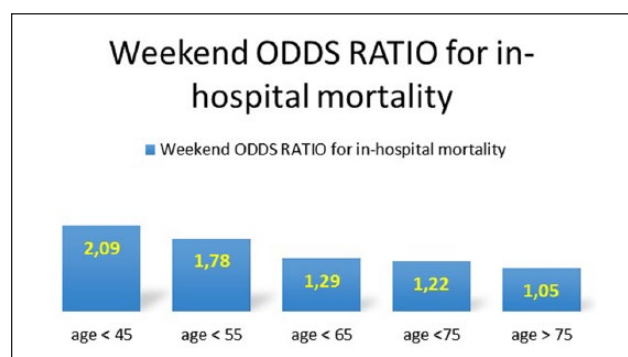
Moderated Poster Session 3 - Acute Coronary Syndromes II Saturday, 03 March 2018 - 15:30 - 16:30

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Hypoglycemic events during hospitalization in diabetic acute coronary syndrome patients treated with vildagliptin vs. guidelines based medical therapy

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Background: Morbidity and mortality in diabetic patients with Acute Coronary Syndrome (ACS) are dramatically higher compared to non-diabetic patients, particularly in patients with hypoglycemic events during hospitalization. Galvus (Vildagliptin) is an oral anti-diabetic drug of the new DPP-4 inhibitor class of drugs, it exhibits less frequent hypoglycemic events in Type 2 Diabetes Mellitus (T2DM) patients.

Objectives: To suggest a new paradigm of treatment in hospitalized diabetic ACS patients by adding Vildagliptin to conventional Insulin-only treatment.

Methods: 100 T2DM adult patients were enrolled when admitted to the ICCU with ACS diagnosis. Patients were divided into two groups in a randomized controlled manner. The control group received subcutaneous Insulin-only therapy while the study group received oral Vildagliptin in addition to the subcutaneous Insulin. Mean glucose values per hospitalization day, mean insulin values given for correction and hypoglycemic events (glucose<70 mg/dl) were documented.

Results: 8 events of hypoglycemia occurred in the control group in comparison to none in the Vildagliptin treated group(t(45)=2.070, p < 0.001(. STEMI and NSTEMI diagnosed patients had significantly (p < 0.05) higher number of hypoglycemic events compared to Unstable Angina diagnosed patients. No significant differences were found between the two groups in glucose level(t(88)=-0.739 ,p=0.462), and in given insulin units(t(87)=0.471,p=0.639).

Conclusions: In T2DM patients hospitalized for ACS, an addition of Vildagliptin to the routine subcutaneous insulin-only therapy significantly attenuated hypoglycemic events while maintaining identical mean glucose levels and insulin dosage compared to insulin-only therapy. Further studies are required to verify the promising results and to support it as a superior standard of treatment.

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Transitioning from the old definition of acute coronary syndromes with normal coronary arteries to the new acronym of MINOCA; how this work-up occurs in the real world

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Background: The concept of acute coronary syndrome (ACS) has been successfully developed as a triage diagnosis at admission for patients with acute atherothrombosis, i.e. patients with a final diagnosis of acute myocardial infarction (MI) or unstable angina (UA).

The 2017 ESC guidelines on STEMI emphasized on the concept of MI with non-obstructive coronary arteries (MINOCA).

We tested the diagnostic efficiency of an objective ACS diagnosis - i.e. the proportion of ACS patients with a final diagnosis of acute MI or unstable angina - in a consecutive real-world population.

Methods: As a part of a larger quality improvement initiative we examined diagnostic concordance between admission and discharge diagnosis in a consecutive series of patients of a tertiary care hospital.

An admission diagnosis of (suspect) ACS was made in case of symptoms of myocardial ischemia of ≥ 10 minutes as well as objective evidence of ACS including either 1) persistent ST elevation (STEACS) or in case of no STEACS a 2) positive troponin (>URL) and/or ECG evidence (ST depression in at least 2 contiguous leads or new T wave inversion of ≥ 2 mm).

The final diagnosis at discharge was myocardial infarction (MI) classified according to the Third Universal MI Definition, UA, or an alternative diagnosis.

Urgent angiography was performed to all patients followed by echocardiography, cardiac magnetic resonance (CMR) or endomyocardial biopsy (EMB) in patients with non-obstructive coronary artery disease.

Results: Of a total 1004 consecutive patients prospectively enrolled in a period of 18 months with an admission diagnosis of ACS, the final diagnosis at discharge was acute MI in 914 patients (91%), unstable angina in 23 (2.3%) and an alternative diagnosis in 67 patients (6.7%). Of the 914 patients discharged with acute MI, the most common was

type 1 MI (n=792, 79%), followed by type 4b MI (n=47, 4.7%) and type 2 MI (n=45, 4.5%).

A total of 100 patients had non-obstructive coronary artery disease on urgent angiography (9.9%). 73 of these patients fulfill the criteria of MINOCA and most of these patients (n=50) had an alternative discharge diagnosis, the most common being left ventricular apical ballooning syndrome (n=16, 22%), previously undiagnosed or new-onset cardiomyopathy (n=14, 19%), arrhythmias (n=8, 11%) and myocarditis (n=6, 8.2%).

Conclusions: In a large series of patients with objective criteria leading to an admission diagnosis of ACS, one out every fifteen patients is discharged with an alternative diagnosis.

The great majority of these patients (n=50, 74,6%) fulfill the criteria for MINOCA.

Careful diagnostic work-up, including advanced imaging, should be routinely considered in these patients before diagnosing myocardial infarction.
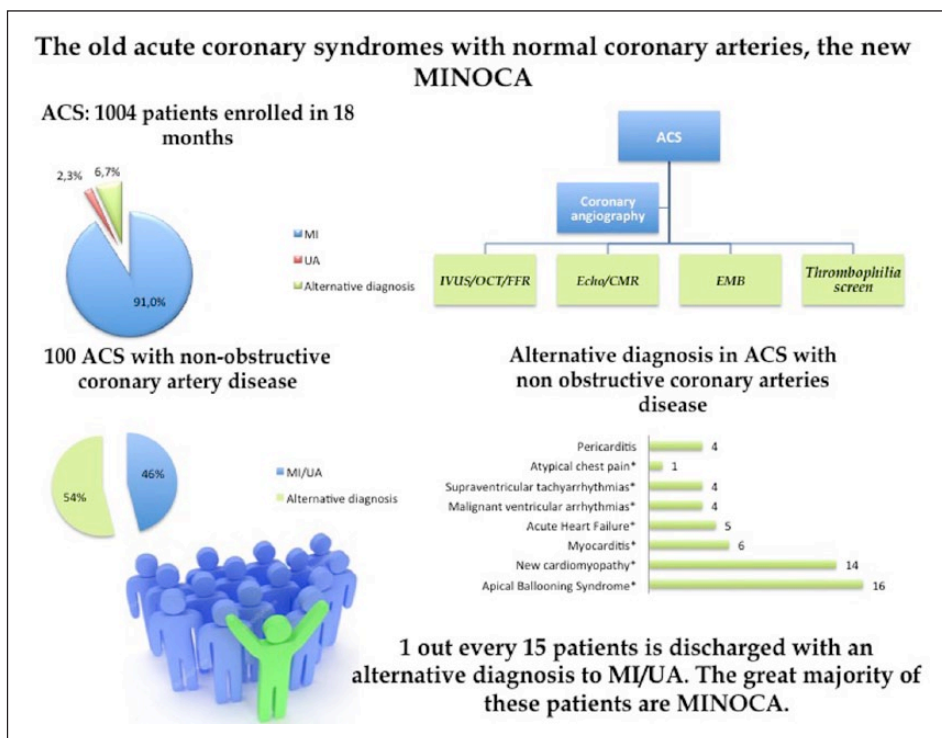
MINOCA 2018

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Right bundle branch block in patients with suspected myocardial infarction

J T Neumann,[1] N Soerensen,[1] N Ruebsamen,[1] F Ojeda,[1] T Keller,[2] T Zeller,[1] M Karakas,[1] S Blankenberg,[1] P Clemmensen[1] and D Westermann[1]

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Background: The new 2017 ESC Guideline for patients with ST-elevation myocardial infarction (MI) recommend that left and right bundle branch block should be considered equal for recommending urgent angiography when MI is suspected. We aimed to evaluate this new recommendation in two large and prospective studies of patients presenting with suspected MI.

Methods: We included 3,410 patients presenting with suspected MI to the emergency department. The final diagnosis was blindly adjudicated by two physicians. All patients had an ECG recorded immediately upon admission, according to the ESC guidelines. Patients were classified as having right bundle branch block (RBBB), left bundle branch block (LBBB), bifascicular block (BFB) or no complete block. All patients were followed for up to two years to assess mortality.

Results: In the overall study population 105 (3.1%) patients had RBBB, 240 (7.0%) LBBB, 48 (1.4%) BFB and 3,017 patients had no complete block. The final diagnosis of MI was adjudicated in 21.0% (RBBB), 27.5% (LBBB), 27.1% (BFB) and 22.2% (no complete block) of patients. Overall patients with a bundle branch block were older and had a higher cardiovascular risk profile, compared to patients without bundle branch block. Among those patients diagnosed with MI, angiography and revascularization rates were similar, among patients regardless of no bundle branch

block or block type. The mortality rate after one year was 10.7% for patients with RBBB, 7% for LBBB, 17.5% for BFB and 3.2% for patients without complete block.

Conclusion: This study support the new ESC STEMI guideline not discriminating between LBBB and RBBB.

Patients with RBBB are at higher risk, and equally likely to have a final diagnosis of MI as those without bundle branch block. Patients with RBBB were often triaged to angiography with a high incidence of PCI treated culprit coronary artery stenosis.

Table 1. Overall study population.

	RBBB (N=105)	LBBB (N=240)	BFB (N=48)	No complete blocks (N=3,017)
Final diagnosis of AMI (%)	22 (21.0)	66 (27.5)	13 (27.1)	671 (22.2)
Age (years)	73.0 (66.7, 79.0)	71.0 (64.4, 77.0)	77.0 (73.4, 82.0)	62.0 (51.0, 72.0)
Male (%)	84 (80.0)	170 (70.8)	35 (72.9)	1945 (64.5)
Hypertension (%)	89 (84.8)	211 (88.3)	43 (89.6)	2069 (68.7)
History of CAD (%)	59 (57.3)	134 (56.8)	25 (52.1)	951 (31.9)
Heart failure (%)	20 (19.2)	70 (30.2)	16 (34.0)	198 (6.7)
Angiography (%)	41 (39.0)	109 (45.4)	17 (35.4)	1098 (36.4)
PCI (%)	20 (19.0)	49 (20.4)	4 (8.3)	613 (20.3)

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Low achievement of recommended low-density lipoprotein-cholesterol goals for primary or secondary prevention in patients admitted with suspected acute coronary syndrome

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Background: Intensive low-density lipoprotein cholesterol (LDL-C) reduction is a mainstay of cardiovascular disease (CVD) prevention. The ESC recommends an LDL-C goal<70 mg/dL for secondary prevention or for primary prevention in very high-risk patients, 100 mg/dL in high-risk patients and 115 mg/dL in the remaining patients on LDL-C lowering therapy. However, optimal LDL-C control is difficult to attain in clinical practice.

Purpose: To assess the achievement of LDL-C targets for primary or secondary prevention in consecutive patients admitted with suspected acute coronary syndrome (ACS).

Methods: Fasting plasma LDL-C was measured the morning after admission in 2661 patients hospitalized at our intensive cardiac care unit with suspected ACS between Jan 2010 and Sep 2015. We searched for the prevalence and predictors of poor LDL-C control.

Results: Patients' median age was 65 years (IQR:54-76), 74.2% were male and 54.2% had persistent ST elevation. Of them, 43.9% were very-high risk (known CVD, severe renal failure or diabetes with other risk factors), 45.8% high-risk (moderate renal failure or CVD risk factors), 4.2% had isolated dyslipidemia and 6.0% had no risk factors. Median total cholesterol was 173(145-204)mg/dL, LDL-C 103(78-129)mg/dL and high-density lipoprotein cholesterol 39(33-46)mg/dL. The percentage of patients on lipid-lowering drugs in each of the risk categories and their LDL-C levels on admission are summarized in the Table. Overall, only 35.2% had LDL-C levels below the recommended target. Among treated patients, dual lipid-lowering therapy was used in 4.7%. Poor LDL-C control was associated to younger age, higher body mass index, active smoking, diabetes mellitus, preserved renal function and no ongoing aspirin. Logistic regression analysis retained active smoking (odds ratio 2.64,95%CI 2.16-3.22, P< 0.001), diabetes mellitus (2.00, 1.62-2.47, P < 0.001) and body mass index (per unit,1.03, 1.01-1.05, P=0.005) as independent predictors of LDL-C levels above the recommended target.

Conclusions: Only one third of patients admitted with suspected ACS have LDL-C levels on admission consistent with ESC recommendations. Major efforts are needed to improve lipid control, especially among higher-risk patients and in smokers or in those with diabetes mellitus or overweight.

Table 1. LDL-C levels and treatment on admission.

	On lipid-lowering drugs	Median (IQR) LDL-C, mg/dL	% below goal LDL-C
Very high risk, n=1169	70.5%	87 (66-111)	29.3
High risk, n=1220	20.9%	114 (92-139)	32.7
Isolated dyslipidemia, n=112	33.0%	122 (100-140)	41.1
Low risk, n=160	0%	112 (86-134)	100

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Use, timing and outcome of coronary angiography in patients with high risk non-ST-segment acute coronary syndrome in daily practice- insights from a "real-world" prospective registry

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Background: In high-risk patients with non-ST-elevation acute coronary syndrome (NSTE-ACS), guidelines recommend an early invasive strategy, defined as coronary angiography (CA) within 24 hours of admission.

Purpose: To investigate use and timing of CA, associated patient characteristics and clinical outcome of early (EIS) versus delayed invasive strategy (DIS) in clinical practice, defined as CA < 24 hours or > 24 hours of admission, respectively.

Methods: Data from a prospective single centre registry were analyzed with consecutive patients hospitalized with ACS in a large, regional non academic hospital with 24/7 interventional facilities. Trends over time in rate and timing of CA were evaluated. Characteristics and clinical outcome were compared using multivariate logistic regression between patients undergoing EIS and DIS.

Results: Between 2006 and 2014, 2299 high-risk NSTE-ACS patients were included in the study. The percentage of patients undergoing CA increased from 77% in 2006 to 90% in 2014 (p trend<0.001) together with a decrease of median time to CA from 23.3 to 14.5 hours (p trend<0.001, see figure) and increase of percentage of patients undergoing EIS from 50 to 60% (p trend =0.002). Patient factors independently related to DIS were higher GRACE risk score and age and presence of comorbidities (see table). No difference was found in incidence of mortality, reinfarction and bleeding at 30 days follow-up. All cause mortality after 1 year follow-up was 4.1 vs. 7.0% in EIS and DIS respectively (HR 1.67, 95% CI 1.12-2.49) but was comparable after adjustment for confounding factors.

Conclusion: The percentage of high risk NSTE-ACS patients undergoing CA and EIS has increased in the past decade. In contrast with the guidelines, patient with higher risk profile are less likely to undergo EIS. However, no difference in outcome after 30 days and 1 year was found after multivariate adjustment for this higher risk.

Table 1. Prognostic factors for delayed CAG.

	OR	95% CI	p-Value
Age (per year)	1.02	1.01-1.03	<0.001
ST-deviation >0.5 mm	0.54	0.44-0.67	<0.001
Year of inclusion	0.91	0.87-0.96	<0.001
Hypertension	1.30	1.05-1.62	0.02
Diabetes	1.42	1.09-1.85	0.01
Previous PCI	1.39	1.04-1.85	0.03
Hospitalisation in weekend	1.70	1.35-2.15	<0.001

Multivariate regression analysis of factors independently related with timing of CA (Odds Ratio of delayed versus early angiography).

Box and whiskers plot of time in minutes from hospitalization to coronary angiography. Horizontal line depicts 1440 minutes (24 hours). Boxes depict median and 25th and 75th percentiles, whiskers 5th and 95th percentiles. CA= coronary angiography, min=minutes
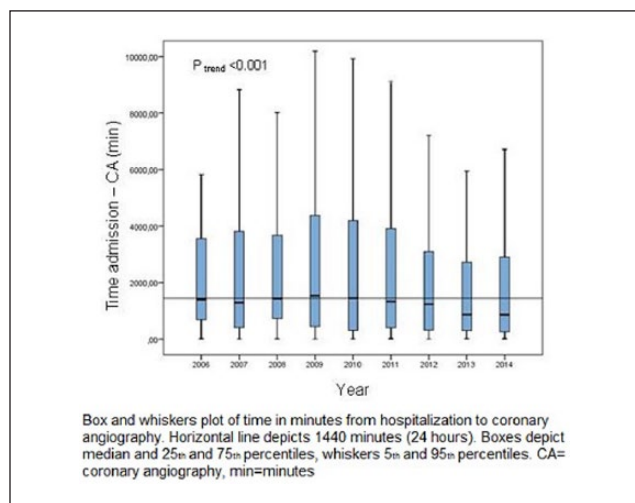
Time from hospitalization to CA

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The additional prognostic value of right bundle branch block over the GRACE score for prediction of intra-hospital mortality in patients with acute coronary syndrome

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Purpose: The aim of this study was to evaluate the complementary role of RBBB over the GRACE score for

the prediction of intra-hospital mortality in acute coronary syndrome patients.

Methods: Retrospective, descriptive, observational study including 2092 consecutive patients (mean age: 67 ± 13 years, 27% female) admitted for ACS to a tertiary hospital. Patients with ventricular stimulation were excluded and those unable to calculate the GRACE score. During hospital stay, data consisting in clinical and analytical parameters, as well as complementary explorations and treatment were collected. The principal outcome of the study was intra-hospital mortality.

Results: At hospital admission RBBB was present in 186 (8.9%) patients. The mean GRACE score at admission was 148 ± 45 points. In patients presenting with RBBB GRACE score was significantly higher than in those who did not show RBBB (166 ± 45 vs. 146 ± 45, $p < 0.001$). During hospital stay, 91 (4.4%) patients died. The patients with RBBB presented higher mortality compared to the global population (OR=3.27, 95% confidence interval [CI]: 2.07-5.15, $p < 0.001$). In the global population, after multivariate adjustment the presence of RBBB at admission and the GRACE score were independent predictors of intra-hospital mortality (table 1). Those patients with low/intermediate GRACE score (≤140 points) and without RBBB were at lowest risk of death (1.16%), whereas the subgroup with high GRACE score (>140 points) and RBBB presented the highest mortality risk (15.7%, p of lineal tendency < 0.001). Moreover, risk reclassification analysis (NRI e IDI) showed complementary value of RBBB to the GRACE score.

Conclusion: The presence of RBBB in patients with ACS is associated with a major risk of intra-hospital mortality. Moreover, it contributes additional prognostic information on top of the GRACE score. Future studies should evaluate the possibility of including this electrocardiographic alteration in risk stratification scales in ACS.

Table 1. Predictors of intrahospital mortality.

	Odds Ratio	95% confidence interval	p
RBBB	2,247	1,009-5,005	0,047
GRACE	1,022	1,015-1,030	0,000
Haemoglobin	0,891	0,761-1,043	0,151
Atrial fibrillation or flutter	1,493	0,723-3,086	0,279
Severe lesion in left anterior descending coronary artery	1,544	0,685-3,478	0,295
LVEF < 40%	2,568	1,289-5,114	0,007
Coronary revascularization	0,661	0,277-1,575	0,350

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Complete revascularization in AMI patients with cardiogenic shock and multivessel disease

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Cardiogenic shock (CS) is the most life-threatening complication of acute myocardial infarction (AMI). According to guidelines, non-IRA and complete revascularization during the index revascularization procedure should be considered to improve the outcomes. We analyzed the current clinical practice of revascularization in multivessel shock AMI patients in a nationwide registry.

Methods and patients: We used Polish Registry of Acute Coronary Syndromes (PL-ACS) database from years 2016-2017. From 19,851 admissions due to NSTEMI (11,978) and STEMI (7,873), we selected patients with CS on admission and coronary angiography performed (N=591). Type and extend of coronary revascularization was at discretion of the operators.

Results: Less patients with NSTEMI (1.5%) than NSTEMI (5.2%) had CS on admission (P < 0.0001). Multivessel disease were diagnosed in 57% of NSTEMI and 50% of STEMI CS patients (p=0.15). More complete revascularization with both PCI or CABG in multivessel disease patients was performed in NSTEMI (33%) than STEMI (23%), p=0.079 (Figure). Patients with complete revascularization were on average 3 years younger (68 vs. 71, p=0.21), had comparable median time from the onset of AMI to admission (159 vs. 150 min, p=0.88) and mean left ventricle ejection fraction (35% vs. 36%, p=0.90), however, they had more frequently 2-vessel disease than 3-vessel disease (73% vs. 40%, p < 0.001) and AMI due to left main disease (15% vs. 7%, p=0.057) than patients with incomplete revascularization.

Unadjusted in-hospital mortality was lower in patients with complete revascularization (36% vs. 50%, p=0.034); in NSTEMI (23% vs. 48%, p=0.022); in STEMI (44% vs. 51%, p=0.44). After adjustment for baseline clinical and angiographic parameters in multivariate logistic regression model for in-hospital mortality, odds ratio for complete revascularization was 0.60 with 95%CI 0.32-1.11, p=0.10.

Conclusions: In daily clinical practice one-fourth of AMI patients with cardiogenic shock and multivessel disease receive complete revascularization. Completely vascularized patients had better in-hospital outcomes.
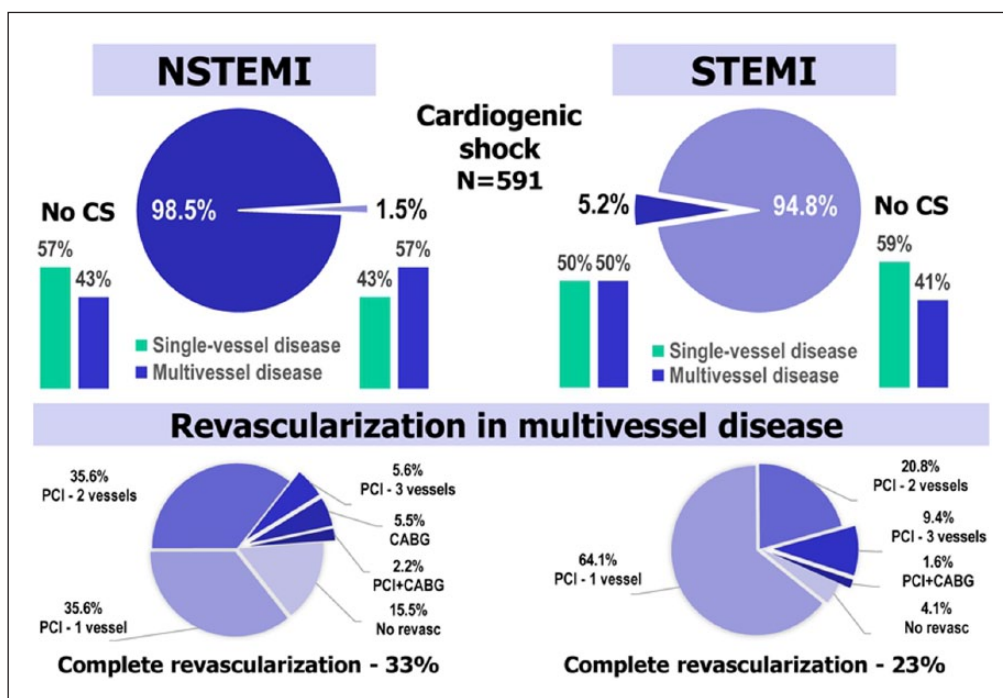
Figure

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Net clinical benefit of ticagrelor, real world data from a multicentre registry study

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On behalf of: ARIAM Andalusia

Introduction: Novel P2Y12, Ticagrelor and Prasugrel, had been demonstrated to be superior to Clopidogrel in patients with acute myocardial infarction (AMI). Better clinical outcomes are obtained due to their potency and rapid onset of action. Recently it has been questioned the benefits of Ticagrelor and its clinical impact in the short-term mortality.

Objectives: To describe the "real world" data of the efficacy and security of Ticagrelor compared to clopidogrel in patients with an acute myocardial infarction admitted in a cardiac intensive care unit.

Methods: This is a retrospective multicentre observational study from the ARIAM-Andalusia registry of patients admitted with an AMI. Mayor adverse cardiovascular events (MACE, composite of death, non fatal myocardial infarction, urgent revascularization and stroke) and bleeding events were collected prospectively between 2013 and 2015, during hospitalization and after 30 days of the event/discharge. Net clinical benefit of ticagrelor vs clopidogrel was analysed using a Cox regression model adjusted by using propensity score greedy matching (PS 1:1) and inverse probability of treatment weight (IPTW)

Results: 1889 patients were included (58% STEMI, 46% GRACE Score > 140, 93% PCI), 1313 were treated with clopidogrel and 576 with ticagrelor. Patients treated with ticagrelor were younger, more likely to be admitted for STEMI, had better reperfusion times and higher PCI rate. 30 day non-adjusted analysis showed a lower mortality (HR=0.21 IC95% [0.11-0.43]; p<0,0001) in the ticagrelor group, without an increase in the bleeding rate (HR=0.95 IC95% [0.54-1.62];p=0.940), so a net clinical benefit of

ticagrelor was demonstrated (HR=0.48 IC95% [0.33-0.72];p<0,0001). The adjusted analysis confirmed the net clinical benefit of ticagrelor PS (574 matched patients, standardized differences<10%) HR=0,63 IC95% [0.39-0.90]; p<0,0001, IPTW (n=1889) HR=0.46 IC95% [0.27-0.79]; p=0,049. Moreover, an early reduction of mortality was observed in the ticagrelor group (PS HR=0.28 IC95% [0.11-0.61]; p<0.0001, IPTW HR=0.26 IC95% [0.13-0.54]; p<0.0001). In the subgroup analysis, ticagrelor also showed net clinical benefit in those patients with higher bleeding risk (>75 years, previous stroke, chronic kidney disease and high CRUSADE score).

Conclusions: Real world data showed that ticagrelor was associated with a higher net clinical benefit compared to clopidogrel, even though in patients with higher bleeding risk, with an early reduction in mortality.

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Beta blocker therapy reduces mortality in patients with coronary artery disease treated with percutaneous revascularization: a meta analysis of adjusted results

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Importance: The long-term impact of Beta Blockers (BB) on prognosis in patients treated with contemporary therapies for CAD (Coronary Artery Disease) remains to be defined.

Objective: In this meta-analysis that included 24 studies, the use of BB reduced long-term mortality, both for ACS and stable angina patients, independently from EF.

Data Sources: Pubmed, Cochrane Library and Google Scholar through April 2017.

Study Selection: All observational studies evaluating the impact of BB in patients treated with coronary revascularization and contemporary therapies and adjusted with multivariate analysis.

Data Extraction and Synthesis: The present research was elaborated by three authors, using current guidelines from The Cochrane Collaboration and Meta-analysis of Observational Studies in Epidemiology.

Main Outcome(s) and Measure(s): All cause death was the primary end point, while MACE (a composite end point of all cause death or myocardial infarction, MI) and myocardial infarction were secondary endpoints. Subgroup analysis were performed for clinical presentation and EF (Ejection Fraction).

Results: 24 studies were included, with 863,335 patients (610,476 were on BB, while 252,859 were not). After 3 (1-4.3) years, long-term risk of all cause death was lower in patients on BB (Odds Ratio [OR] 0.69 [0.66-0.72]), both for ACS (OR 0.60 [0.56-0.65]), and stable angina patients (0.84 [0.78-0.91]) and independently from EF (OR 0.64 [0.42-0.98] for reduced EF and OR 0.79 [0.69-0.91] for preserved EF). The risk of long-term MACE was lower but not significant for ACS patients treated with BB (OR 0.83 [0.69-1.00]), as in stable angina. Similarly, risk of MI did not differ between patients treated with and without BB. (OR 0.99 [0.89-1.09], all CI 95%). Using meta-regression analysis, the benefit of BB was increased for those with longer follow-up. The number needed to treat (NNT) was 52 to avoid 1 event of all cause death for ACS patients and 111 for stable patients.

Conclusions and Relevance: Even in PCI era, BB reduce mortality in patients with CAD, confirming their protective effect, which was consistent for ACS and stable patients and for those with preserved or reduced EF.

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Frequency and determinant factors of adherence to current guidelines of clinical practice regarding pharmacological treatment prescribed at discharge after acute coronary syndrome

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Background: The prognostic importance of an adequate adherence to clinical practice guidelines is well known.

Purpose: The aim of this study was to evaluate the degree of adherence to current guidelines in a regional cohort of patients admitted for acute coronary syndrome (ACS).

Methods: In this prospective cohort study 1625 consecutive patients between January 2011 and September 2015 admitted for ACS to 4 regional hospitals in southern Spain were included. Optimal pharmacological treatment at discharge was defined as the combination of dual antiplatelet therapy, angiotensin-converting enzyme (ACE) inhibitors or Angiotensin II receptor antagonists (ARBs), high dose statins (Atorvastatin 80 mg or Rosuvastatin 20 mg) and Beta blockers.

Results: At discharge, 92.99% of the population had been prescribed dual antiplatelet therapy; 92.8% received Beta

blockers; 93.73% ACE inhibitors or ARBs and 61.78% high dose statins. Globally, 834 patients (51.32%) had been prescribed optimal treatment at discharge. Analysed in terms of the number of recommended drugs, 8 patients (0.49%) were discharged without any drug, 42 patients (2.58%) with one agent, 154 patients (9.48%) with two, 587 patients (36.12%) with three and 834 patients (51.32%) with four (optimal treatment). Multivariate logistic regression analysis identified as predictors of optimal treatment at discharge haemoglobin level at admission, history of arterial hypertension, renal function, history of atrial

fibrillation or flutter, year of admission and percutaneous coronary intervention.

Conclusion: In the present study, only slightly more than half of the patients discharged after ACS were prescribed optimal pharmacological therapy recommended by current clinical practice guidelines with the inherent prognostic impact that might entail. Multiple factors have been identified as predictors of not achieving optimal treatment. Thus it is of utmost importance to continue the work of the scientific societies promulgating optimal treatment strategies at discharge in patients with ACS.

Table 1. Predictors of optimal treatment.

	OR (CI 95%)	p
GRACE 6 months (per 10 points)	10.10 (10.00-10.20)	0.028
Haemoglobin	1.12 (1.04-1.21)	0.002
eGFR (CKD-EPI) [ml/min/1.73m^2]	1.01 (1.00-1.03)	<0.001
Hypertension	1.65 (1.26-2.18)	<0.001
History of atrial fibrillation or flutter	0.43 (0.32-0.61)	<0.001
Year of admission	1.01 (1.00-1.01)	<0.001
Percutaneous coronary intervention	2.69 (2.05-3.54)	<0.001

Moderated Poster Session 4 - Acute Heart Failure/ Acute Cardiac Care Saturday, 03 March 2018 - 15:30 - 16:30

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role of of assessment of left atrial emptying in assessment of acute left ventricular diastolic heart failure

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Background: acute heart failure is a challenging problem with poor prognosis and high hospitalization rate which increases with age, and it is difficult to assess elevated LV diastolic pressure.

Aim: assessment of left atrial emptying function as diagnostic tool for detection of acute heart failure.

Methods: forty patients with heart failure symptoms were investigated with conventional echocardiography to assess LA total emptying fraction (LATEF) calculated as A max- A min/A max, LA passive emptying fraction (LAPEF) calculated as A max- A p/A max, LA active emptying fraction (LAAEF) calculated as A p- A min/A max, where A max is LA area just before MV opening, A min is LA area at the end of LA systole, A p is LA area just before LA contraction. Left ventricular end diastolic pressure (LVEDP) measured invasively during coronary angiography.

Results: we found strong correlation between LVEDP and LA total, passive and active emptying fractions (r) = −0.685, -0.619 and -0.496 respectively denoting significant reduction of LA emptying parameters as long as LVEDP increase where the highest effect on LAPEF.

In comparison to subjects with normal LVEDP patients with high LVEDP has lower LA total, passive and active emptying fractions (47%±11 vs 72%±8, 26%±9 vs 42%±16 and 32%±11 vs 58%±12) respectively with p value <0.05 for each.

LA total, passive and active emptying fractions (0.44, 0.48 and 0.65 respectively) have good sensitivity and specificity for detection of high end diastolic pressure (97% and 82%), (95% and 82%) and (95% and 82%) respectively.

Conclusion: Estimating LA emptying fractions are good methods for detection of abnormally elevated end diastolic pressure with high sensitivity and specificity

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Intestinal fatty acid binding protein is associated with mortality in patients with acute heart failure or cardiogenic shock

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Background: Acute heart failure and cardiogenic shock are associated with an impaired intestinal perfusion, which may lead to a release of cytoplasmatic proteins by hypoxic epithelial injury. In addition, patients may develop an inflammatory activation and multi organ failure despite restoration of cardiac output. Intestinal fatty acid binding protein (iFABP), highly specific for the small bowel enterocyte, may pose a useful novel and very sensitive biomarker for predicting outcome of these patients.

Objectives: The aim of this study was to investigate whether circulating levels of iFABP are associated with mortality in patients with acute heart failure or cardiogenic shock requiring intensive care unit (ICU) admission.

Methods: We included 90 consecutive patients with cardiogenic shock (74.4 %) or severe acute heart failure (25.6 %) admitted to a cardiac ICU. Blood samples were taken at day 0 and day 3. Median age was 64.7 (49.4-74.3), 76.7% of patients were male and median NT-proBNP levels were 4986 (1525 − 23842) pg/mL. 30-day survival was 64.4%.

Results: Patients with serum levels of iFABP at day 0 in the highest quartile (iFABP ≥ 588.4 pg/mL) had a 2.5-fold risk (p=0.02) of dying independent of demographics, NT-proBNP levels and vasopressor use. Extensively elevated admission levels of iFABP above the 90th percentile (iFABP ≥ 10208.4 pg/mL) were associated with an excessive mortality rate of 88.9 %. In contrast, iFABP levels at day 3 were not associated with outcome.

Conclusion: Circulating levels of iFABP at admission predict mortality. This suggests that early inadequate perfusion of the small intestine may be associated with a dramatically decreased survival in patients with cardiogenic shock or severe acute heart failure.

Intestinal Fatty Acid Binding Protein is Associated with Mortality in Patients with Acute Heart Failure or Cardiogenic Shock
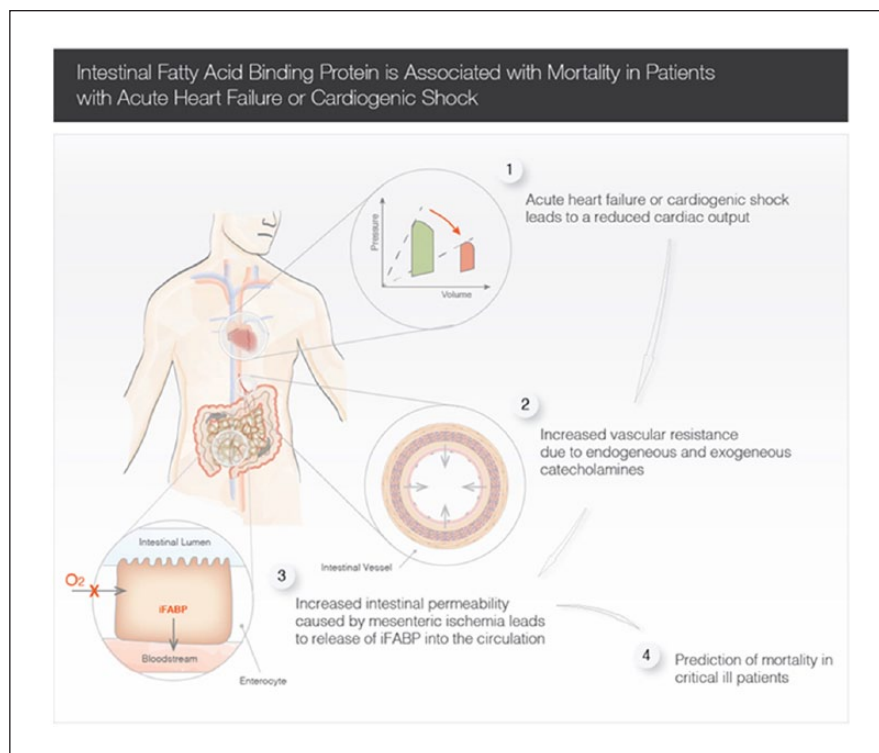
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Evaluation of acute renal failure using RIFLE criteria and associated prognosis in patients with acute heart failures

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Background: In patients admitted for acute heart failure (AHF), the development of acute renal failure (ARF) has been associated with an increase in both in-hospital and long-term follow-up. However, consensus has not yet been reached on the best way to assess renal function and to define ARF

Purpose: We intend to study the prognosis of the RIFLE criteria and their associated variables in a population of patients with AHF

Methods: 715 patients admitted for AHF (57.4% men, LVEF $44 \pm 17\%$) were studied. Creatinine (Cr) and glomerular filtration rate (GFR) were collected during admission and baseline values in clinical stable situation before admission. The RIFLE criteria establish the definition of ARF and a classification in stages according to the increase of Cr or reduction in GFR respect to the basal value in the first 7 days of admission. Stage 1: Increase $\geq$ 1.5 times in serum Cr or decrease $\geq$ 25% GFR. Stage 2: Increase $\geq$ 2 times in serum Cr or decrease $\geq$ 50% GFR. Stage 3: Increase $\geq$ 3 times in serum Cr or decrease $\geq$ 75% GFR or serum Cr $\geq$ 4 mg / dL with an increase of at least 0.5 mg / dL.

Results: ARF stage 1 was presented in 25.7% (184 patients), ARF stage 2 in 19.0% (136), ARF stage 3 in 14% (100) and there was no acute renal damage in 41.3% (295). Follow-up was 2.75 years (IQR 1.12-3.87 years). Mortality was 34.1% (242). The occurrence of ARF according to the RIFLE criteria was significantly associated with mortality ($p < 0.01$). This association was mainly due to those who developed stage 3 ARF (OR 1.92, 95% CI 1.25-2.96, $p < 0.01$), remaining after the multivariate analysis taking into account other factors associated with mortality such as diabetes, ischemic etiology, previous diagnosis of HF, NT-proBNP at admission, renal function and sodium at admission (OR 1.94 95% CI 1.07-3.51, $p = 0.03$). Diabetes (OR 2.07 95% CI 1.33-3.21, $p < 0.01$) and previous heart failure (OR 1.95 95% CI 1.26-3.04, $p < 0.01$) were associated with the development of stage 3 ARF.

Conclusions: In patients hospitalized for AHF, the development of ARF according to the RIFLE criteria is associated with mortality in follow-up. Its development is greater in diabetic patients and in those with previous heart failure.

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Mitochondrial DNA predicts mortality in acute but not in chronic heart failure

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Background: Acute heart failure (AHF) and cardiogenic shock (CS) are associated with a poor short-term outcome, while patients with chronic heart failure (CHF) exhibit a poor long-term prognosis. Tissue hypoxia may lead to cellular damage and the release of intracellular mitochondrial DNA (mtDNA), which may activate the immune system due to its resemblance to bacterial DNA.

Purpose: The aim of this study was to analyze circulating levels of mtDNA as a possible predictor of outcome in patients with AHF/CS and CHF.

Methods: Plasma levels of circulating mtDNA were measured in 90 consecutive patients with CS or severe AHF admitted to our ICU and in 109 consecutive patients with CHF at our HF outpatient department.

Results: Patients in the ICU group were 64.7 (49.4-74.3) years old and median NT-proBNP levels were 4986 (1525 – 23842) pg/mL. 30-day survival was 64.4%. In the CHF group, median age was 63 (IQR 52-72) years. 49.5 % of patients had ischemic and 50.5 % had a non-ischemic etiology of CHF. 38.5 % were in NYHA class III/IV, and patients had a median NT-proBNP level of 1025 (IQR 450-3480) pg/mL.

Patients with AHF or CS showed significantly higher circulating levels of mtDNA as compared to patients with CHF (27.0 IQR 8.2 – 52.2 ng/mL vs. 14.5 IQR 8.5 – 25.4 ng/mL, p<0.005). In CHF patients, mtDNA levels were associated with NYHA functional class but did not differ according to HF etiology and outcome. On the contrary, in patients with severe AHF and CS, mtDNA levels were significantly higher in patients that died within 30 days after ICU admission (30.6 IQR 13.0 – 90.1 ng/mL vs. 22.8 IQR 6.4 – 41.6 ng/mL, p<0.05); patients with plasma levels of mtDNA in the highest quartile (mtDNA>50.9 ng/mL) had a 3.1-fold risk (p=0.002) of dying.

Conclusions: Circulating levels of mtDNA predict mortality in patients with severe AHF and CS but are not associated with outcome in patients with CHF. Reduced tissue perfusion with release of mtDNA may play a role within the pathophysiology of AHF and advances stages of CHF.

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Prosthetic heart valve thrombosis in a patient under warfarin anticoagulation therapeutic range: the diagnostic and follow-up importance of the several imaging modalities

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We present a clinical case of a 68-year-old woman with a history of rheumatic heart disease and permanent atrial fibrillation. Fifteen years previously, she had been submitted to a surgical aortic and mitral valve replacement by mechanical prosthetic valve (MPV) due to severe aortic and mitral regurgitation. She had been asymptomatic until ten years ago, when developed aortic prosthetic endocarditis, requiring a second aortic valve replacement by a new aortic MPV.

Since then, the patient has remained under effective warfarin anticoagulation (TTR >70%) and clinically stable in NYHA functional class II, until one week before the admission, when she reported progressive worsening dyspnea (NYHA IV), orthopnea and lower limb oedema. Physical examination revealed signs of decompensated heart failure and cardiac arrhythmia. Prosthetic metallic sounds were audible. Laboratoy tests showed macrocytic hyperchromic anemia, INR 2.41 and NT-proBNP 22103 ng/mL. 12-lead electrocardiogram confirmed atrial fibrillation. Transthoracic echocardiogram (TTE) revealed a normal functioning aortic MVP with previously known periprosthetic pseudoaneurysm; a mitral MPV with severe dysfunction (mean gradient 24 mmHg, maximum velocity 3.18 m/s, pressure half-time 290 ms); severe tricuspid regurgitation; mild to moderate pulmonary regurgitation; high pulmonary systolic arterial pressure (94 mmHg); right ventricle dysfunction; and plethora of inferior vena cava (IVC). Transesophageal echocardiogram (TEE) also showed immobility of the lateral and hypomobility of the medial mitral hemi-discs. Cinefluoroscopy confirmed serious compromise of function and mobility of mitral MVP. Owing to strong suspicion of mitral MVP thrombosis, unfractionated heparin infusion and oral aspirin were immediately started and emergent patient transfer to a surgical centre was scheduled. Cardiac surgery was performed through median resternotomy and included removal of the mitral valve thrombus using right atrium and transseptal approach, tricuspid valve repair with a 32 mm annuloplasty ring and closure of the aortic noncoronary cusp pseudoaneurysm. Immediate postoperative TEE confirmed correct functioning of the mitral MVP. Pre-discharge TTE also demonstrated minimal tricuspid regurgitation with undetectable right ventricle – right atrium gradient and normal size and respiratory variation of IVC.

This clinical case illustrates a prosthetic heart valve thrombosis, a rare complication of valve replacement, with a reported annual rate ranging from 0.1% to 5.7%. This case is also particular as it occurred under the therapeutic range established for warfarin anticoagulation,

highlighting the complex multifactorial pathophysiology of prosthetic valve thrombosis. Finally, it emphasizes the diagnostic and follow-up applicability of several imaging modalities (cinefluoroscopy, transthoracic, transesophageal and perioperative echocardiogram) in this serious cardiac disease, presenting as acute heart failure.
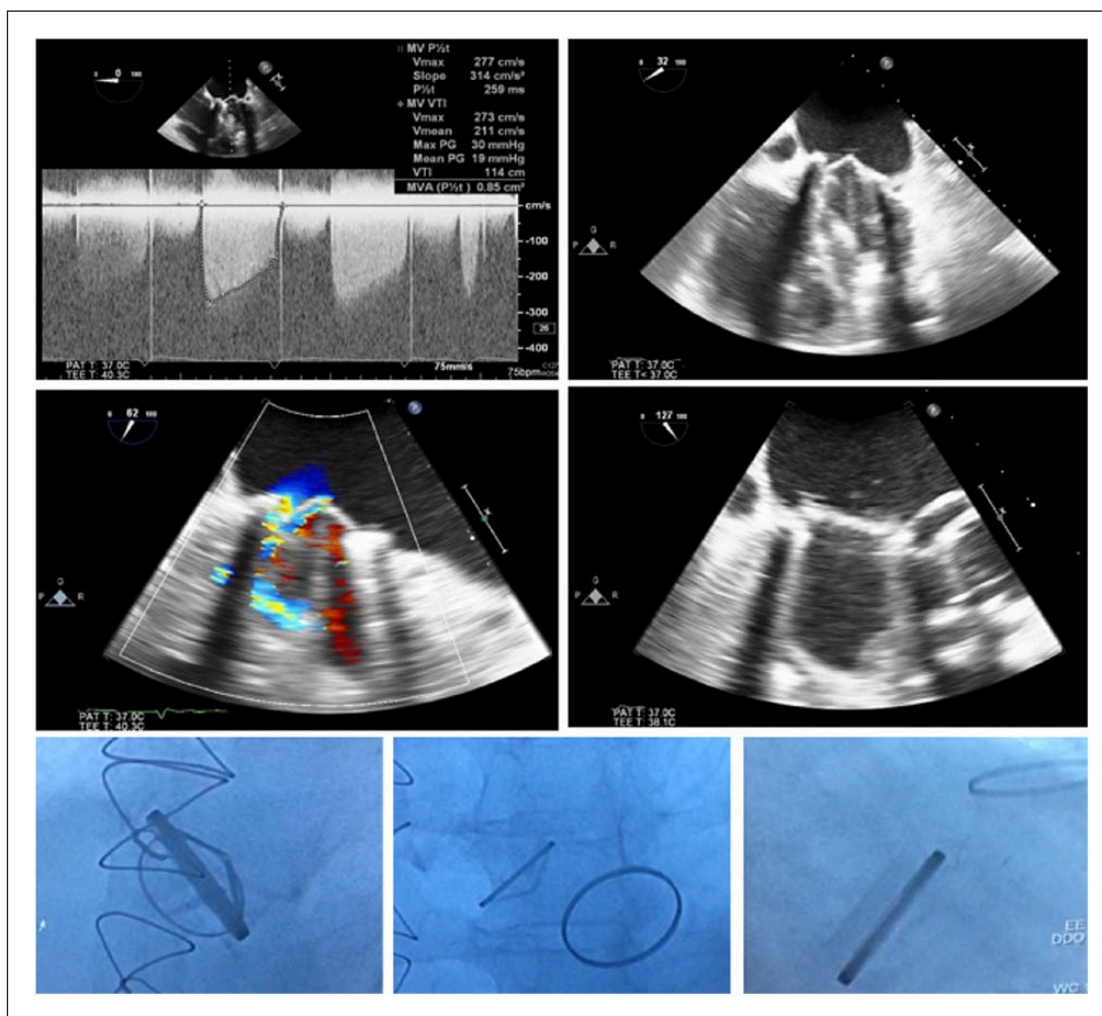
Mechanical mitral valve thrombosis

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Papillary muscle rupture with cardiogenic shock, an uncommon manifestation of catastrophic antiphospholipid syndrome

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We report the clinical case of young woman with previous diagnosis of systemic lupus erythematous (SLE) who develop catastrophic antiphospholipid syndrome (CAPS) 15 days after delivery. The unique feature of this case is the presentation of CAPS as cardiogenic shock due to acute mitral regurgitation secondary to papillary muscle rupture (owing to microvascular thrombosis).

A 32-year-old female patient with a known history of SLE and autoimmune thyroiditis was admitted in the emergency department (10 days after prematurely delivery due to preeclampsia) with complains of headache, visual disturbances and lumbar pain. Her medications were: enalapril (initiated after delivery) and prophylactic enoxaparin (corticosteroid was stopped after delivery). On admission, she was hypertensive and tachycardic. Auscultation revealed

basal rales and S4 was present on cardiac auscultation. Cutaneous purple was present on ears. ECG showed sinus tachycardia with diffuse ST segment depression. Shortly after arrival she had a tonic-clonic seizure, her cranial computed tomography (CT) angiography was normal. Labs showed hemoglobin 10,7 g/dL, normal renal function, C reactive protein 22 mg/dL, high sensitivity T troponin 1024 ng/L and NT-Pro-BNP 9466 pg/mL. Point-of-care transthoracic echocardiography (TTE) showed no alterations. Toracoabdominopelvic CT angiography excluded any abnormality. She was admitted in the intermediate medical care unit with the possible diagnosis: lupus/viral myocarditis or catastrophic antiphospholipid syndrome (cutaneous, cardiac and neurologic involvement). Corticosteroids and anticoagulation were initiated. Blood cultures came negative and serologic viral investigation too. Immunological study was positive to LES antibody and β-2 glycoprotein IgG. Unexpectedly, on day 3, she developed severe thoracic chest pain, hypotension and refractory pulmonary edema leading to tracheal intubation and aminergic drugs

escalation. TTE showed acute severe mitral regurgitation due to papillary muscle rupture. Coronary angiography demonstrated normal coronary arteries. She was emergently transferred to the cardiac surgery room and mitral valve was replaced by a biological prosthesis. One day later she was extubated and her neurologic function was intact. It was decided to initiated intravenous immunoglobulins, assuming the presumptive diagnosis of CAPS. During hospitalization CAPS diagnosis was confirmed: a cardiac magnetic resonance imaging (MRI) showed multiple subendocardial infarctions, probably related to thrombotic microangiopathic process, cranial (MRI) demonstrated innumerable small foci suggestive of acute/sub-acute ischemic lesions and finally anatomic-pathological examination of the papillary muscle revealed multiple necrosis foci. She was discharge 15 days after surgery, completely recovered.

This clinical case highlights the importance of considering the rare causes of cardiogenic shock in this specific auto-immune population.
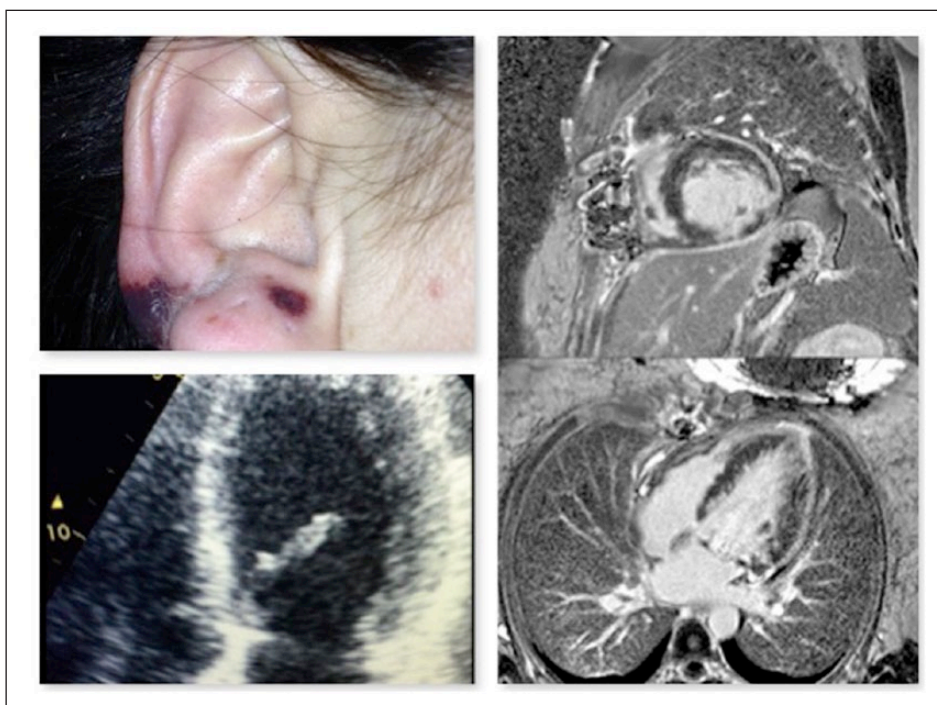
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Inappropriate implantable cardioverter defibrillator (ICD) events in patients surviving out-of-hospital cardiac arrest implanted with a post-arrest ICD

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Background: Implantable cardioverter defibrillators (ICD) have been shown to prevent sudden cardiac death in patients with heart failure as well as in patients surviving a primary arrhythmia, however the device does have

possible adverse complications such as inappropriate therapy

Purpose: We aimed to assess whether inappropriate therapy (shock and anti-tachycardia pacing (ATP)) and death differed between patients successfully resuscitated from out-of-hospital cardiac arrest (OHCA) with and without acute myocardial infarction (AMI) as cause of OHCA.

Methods: We identified 291 consecutive patients resuscitated from OHCA between 2007 and 2011 with ICD implantation < 90 days post-arrest, of which 96 had AMI and 195 non-AMI as cause of OHCA. Data was collected using national registers as well as patient charts. Inappropriate shock- and inappropriate ATP-events were assessed by cumulative incidence and multivariate cause-specific hazard ratios (HR) for death and inappropriate therapy with follow-up up to 9 years (mean 4 years).

Results: Long-term mortality was similar in AMI and non-AMI patients (17 vs. 21%, p = 0.53). Inappropriate shock was noted in 6% of AMI-patients (total n=6, 4 due to atrial fibrillation/flutter (AF), 1 lead defect, 1 due to other supraventricular tachycardia (SVT)), and 15% of non-AMI patients (total n=16, 12 due to AF, 3 lead defect, and 1 due

to other SVT), p=0.01. Inappropriate ATP was noted in 6% of AMI-patients (total n=6, 3 due to AF, and 3 other SVT), and 9% of non-AMI patients (total n=14, 9 due to AF, 4 other SVT, and 1 noise), p=0.72. Cumulative incidence of inappropriate shock and inappropriate ATP at follow-up did not differ between patients with AMI and non-AMI when taking death into account (pshock=0.55, pATP=0.66, Fig.1). In cause-specific hazard analyses with death as competing risk, left ventricular ejection fraction (LVEF) < 35% was independently associated with both inappropriate shock (HR=3.9, CI: 1.3-11.1, p=0.01) and inappropriate ATP (HR=3.2, CI: 1.1-9.5, p=0.04), whereas age, AMI or congestive heart failure were not. Male sex was associated with higher risk of inappropriate ATP only (HR=3.0, CI: 1.1-8.6, p=0.04).

Conclusion: OHCA-survivors with and without AMI as cause of OHCA had similar cumulative incidence of inappropriate shock and death; as well as inappropriate ATP and death. Depressed LV function <35% was independently associated with higher risk of both inappropriate shock and inappropriate ATP, while male sex was associated with risk of inappropriate ATP only. Inappropriate therapy was primarily due to atrial fibrillation/flutter.
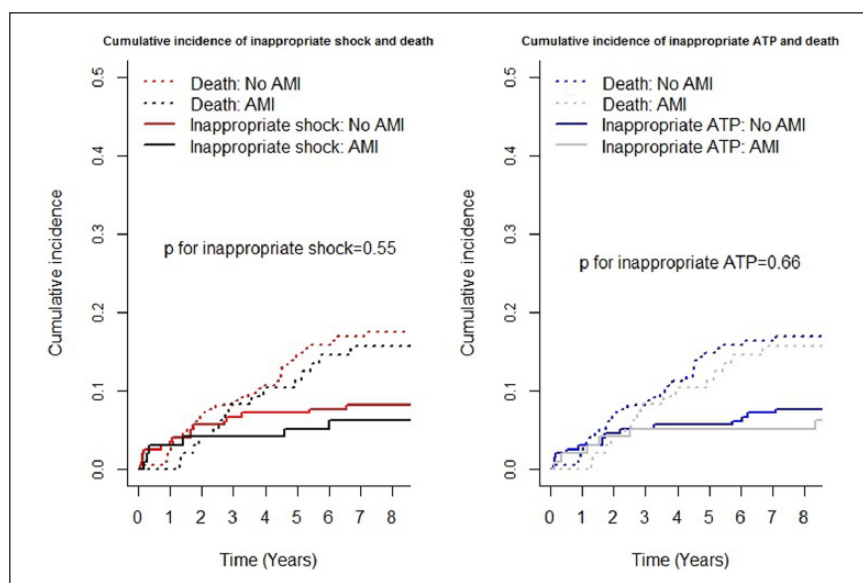
Figure 1

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Predictors of improvement in renal function after heart transplantion

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Background: Moderate chronic renal insufficiency is a frequent comorbidity in patients evaluated for heart transplantation (HT). Improvement in cardiac output after HT might lead to better perfusion of the kidney and thus improve of glomerular filtration rate (GFR).

Aim: to identify predictors of improvement of renal function after HT.

Methods: Retrospective cohort of HT patients from 2011 to 2016. We estimated glomerular filtration rate (GFR) with

the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation. Main outcome was improvement in renal function defined as a higher GFR at the sixth month post HT compared to baseline (pre-HT) GFR. We used univariate and multivariate logistic regression to identify association of clinical variables with improvement in renal function.

Results: We included 83 patients in the final analysis; twenty-four had improvement in renal function. At multivariate analysis remained as independent predictors of improvement of renal function: the baseline GFR (OR 0.95, 95% CI 0.93-0.98 p=0.005), absence of systemic hypertension (OR 4.94, 95% CI 1.37-17.8 p=0.015) and elective HT (OR 13.71, 95% CI 1.33 – 141 p=0.028). A scale developed with beta coefficients from multivariate logistic regression (3 points to absence of hypertension, 5 points for elective HT, and -1 point for every 10 ml/min in baseline GFR) showed good accuracy (AUC 0.76). The probability for improvement in renal function was 7% in patients with a -9 to -3 points, 23% in patients with -2 to -1 points, and 58% in patients with ≥0 points (p<0.001).

Conclusions: in patients with HT, baseline GFR, absence of systemic hypertension and elective HT were independent predictors of improvement in kidney function after HT.

Table 1. Predictors of improvement of GFR.

	Univariate		Multivariate	
	OR (95% CI)	P	OR (95% CI)	P
Elective or urgency HT	5.9 (0.72-47.9)	0.099	13.7 (1.3-141)	0.028
Hypertension	0.60 (0.23-1.57)	0.300	0.20 (0.06-0.73)	0.015
NYHA class IV	0.47 (0.18-1.25)	0.131	—	—
Furosemide	6.5 (0.80-52.8)	0.080	—	—
Baseline GFR (ml/min/1.73m^2)	0.98 (0.96-1.00)	0.074	0.96 (0.93-0.98)	0.005
Days of hospitalization after HT	0.98 (0.95-1.00)	0.090	—	—
Everolimus	2.0 (0.67-6.1)	0.216	—	—
Ganciclovir	0.59 (0.23-1.55)	0.288	—	—

105

Impact of body temperature at admission on in-hospital outcomes in patients with Takotsubo syndrome: Insights from the Tokyo cardiovascular care unit network registry

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Backgrounds: Takotsubo syndrome (TTS) reportedly occurs in patients with fever due to underlying disease, such as infection. No previous study has examined the association between body temperature and in-hospital prognosis.

Methods: This was a retrospective analysis of patients with TTS in the Tokyo Cardiovascular Care Unit network registry 2013-2015. We identified 421 eligible patients whose data on body temperature (BT) at admission were available, and classified them into 3 groups: high-BT group (≥37.5 C; n = 27), normal-BT group (36.0-37.4 C; n = 319), and low-BT group (≤35.9 C; n = 75). We compared patient characteristics and in-hospital outcomes among the 3 groups.

Results: Patients in the high-BT group had significantly higher proportion of males (high-BT 48.1% vs normal-BT 18.5% vs low-BT 21.3%; p = 0.001), impaired consciousness, physical trigger (63.0% vs 30.1% vs 30.7%; p = 0.015) than those in the normal-BT and low-BT groups. There were no significant differences in age, symptom onset-to-admission time, and ballooning types among the 3 groups. Patients in the high-BT group showed a significantly higher heart rate (mean, 101 bpm vs 89 bpm vs 82 bpm; p<0.01) at admission without significant difference in blood pressure. Patients in the high-BT group also showed less frequent T-wave inversion (38.5% vs 53.8% vs 67.6%; p = 0.020) and higher C-reactive protein (median, 6.8 mg/dL vs 0.3 mg/dL vs 0.3 mg/dL; p<0.001), although there were no significant differences in ST-elevation, QT prolongation, white blood cell, brain natriuretic peptide, and cardiac troponin. In-hospital all-cause mortality was significantly higher in the high-BT group than in the normal-BT and low-BT groups (18.5% vs 2.5% vs 4.0%; p<0.001). Both cardiac mortality (11.1% vs 1.3% vs 1.3%; p =0.001) and non-cardiac mortality (7.4% vs 0.9% vs 2.7%; p = 0.031) were also significantly higher in the high-BT group. Multivariable logistic regression analysis showed that high BT, compared with normal BT, was significantly associated with higher in-hospital mortality even after adjustment for age, sex, ballooning type, and triggering events (adjusted odds ratio, 4.61; 95% confidence interval, 1.26-16.96; p = 0.021).

Conclusions: This study suggest that high BT at admission was a strong predictor of in-hospital mortality in patients with TTS. Attending physicians should be aware of high mortality risk in febrile patients with TTS.

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Population pharmacokinetics of remifentanil in critically ill patients receiving extracorporeal membrane oxygenation: A prospective cohort study

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Background: The aim of the study was to describe the population pharmacokinetics (PK) of remifentanil in critically ill adult patients receiving venoartrial extracorporeal membrane oxygenation (VA-ECMO) and to identify determinants associated with altered remifentanil concentrations.

Methods: Adult intensive care unit (ICU) patients who received a continuous infusion of remifentanil during VA-ECMO support were eligible for this study. The population PK model of remifentanil was developed using nonlinear mixed effects modeling (NONMEM). The final model was validated with bootstrapping and visual predictive checks. We also performed Monte Carlo simulations (n = 5000) to describe the effect of sex and ECMO pump speed on remifentanil plasma concentrations.

Results: Fifteen adult patients receiving ECMO participated in the study. The PK of remifentanil was best described by a one-compartment model with additive and proportional residual errors. Remifentanil concentrations were affected by sex and ECMO pump speed. The final PK model included the effect of sex and ECMO pump speed on clearance is developed as followed: clearance (L/h) = 366 × 0.502sex × (ECMO pump speed/2350)2.04, where 0 for female and 1 for male, and volume (L) = 41.

Conclusions: Remifentanil volume and clearance was increased in adult patients on VA-ECMO compared with previously reported patients not on ECMO. Therefore, we suggest that clinicians consider an increased dosing of remifentanil in adult patients receiving ECMO.

Poster Session 1 - Acute Heart Failure, Cardiogenic Shock and Advanced Cardiac Support Saturday, 03 March 2018 - 09:00 - 12:30

Case reports

P114

Myxofibrosarcoma: a rare type of tumor presenting with congestive heart failure

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We present a case of a 82 year-old caucasian male, with past medical history of arterial hypertension, dyslipidaemia, type 2 diabetes, former smoker (45 pack-years), chronic obstructive pulmonary disease and glaucoma. One year before, he had been submitted to a cardiac surgery to remove a mass located in left atria, which histological exam revealed to be a myxofibrosarcoma, but since cardiac surgery performance he was lost to follow-up.

Due to symptoms of fatigue for small efforts, cough, orthopnoea and lower limbs oedema of 3 weeks duration, a transthoracic echocardiography (TTE) was performed. Despite the technically difficult acoustic window, the TTE showed an irregular mass located in left atria, with dimensions of 27 mm x16mm, with diastolic prolapse of the mass into the left ventricle and signs of mitral valve obstruction. The patient was then admitted in our hospital due to symptoms of congestive heart failure.

At admission he was hemodynamically stable, with bibasilar rales at pulmonary auscultation and with lower limbs oedema.

To better characterize this mass a transoesophageal echocardiography (TEE) was performed and revealed a multilobulated and heterogeneous mass, occupying more than 2/3 of left atria volume, causing severe mitral valve obstruction (mean gradient of 12 mmHg), with severe tricuspid regurgitation with right ventricle-right atrial gradient of 70 mmHg.

The diagnosis of cardiac myxofibrosarcoma relapse was admitted with signs of mitral valve obstruction and severe pulmonary hypertension.

The patient was discussed in a medical-surgical team with Oncology and Cardiac Surgery, but was refused for cardiac surgery and for chemotherapy in the acute setting.

During hospitalization he evolved with worsening of heart failure (NHYA class IV) and died after 4 days of initial admission.

Primary Myxofibrosarcomas are reported as one of the rarest forms of cardiac sarcomas with few cases reported in the literature. Clinical features depend on the site of the tumor and may include severe acute left sided heart failure. The majority appear in women, involve the left atrium and present with dyspnea as the salient clinical symptom. Because the primary myxofibrosarcoma is capable of local invasion or distant metastasis, the prognosis of patients has been reported to be very poor despite surgical resection, radiation therapy, and chemotherapy. The most important factor that predicts a better prognosis is the ability to achieve a complete surgical resection of the tumor. Surgery is the mainstay of treatment for these lesions and provides the greatest chance for survival and, to date, the extent to which adjuvant chemotherapy and radiation therapy are beneficial, remains controversial. Careful follow-up is necessary to detect recurrences.
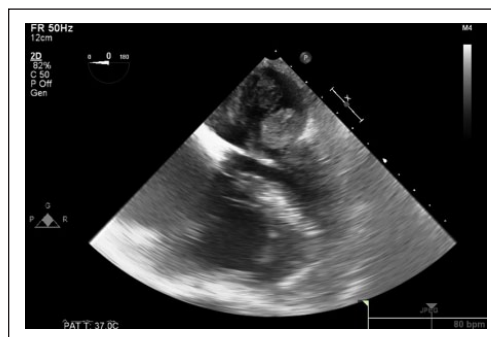
Myxofibrosarcoma

P115

A clinical case of inflammatory viral cardiomyopathy mimicking the uncontrolled congestive heart failure

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A 34-year-old male presented with complaints of dyspnea, atypical pain in the chest, general weakness.

He had a medical history of myocardial infarction (October 2015). At that time, he was undergoing coronary angiography and percutaneous coronary intervention. Coronary angiography demonstrated significant a 75% stenosis of

the proximal left anterior descending artery and the absence of stenosis in other coronary arteries. After discharge from the hospital he was well till February 2016 when he presented with lower extremity edema, dyspnea on minimal exertion, dry cough, pain in the chest, general weakness. The clinical course was characterized by rapid deterioration. The patient received optimal treatment, but he was admitted to hospital with acute decompensated heart failure (ADHF) several times.

On physical examination at admission, he had swelling jugular veins, fine crackles and reduced breath sounds at the basal portion of both lungs, lips cyanosis, lower extremity edema. ECG on admission showed changes characteristic of old anterior myocardial infarction and aneurysm of the LV. A blood analyses count, a blood chemistry (C-reactive protein, CK, CK MB, troponin I) were normal.

Transthoracic echocardiography revealed dilatation of all chambers of the heart, eccentric hypertrophy of the LV, with systolic dysfunction (LV EF 32%), dyskinesia of the top LV with thrombus, akinesia of the anterior and septal segments, double-sided hydrothorax, signs of pulmonary hypertension.

The abdominal ultrasound exam showed stagnation in the liver system and ascites.

The 2D speckle tracking echocardiography showed reduction on the anteroseptal wall and posterior wall (artery intact) of LV longitudinal strain.

Coronary angiography revealed normal coronary arteries and stent was passed that caused the expansion of diagnostic search.

After one week from the start of admission the symptoms of ADHF were not stopped with increasing doses of diuretics. The endomyocardial biopsy (EMB) was held on according by the presence of normal coronary arteries, progressive LV systolic dysfunction and uncontrolled ADHF. EMB revealed diffuse acute viral myocarditis (CD 45+, CD 68+ > 50 в 1 mm^2) with marked expression of enterovirus with slight expression of the herpes virus type 6; severe activity; with slight interstitial and subendocardial fibrosis (Figure 1).

Compensation of CHF occurred after the administration of high-dose intravenous immunoglobulins and oral glucocorticoids, interferon alfa-2 beta, valganciclovir.
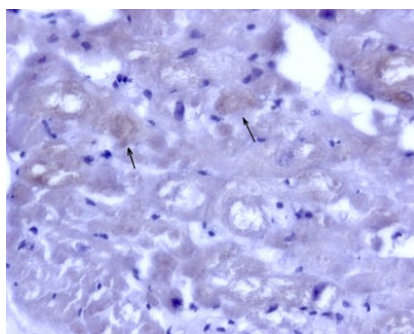
EMB. Expression enterovirus VP-1 antigen.

P116

New onset heart failure in a female patient: when the brain is in charge

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We report the case of a 48-year-old female patient from São Tomé and Príncipe, G2P1, with a history of pregnancy at age 17 complicated by major bleeding at the end of term; she was submitted to emergency caesarean section of a stillbirth. Since that time she was in amenorrhea.

She went to the emergency department due to fatigue and dyspnea for four days, with progressive worsening (at the time of admission for small efforts). She also reported chest pain associated with cough and deep inspiration.

On admission she was slightly polypneic, with an oxygen saturation of 91% in ambient air; heart sounds were hypophonetic, breath sounds were diminished in the bases, and there was lower limb edema with Godet sign (1+) up to the thighs.

Laboratory evaluation showed haemoglobin 9.3 g/dL, increased ferritin (1070 ng/ml) with normal serum iron, AST 401 U/L, ALT 168 U/L, LDH 1778 U/L, CK 6798 U/L, creatinine 1.1 mg/dL, total cholesterol 366 mg/dL, LDL cholesterol 293 mg/dl, triglycerides 218 mg/dl, high-sensitivity troponin T 27 ng/l and NT-proBNP 2166 pg/ml. ECG revealed low-voltage QRS complexes, and chest radiography showed an enlarged cardiac silhouette and bilateral pleural effusion (figure A). TTE documented dilation of all cardiac chambers, with biventricular systolic dysfunction (LV ejection fraction 20%); transmitral flow with a restrictive pattern; moderate mitral regurgitation; severe tricuspid regurgitation; RV-RA gradient of 35 mmHg; dilated inferior vena cava with reduced inspiratory collapse; mild pericardial effusion (figure B).

She was admitted with a diagnosis of congestive heart failure of unknown aetiology.

The initial aetiologic study revealed severe central hypothyroidism. The remaining study, including autoimmunity screening, viral serologies, and coronary angiography was unremarkable. The complete study of the hypothalamic-pituitary axis was compatible with hypopituitarism. Head MRI documented empty sella turcica (figure C; arrow).

The final diagnosis was dilated cardiomyopathy (DCM) associated with severe central hypothyroidism due to Sheehan syndrome. In addition to diuretic and neurohormonal therapy, levothyroxine and dexamethasone were started.

After two months of follow-up the patient was in NYHA functional class II. TTE showed improvement of LV ejection fraction (41%); normalization of RV function; mild to moderate mitral regurgitation; mild tricuspid regurgitation; resolution of pericardial effusion.

This case reinforces the importance of a detailed clinical history and the need for a complex diagnostic approach in the etiologic diagnosis of DCM. Endocrine disorders are usually associated with reversible situations, so its timely identification is critical.
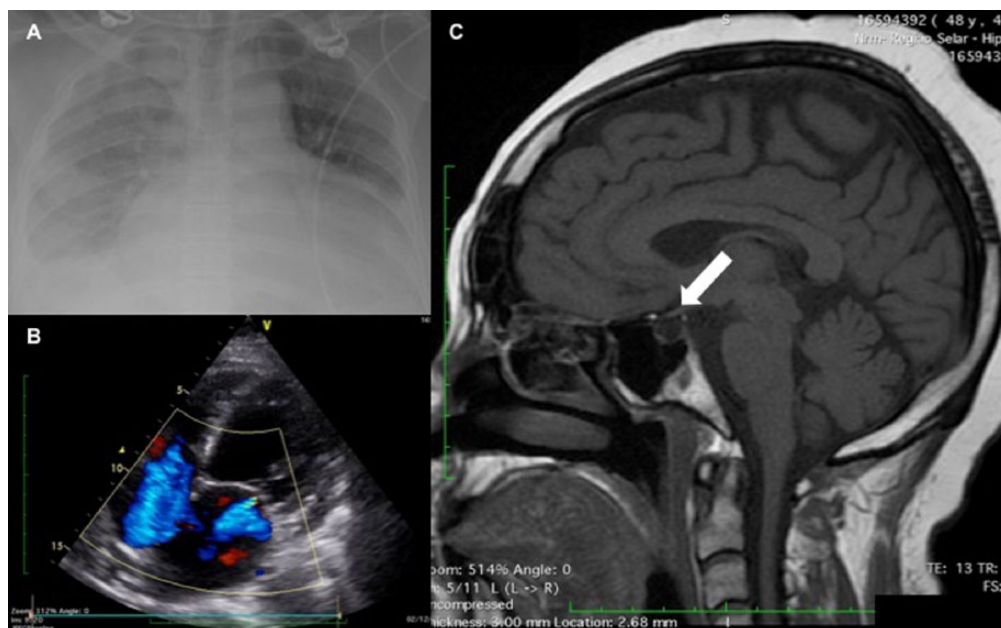
P117

A challenging case of acute heart failure: eosinophilic myocarditis

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Introduction: Acute necrotizing eosinophilic myocarditis (EM) is one of the most severe myocarditis and is characterised by rapidly progressive congestive heart failure that is nearly always fatal without prompt treatment. We report a case of acute necrotizing eosinophilic myocarditis with only mild peripheral eosinophilia who presented with cardiogenic shock and multi-organ failure.

Clinical report: A 64-year-old, deaf woman without relevant medical history was brought to our Emergency Department for dyspnoea and chest pain. On admission, she was in cardiogenic shock (cold and cyanotic extremities, blood pressure 90/70 mmHg, heart rate 130 bpm, anuric). The ECG showed atrial tachycardia and new left bundle branch block. The echocardiogram exhibited severely reduced left ventricle ejection fraction (LVEF, 15%) with akinesia of anterior and septal wall, severe mitral regurgitation (MR) with bileaflet thickening and posterior leaflet tethering. A urgent coronary angiography was normal. Considering the unstable hemodynamic condition, intra-aortic balloon pump was inserted and epinephrine infusion started. First blood analysis showed high white blood count (24960/uL,), with 900/uL eosinophil cells (nv < 500/uL) and high level of troponin I (69 ng/mL, URL < 0.04 ng/mL), with signs of acute renal and hepatic failure. In the suspicion of acute myocarditis, we performed endomyocardial biopsy which disclosed acute myocardial necrosis in presence of inflammatory interstitial infiltrate, mostly eosinophil cells, leading to the diagnosis of EM. We ruled out secondary causes of hypereosinophilia, such as allergies, drugs, parasitic infections, haematologic neoplasia and autoimmune disorders. The patient was treated with 1mg/Kg per day of prednisone, anticoagulant and standard heart failure therapy and underwent a slow but progressive clinical improvement. Cardiac magnetic resonance imaging confirmed the diagnosis of myocarditis, with oedema and subendocardial late gadolinium enhancement of the anterior wall and subendocardial regions. LVEF improved to 35% and MR became moderate with normalization of leaflet thickness, leading the hypothesis of mitral valve involvement. We did not observe neither thrombotic nor arrhythmic complications, during her hospital stay. The

patient was discharged after a second endomyocardial biopsy showed histological evidence of recovery.

Discussion: Patients with EM may present with cardiogenic shock and valve damage and the clinical course may be fatal in the absence of a timely diagnosis and an appropriate immunosuppressive treatment. The diagnosis of EM in the absence of peripheral blood hypereosinophilia and of a causative agent poses is extremely challenging and requires endomyocardial biopsy, which should be considered promptly in all cases of unexplained cardiogenic shock.

Echocardiographic view

P118

Unusual and challenging presentation of bilateral pheochromocytoma: the cardiologist should not be fooled

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A 45-years old woman, without prior Cardiological history, was admitted to our hospital suffering acute cardiogenic shock that required urgent support with intraaortic balloon pump, inotropes and vasopressors. The only anamnestic report was a flu-like syndrome two weeks before. ECG showed a previously unknown rapid atrial fibrillation. Echocardiogram showed a non-dilated, strongly hypokinetic left ventricle, with an estimated ejection fraction of 15%. Coronary angiography demonstrated normal coronary arteries. The patient developed multi-organ failure, successfully treated with transient hemodynamic and dialytic support, blood and plasma transfusions because of haemolytic syndrome, followed by left ventricular ejection fraction recovery and multi-organ function normlization within the following ten days.

Initially suspected to be an acute myocarditis, during the diagnostic work-up performed due to unexplained persistently elevated bilirubin levels, suggesting an abdominal pathology, an ampullary neuroendocrine tumour was discovered. Additional, a surprising bilateral pheochromocytoma (PCC) was discovered through magnetic resonance imaging (Figure 1) and confirmed by urine and plasma metanephrines determination. Genetic analysis revealed a mutation in the Neurofibromatosis type 1 (NF1) gene, a syndrome however rarely associated with bilateral PCC. An accurate examination revealed freckles on the groin and some small "coffee and milk" spots on her back. Bilateral adrenalectomy was successfully performed and the patient is currently asymptomatic, in stable sinus rhythm, normal left ventricular function and normal renal and hepatic function.

Because of the life threatening complications and the good prognosis after radical surgery, the diagnosis of PCC should be quickly considered (even from cutaneous spots that are present in 95% of people with NF1) and appropriately excluded in patients presenting with unexplained de novo cardiogenic shock.

Figure 1. Magnetic resonance imaging of the right, 40 mm (A) and left, 6 mm (B) bilateral pheochromocytoma showed by yellow arrows.

MRI

P119

Aortic valve endocarditis with systemic embolic events: an unusual manifestation at the onset of lung adenocarcinoma

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Introduction: Neoplastic disease can rarely evolve with bacterial or marantic endocarditis. Even more unusually endocarditis occurs as the onset manifestation of solid cancers. We are presenting the case of a woman with aortic valve endocarditis and systemic embolic events manifested before the diagnosis of a lung adenocarcinoma. Case presentation. A 51 year old woman, recently diagnosed with right lung community-acquired pneumonia for which she underwent 7 days antibiotic treatment, presented to our hospital for chest pain and dyspnea. The thoracic CT scan established the diagnosis of pulmonary thrombembolism associated with right pneumonia in resolution. TTE assessment at admission was normal. Anticoagulant therapy was initiated with rivaroxaban and antibiotic therapy was not furtherly continued in the absence of fever or biological inflammatory syndrome. One week after admission she developed multiple cerebral ischemic lesions, confirmed by repeated cerebral CT scan (Fig.1). Laboratory work-up indicated augmentation of leukocytosis (38 630/mm3) and inflammation markers. A repeated TTE revealed a large vegetation on the aortic valve with moderate aortic regurgitation (Fig. 2). Empirical antibiotic therapy for infectious endocarditis was initiated immediately and the anticoagulant therapy was continued with LMWH for pulmonary embolism. 24 hours after stroke the patient developed acute left leg ischemia, resolved by interventional thrombembectomy. The subsequent evolution was with persistence of right lung infiltration and also of the aortic valve vegetation, with the only improvement of leukocytosis. After one month from the embolic events a diagnostic bronchoscopy was performed indicating diffuse infiltrate on the right bronchus with partially stenosis. The bronchial biopsy showed a typical aspect for bronchial adenocarcinoma. Due to the inconclusive results of blood cultures before the initiation of antibiotics (two negative and one positive for a commensal germen), another important decision in this case was to differentiate between a bacterial and marantic endocarditis. In this regard, the dynamic of leukocytosis, the cessation of the embolic events after the initiation of the antibiotic cure and also the pathologic result of the leg embolus with large inflammatory cells, suggestive for bacterial vegetation, sustained the diagnosis of infectious endocarditis. Despite the systemic embolic complications the patient was not referred to cardiac surgery for endocarditis due to the severity of neoplastic disease. After 2 months from the initial hospitalisation the patient died due to multiple organ failure. Particularities of the case report. We are presenting this case in order to highlight a rare, but very dangerous association of solid cancer with endocarditis as onset manifestation and the particular differential diagnosis that arrows in this context, between the bacterial and marantic vegetation.

P120

Fatal acute congestive heart failure in a patient with haemochromatosis - clinical presentation of acute pulmonary embolism

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Haemochromatosis is a disturbance in the iron metabolism, leading to excessive accumulation of iron in various organs. M.J., 42 years old, female was admitted to the Clinic for Urgent Internal Medicine with signs and symptoms of heart failure in the state of chock.(NYHA lll/lV).The patient complained about difficulty in breathing , shortness of breath, dispnoea and rapid fatigue, all of which started couple of days before the admission. ECG on admission- sin rhythm fr 114/min, lowered voltage, frequent VES reduced r from V1-V4 flattened t to D2,D3,AVF. Transthoracic echocardiography was done following admission on which fluctuating thrombus mass was present in the right chamber, mural thrombus at the top of left and right normal size chambers. SPDK 35mmHg,MR 2+, globally decreased systol functions, EF 15%. Pericardium was empty. Mutual pleural effusions. Urgent MSCT pulmonary angiography was done due to established suspicion of lung thromboembolism in which defects in charging for lower lobe of the right lung, two-sided pleural effusion and atelectasis basal to the right

were described. Also abdomen MSCT was completed - liver was homogenous and natively increased density up to 85H4. CVK was placed. Intensive monitoring of ECG , blood pressure and direza. In the laboratory analysis , BNP and D increased, spontaneous INR 2.35, all coagulation factors were reduced; fibrinogen was in the lower refference range limit, high values of transaminase, cardiospecific enzymes within reference range, increased uric acid and serum Fe (36) , feritin 55 600 ug/l,. Molecular genetic analysis confirmed that the patient is a homozygous gene carrier for mutation (p.G320V in gene HJV). This mutation indicates Hereditary type 2 hemochromatosis. Perfusional lung scintigraphy (after iv.inj.185MBq Tc99m-MAA)- clear segmental perfusion defect in superior segment projection of the lower lobe. MR heart examination - Global and regional systol function of the left ventricle EF 34%,. Pleural effusion was noticed on the right side.At morphological T2w i T2w* sequences, miocard was of completely lowered MR signal intensity which indicated tissue changes which correspond to hemochromatosis.

Conclusion- The patient was treated in our Clinic due to acute heart failure and lung thromboembolism within proved hemochromatosis and partial hypopituitarism. Inotropic combination of dopamin and dobutammin therapy with diuretics followed clinical and radiological improvement - pleural effusion regression. Veinpunctions with 50ml blood evacuation were conducted on daily basis. Therapy iv Deferral infusions lasted 10 days. In blood bichemism all parameters were within reference range, except Fe 46, feritin 7090 ug/l,transferin 2.4 ug/l,On scheduled follow ups significant decrease of feritin was noticed 4900ug/l -3400ug/l-1500ug/l-450ug/l, with no signs of heart failure. In following period veinepuntions were performed every month with blood evacuation of 250ml blood.
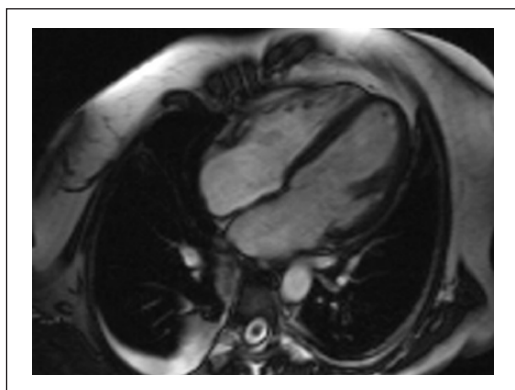
lowered MR signal intensity

P121

A rare cause of acute heart failure

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We present a case of a 58 year-old caucasian woman, with past medical history of diffuse systemic sclerosis (SSc) with cutaneous and gastrointestinal involvement, under medical therapy with mycophenolate mofetil, that was admitted to our hospital due to a 2 weeks history of fatigue and dyspnoea. At admission, observation was remarkable for de novo hypertension (systolic arterial pressure of 153 mmHg), tachycardia (120 bpm), oliguria, polypnea and presence of bibasilar rales at pulmonary auscultation. Laboratory analysis revealed not previously known normochromic normocytic anaemia (haemoglobin 7.7 g/dL), thrombocytopenia (124.000/mm3 platelets) and elevated serum creatinine (1.4 mg/dL), lactate dehydrogenase (1508 U/L) and high sensitive troponin T (153 ng/L) levels. The peripheral blood smear showed schistocytes. Arterial gasometry revealed metabolic acidosis and hyperlactatemia, serial electrocardiograms revealed sinus tachycardia with no signs of acute ischemia and chest X-Ray showed signs of pulmonary oedema. A transthoracic echocardiography (TTE) was performed and revealed non-dilated left ventricle with diffuse hypokinesis causing severe left ventricular systolic dysfunction (LVSD), a right ventricular-right atrial gradient of 40 mmHg, pulmonary artery systolic pressure of 55 mmHg and mild to moderate pericardial effusion.

The diagnosis of scleroderma renal crisis (SRC) was admitted due to the presence of oliguric acute kidney failure AKIN 2, arterial hypertension and microangiopathic haemolytic anaemia. Cardiovascular symptoms were initially presumed to be related with acute increase in systemic vascular resistance. An angiotensin-converting enzyme inhibitor (ACEi) was initiated and uptitrated until arterial pressure control achievement. An invasive coronary angiography was performed and excluded epicardial coronary disease. A cardiac magnetic resonance imaging without gadolinium contrast confirmed severe LVSD with no signs of myocardial oedema. During hospitalization congestive symptoms and renal function improved. The TTE revaluation after 10 days revealed a recovery of left ventricular ejection fraction with no wall motion abnormalities.

SSc is a rare autoimmune disease and SRC is an infrequent (5-10%) complication of SSc that occurs particularly in the first years of disease evolution and in the diffuse form. The heart is one of the major organs involved in SSc. Cardiac involvement can be manifested by myocardial disease, conduction system abnormalities, arrhythmias, or pericardial disease. Additionally, SRC and pulmonary hypertension lead to significant cardiac dysfunction secondary to

damage in the kidney and lung. The treatment of SRC relies on aggressive control of blood pressure with ACEi. The prognosis of SRC has improved with the introduction of ACEi, but despite aggressive antihypertensive therapy, 5-year survival of patients with SRC remains low and is only 65%.

P122

Estimation of dehiscence of mitral ring by real-time 3-Dimensional transesophageal echocardiography as a cause of severe macroangiopathic hemolytic anemia

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Hemolytic anemia is uncommon complication after mitral valve repair. A56-year-old woman, was admitted in our ICU of Military Medical Academy with signs of Cardiac failure (NYHA lV) and anemia. A 34 years ago, she had mitral valve replacement (Bjork Shiley 29 mm) , due to severe rheumatic mitral valve stenosis. After that, she was regularly on oral anticoagulant therapy. During the last 2 years she had progressive exertional dyspnea, palpitations and anemia. She had been receiving supstitution with red blood cell (RBC) every 3-4 month. Our hematological results revealed a Coomb's-negative hemolytic anemia with a hematocrit of 19,9% , hemoglobin of 67 g/ L , LDH of 2129 U/ L , total bilirubin of 118 , and a peripheral blood demonstrating mechanical hemolysis with schistocytosis and red cell fragmentation. Echocardiography was performed with a high suspicion of mechanical hemolytic anemia related with mitral mechanical prosthesis. Routine 2-dimensional (2D) transthoracic echocardiogram,has shown significant paravalvular leakage. A transesophageal 2D echocardiogram revealed dehiscence of the mitral valve annuloplasty ring from the native mitral valve annulus. Color Doppler images demonstrate severe high-velocity para-ring regurgitant jet. After we performed 3D echocardiographic study we had clear insight in a paravalvular communication created by the dehiscence of the annuloplasty ring from the native mitral valve annulus. Area of dehiscence 1.5cm^2. 3D color Doppler images demonstrated the high-velocity circular para-ring regurgitant jet. Mechanisms of hemolysis include collision of the regurgitant jet into the prosthetic ring, fragmentation of the regurgitant jet by a dehisced annuloplasty ring, and rapid acceleration of a jet through a small para-ring channel. The patient underwent cardiac surgery, mitral valve replacement, after which the hemolytic anemia was resolved.
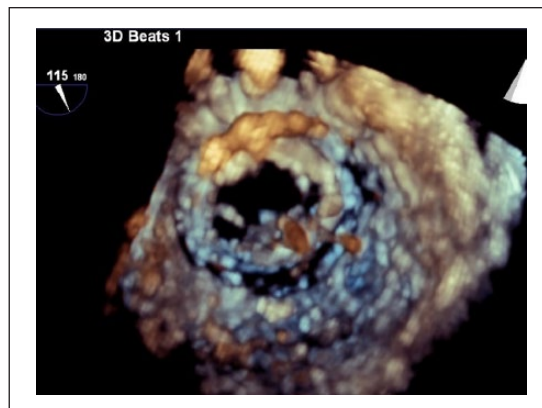
Figure 1: dehiscence of mitral ring

P123

Myofibroblastic sarcoma with myxoid features mimicking pulmonary embolism

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This is a case of a 36-year old female without co-morbidities who presented with sign and symptoms of a right-sided heart failure. Physical examination showed an RV heave, a loud P2 and a holosystolic murmur at the left parasternal border. Sinus rhythm with RV hypertrophy was noted on ECG. Chest X-ray revealed cardiomegaly. Transthoracic echocardiography noted a fluttering echogenic density from the MPA protruding through the pulmonic valve, a dilated RV with signs of pressure and volume overload and severe pulmonary hypertension. Thrombolysis and anticoagulation were administered, however the patient remained symptomatic. Chest CT scan was then done, which showed a large pulmonary artery filling defect in the main and left pulmonary arteries suggestive of thromboembolism, however malignancy cannot be ruled out. Progression of the right heart failure despite medical therapy prompted surgical intervention. The patient underwent pulmonary endarterectomy. Intraoperatively, a pulmonary artery mass consistent with a myofibroblastic sarcoma with myxoid features was noted. Patient succumbed to death due to RV failure on the second post-operative day.

P124

Severe biventricular dysfunction treated with concomitant implantation of left and right percutaneous ventricular assist device

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A 37-year-old male with no relevant past clinical history presented with dyspnea at rest. High response atrial fibrillation with hypotension was detected, and during amiodarone infusion the patient suffered left embolic stroke. Systemic thrombolysis had partial success, and cerebral artery thrombectomy followed; CT scan showed ischemic stroke with perilesional hemorrhagic suffusion.

Due to persistent hypotension, echocardiography was performed: it showed severe left ventricular (EF 10%) and right ventricular (STDI 5 cm/sec) systolic dysfunction (Panel A in Figure). Despite high dose inotropic support, cardiogenic shock occurred. The patient was then referred for mechanical support: veno-arterial extracorporeal membrane oxygenation (VA-ECMO) was deemed contraindicated due to high hemorrhagic risk, and biventricular support with percutaneous ventricular assist device (VAD) was then planned.

Coronaries were free of disease at angiography, and endomyocardial biopsy (EMB) was performed with biotome over Mullins catheter at interventricular septum via right femoral vein access. Left VAD Impella CP was then positioned via left femoral artery access (Panels B and C), while right VAD Impella RP was advanced via right femoral vein with the help of a buddy wire (Amplatz Superstiff) in order to reduce tortuosity of right ventricle and right ventricular outflow tract (Panel D). An optimal final result with sustained flow of both devices and good biventricular unloading was achieved (Panels E and F). Weaning occurred on post-operative day (POD) 6 and 8 for right VAD and left VAD, respectively, and was followed by IABP positioning via left femoral artery access; the left and right ventricle progressively recovered.

At cardiac MRI, systolic function recovery (EF 34%) was detected. A late enhancement pattern suggestive of acute myocarditis (EMB showed aspecific inflammatory findings) was also evident. The patient, hemodynamically stable and with nearly complete neurologic recovery, was finally discharged on POD 23.

The use of percutaneous left VAD (Impella 2.5 and Impella CP) showed good results in treatment of severe left ventricular dysfunction and in support during high risk coronary procedures. Since use of Impella RP seems to be a reasonable option for patients with severe right ventricular impairment, the combined support of biventricular function with these percutaneous devices may represent a safe alternative in hemodynamically unstable patients with contraindications to VA-ECMO.
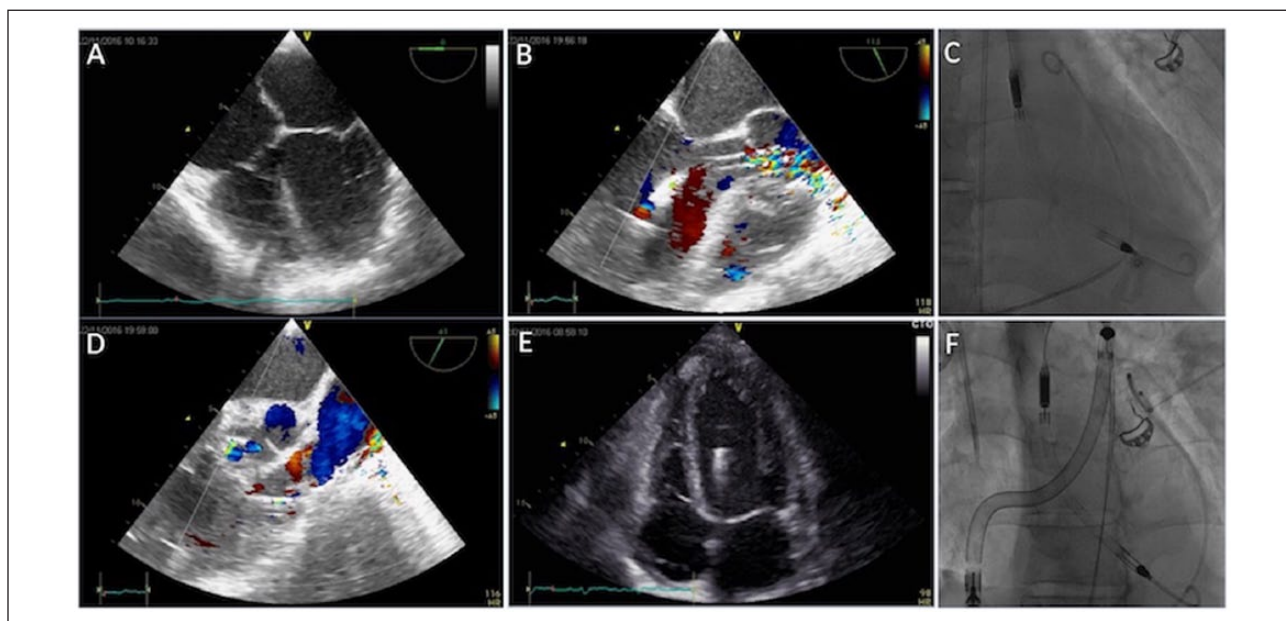
Impella CP and Impella RP implantation

P125

Unusual vascular access for ECMO implantation after a complication during PCI

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A 60 year-old man was admitted due to recurrent syncope. Medical background includes cerebrovascular disease:

right internal carotid endarterectomy,1998. Severe left internal carotid stenosis. Peripheral vascular disease (aortic bifemoral bypass, 2010) and coronary artery disease (CABG in 2006: LIMA to LAD. RIMA to OM [T-graft to LIMA]. RA to PDA). 3 months prior to admission he began to experience syncopes, non-related to efforts and no chest pain.

No relevant data at physical examination. ECG at admission was a sinus rhythm with T wave inversion in leads I, AVL, V1-V2. No evidence of arrhythmias. An angio-CT was requested, reporting a moderate stenosis in right carotid territory, occlusion of left internal carotid artery and moderate stenosis in both subclavian arteries. Basal echocardiogram reported a LVEF of 55%, and apical hipokinesis. ECG exhibited new T-wave inversion in leads V2-V6. A stress echocardiography confirmed ischemia in the LAD territory; therefore he underwent an angiography that evidenced severe stenosis in the LAD, distal to the anastomosis of the LIMA graft, being permeable all of the grafts and no new stenosis in the other native coronary arteries. It was decided to perform a PCI on the LAD through the LIMA graft. After guidewire introduction to distal LAD, the patient experienced hemodynamic instability with severe hypotension and bradycardia and then cardiac arrest.

Advanced life support was initiated (orotracheal intubation, transfemoral pacemaker and intra-aortic ballon pump implantation) obtaining a pulse recovery in less than 10 minutes, high doses of amines were required. The angiogram exhibited severe spasm of the RA graft and loss of caliber in the proximal segment of LIMA, hence it was performed a DES implantation 3/48 mm into the LIMA graft; a flow recovery was proved. An echocardiogram at the bedside of the patient revealed a LVEF of 10%, no pericardial effusion, and due to the refractory cardiogenic shock, the patient was intended for ECMO placing, as a bridge to recovery.

Given the severe atherosclerotic disease the artery cannulation was a total challenge. It was planned an approach through the previous aortofemoral graft: by placing an end-to-side Dacron graft sewn into the right branch of the previous Dacron graft to insert the arterial cannula. Femoral venous cannulation was carried out by dissection and the implantation guided by TOE was successfully achieved.

Sufficient flow, adequate gas exchange and ventricular unloading were confirmed. A remarkable improvement on clinical, hemodynamics and echocardiographic findings were proved (LVEF 35 %, Simpson biplane). And thus, ECMO weaning was accomplished being possible its removal on the 6th postoperative day.

This case illustrates how this unusual approach by might be a safe and feasibly procedure for those patients with severe generalized atherosclerosis requiring mechanical support with no other alternative options for arterial cannulation.
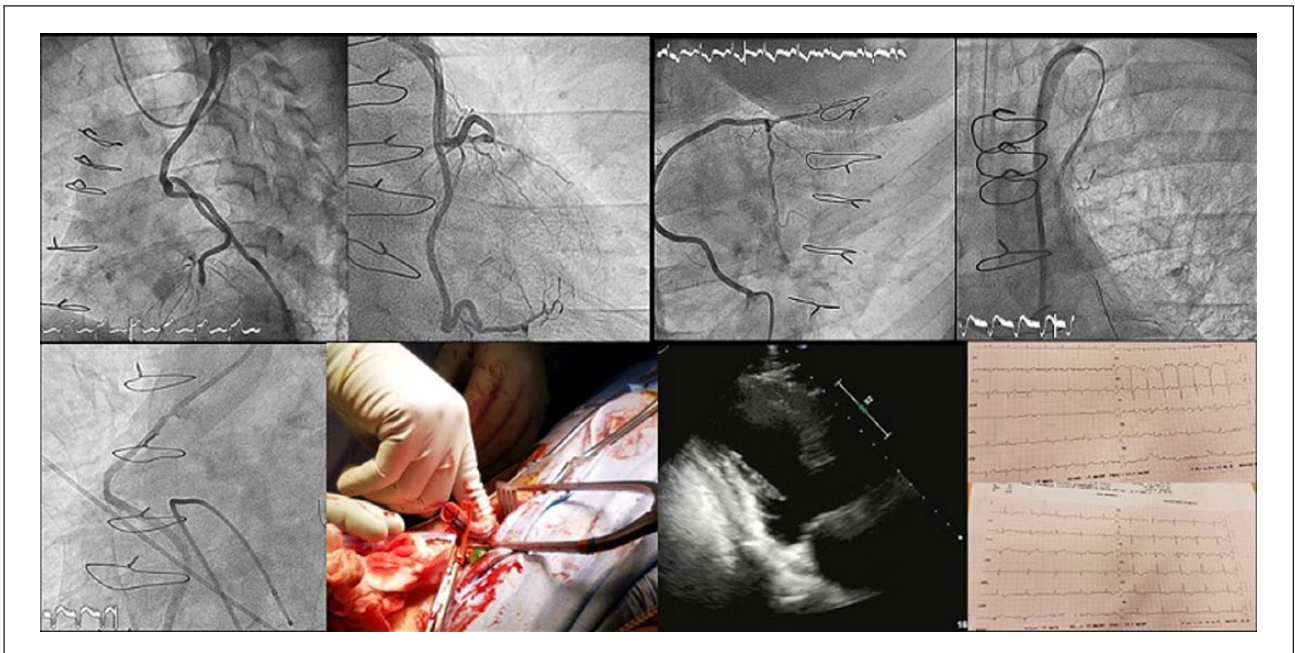
Complicated PCI resulting in ECMO.

P126

Hemodynamic optimization by intra-aortic balloon pump in end-stage decompensated biventricular heart failure: a case report

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A sixty-five-years-old woman with end-stage dilated cardiomyopathy, severe and moderate mitral and aortic regurgitation respectively, chronic kidney disease, persistent atrial fibrillation, and carrying an implanted CRT-D due to multiple episodes of monomorphic ventricular tachycardia, presented with decompensated bi-ventricular HF, acute renal failure, and fluid overload, manifested as dyspnoea. Echocardiography revealed severe and moderate systolic dysfunction of the left and right ventricles, with distended inferior vena cava. The mean pulmonary artery pressure was 52mmHg, and the pulmonary wedge pressure was 30mmHg. The patient was randomized to the inotropes arm of the IABP-HF trial, which investigates the effects of inotropic therapy vs primary IABP implantation in patients with decompensated HF (NTR6143). High-dose infusion of Furosemide was initiated in combination with Dobutamine and Enoximone, but the patient failed to improve haemodynamics and diuresis. Upon decision of the clinical team, she was crossed-over to the IABP arm and the device was implemented with a 1:1 triggering rate. With counterpulsation, diuresis improved from 50mL/h to 260 mL/h in the 12th hour, SVO2 increased from 48% to 67% and eGFR raised to 56mL/min. Minor changes were noted in lactate (reduction) and mean arterial pressure (increase). After 36 hours, cumulative fluid loss was 7.0L. The IABP was explanted and the patient kept stability. The infusions were progressively weaned in the following week. She was discharged to the ward and referred for percutaneous mitral valve repair. In current ESC guidelines, IABP holds a IIIB (harm) recommendation for routine use in HF with cardiogenic shock, and a IIbC (may be considered) in selected cases. ACC/AHA guidelines confer a IIaB recommendation for unspecified MCS strategies with bridging purposes in carefully selected cases. This report demonstrates clinical improvement immediately after IABP insertion in a patient with stage D HF refractory to inotropes.

Table 1. Echocardiography and haemodynamics.

	Admission, pre-IABP	After 48h of IABP	Pre-discharge, no IABP
LVEDV (mL)	326	281	326
SV (mL)	54	72	87
EF (%)	16	26	27
CO (L/min)	5.3	6.1	7.0
mPAP (mmHg)	57	47	N/A
CVP (mmHg)	30	15	17
MAP (mmHg)	70	83	87
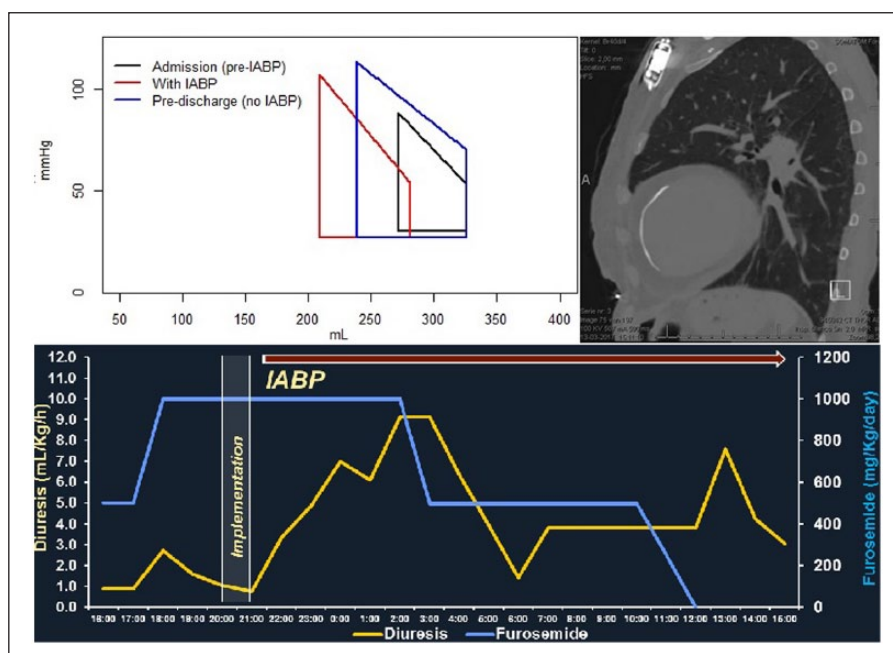
P127

Fourth time's the charm

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A 62-year-old woman with a 40-year history of rheumatic mitral valve disease, with mitral valve commissurotomy in 1976, mitral plasty in 2000 and mitral valve replacement with a bidisc mechanical prosthesis in 2010, presented to our institution with acute heart failure (AHF) in anasarca and New York Hear Association (NYHA) class IV. She was asymptomatic until 1 month before this episode, when she started gradual worsening fatigue with reduced exercise tolerance, shortness of breath, orthopnea and bilateral lower extremity edema, which evolved to anasarca. Other significant medical history included permanent atrial fibrillation and chronic haemolytic anaemia.

She was in "warm-wet" AFH profile. Cardiac auscultation revealed clear prosthesis clicks, a decrescendo diastolic murmur in aortic area and a systolic murmur along the left sternal border.

The laboratory evaluation showed haemolytic anaemia (haemoglobin 10g/dL), INR 6.8, acute kidney injury AKIN 2 and a cholestatic pattern.

Transthoracic and transesophageal echocardiogram revealed a bidisc mechanical mitral valve with no signs of obstruction but with a moderate to severe paravalvular mitral leak. They also showed progression of the rheumatic disease with severe aortic regurgitation, severe tricuspid regurgitation, pulmonary hypertension (pulmonary artery systolic pressure of 99mmHg) and right ventricle systolic dysfunction. Left ventricle was not dilated and had normal systolic function (Simpson biplane 56%).

In the next days, a negative fluid balance strategy was adopted with partial improvement of the symptomatology.

Although the surgical approach implied a fourth cardiac surgery with manipulation of three valves and a non negligible mortality risk, the patient wanted the procedure to be done. She was referred and accepted by the surgical center.

She was submitted to a mitral paravalvular leak closure, an aortic valve replacement with a mechanical valve and a tricuspid valve ring annuloplasty.

The procedure was uneventful. She required inotropic treatment in the first three days and still needed endovenous diuretic therapeutic, which was progressively reduced. The postoperative transesophageal echocardiogram revealed a normally functioning prosthetic aortic and mitral valve, with a mild mitral paravalvular leak and a tricuspid ring with moderate regurgitation.

Her exercise tolerance had gradually improved and, three weeks after surgery at discharge, she was in NYHA class I-II with no orthopnea and no extremity edema. She remains asymptomatic after 6 months follow-up.

Despite the improvements in the outcomes of patients undergoing revision valvular surgery, redo-mitral valve replacement remains a challenge, especially when associated with other valve repairs (namely aortic valve surgery) and pulmonary hypertension. We presented a successful case of a fourth redo mitral valve surgery.
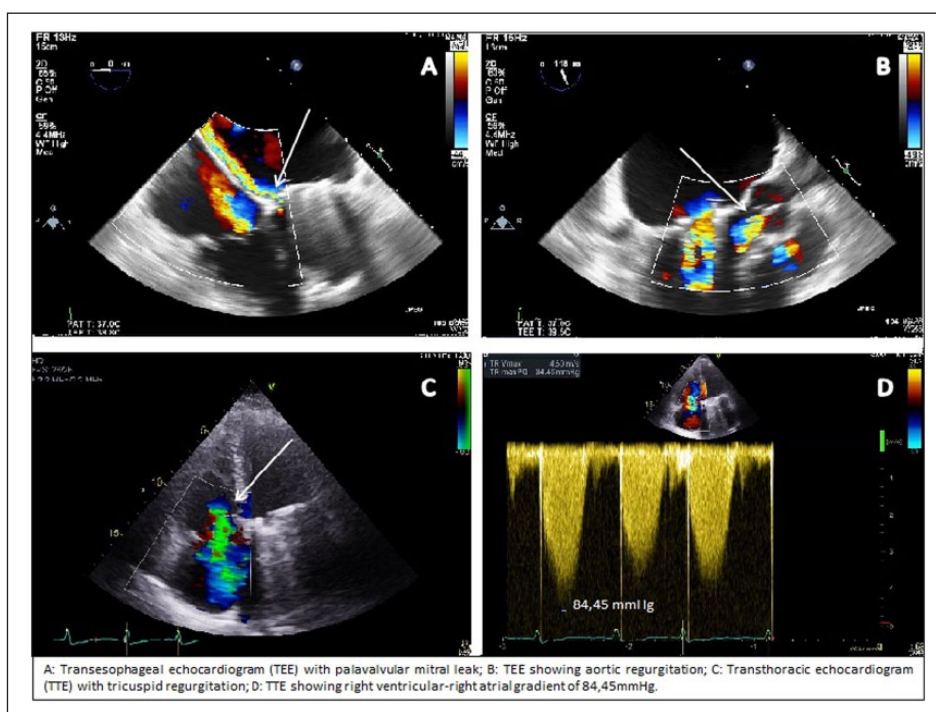
A: Transesophageal echocardiogram (TEE) with palavalvular mitral leak; B: TEE showing aortic regurgitation; C: Transthoracic echocardiogram (TTE) with tricuspid regurgitation; D: TTE showing right ventricular-right atrial gradient of 84,45mmHg.

TTE and TEE images

P128

Interleukin 1 receptor antagonist anakinra in the treatment of antisynthetase syndrome-related myocarditis with cardiogenic shock

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Antisynthetase syndrome (AS) is a rare autoimmune disorder with antibodies against aminoacyl-tRNA synthetase. AS is frequently characterized by myositis, polyarthritis and interstitial lung disease. Cardiac involvement occurs rarely. AS associated myocarditis is a deadly condition with 3-25% risk of congestive heart failure and 10-20% mortality.

A 66 year-old man with arterial hypertension and familiar history of psoriatic arthritis was referred to our center after fainting. He started experiencing fever, night sweats, arthralgia, peripheral edemas and weight loss. Physical examination and ECG were unremarkable. Laboratory tests revealed elevated high sensitivity cardiac troponin T (hs-cTnT), C-reactive protein (CRP) and eritrocyte sedimentation rate (ESR). Rheumatologic tests showed negative RF and ANA and positive anti-syntetase (anti-SSA/Ro52) antibodies. Transthoracic echocardiography (TTE) and myocardial perfusion scintigraphy showed no significant findings. Chest computed tomography demonstrated an interstitial lung disease. Articular ultrasound showed bilateral flexors and extensors inflammation. NSAIDs therapy was started. Ten days after, the patient developed a complete atrioventricular block and an episode of ventricular tachycardia, leading to implantable cardiac defibrillator (ICD) placement. Noteworthy, hs-cTnT and CRP were persistently elevated. AS with associated myocarditis was suspected. Cardiac magnetic resonance imaging (MRI) showed dilated left ventricle with moderate dysfunction (EF 40%) and diffuse hypokinesia. T2 STIR altered signal was present in the interventricular septum and in the anterior wall, with patchy LGE. Endomyocardial biopsy (EMB) revealed active chronic myocarditis, with lympho-monocyte infiltration, edema and myocytolysis with substitute fibrosis, without viral DNA or RNA sequences. Corticosteroid therapy was started. After three days, the patient developed cardiogenic shock refractory to inotropes. TTE showed a severe left ventricular dysfunction (EF 15%). Thus, he was transferred to our intensive cardiac care unit (ICCU). Mechanical ventilation was started and an intra-aortic balloon pump (IABP) was placed, using a Swan-Ganz catheter for invasive hemodynamic monitoring. Corticosteroid therapy was ineffective, thus interleukin-1 receptor antagonist anakinra 200 mg s.c. twice daily was started. Cardiac function promptly recovered after 48 hours, allowing weaning from inotropes and mechanical support. At discharge from ICCU, TTE revealed EF 55% and hs-cTnT progressively reduced. Anakinra dosing was halved and continued for ten days.

AS related myocarditis is a rare but dramatic complication. Cardiac MRI and EMB are crucial for decision making and therapy. Treatment includes corticosteroid and cardiac support with inotropes and mechanical circulatory assist devices in severe ventricular dysfunction. Immunomodulation with anakinra should be considered in patients not responding to conventional treatment.

P129

Complete recovery of acute cardiac dysfunction after intensive dual iron chelation therapy in a patient affected by beta-thalassemia major

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Iron deposition cardiomyopathy is the leading cause of mortality in patients with ß-thalassemia major (TM) undergoing red blood cell (RBC) transfusions. Chelation therapy is commonly used to avoid iron overload toxicity. Here we describe the case of a patient experiencing cardiogenic shock as a consequence of chelation therapy cessation and how it was possible to revert severe cardiac dysfunction using aggressive dual iron chelation treatment. A 30-year old man suffering from TM was admitted to the emergency room (ER) with signs and symptoms suggestive of cardiogenic shock. At admission, blood pressure was 75/40 mmHg; the ECG showed sinus tachycardia. Echocardiogram documented increased left ventricular (LV) end-diastolic diameter, LV hypokinesia, EF 26% and moderate mitral regurgitation. A cardiac magnetic resonance (CMR) performed before the index event, despite documenting accumulation of iron in both liver and heart, showed normal cardiac function with indexed LV end-diastolic volume (LVEDVi) of 131 ml/m^2, an LVEF 52%. Of note, the patient reported that after the CMR results he completely stopped the chelation therapy. Furthermore, he admitted that his compliance to chelation therapy had always been poor. The patient was admitted at our ICU and treated with diuretics, inotropes and vasodilator. Few hours later, since the haemodynamic shock persisted; intra-aortic balloon pump (IABP) was positioned and dialysis started. In addition, intensive iron chelation with continuous deferoxamine infusion 35 mg/kg/die and oral deferiprone at the dose of 75 mg/kg/die was started. No clinical response was observed in the first 10 days, but thereafter a progressive improvement of clinic and laboratory findings occurred, with complete recovery of renal function and improvement of the low

cardiac output condition allowing IABP removal after 23 days. The patient was discharged after 35 days with LVEF 38%, no mitral regurgitation. Subcutaneous infusion of deferoxamine and oral deferiprone were continued. Four months later, the patient presented a remarkable clinical improvement (NHYA I). CMR documented severe residual iron loading with cardiac T2 of 8 msec and liver T2 of 6 msec but the LVEF was normal. Cardiac siderosis is the most common cause of morbidity and mortality in patients with transfusion dependent TM. This case report demonstrates that withdrawal of chelation therapy can lead to development of cardiogenic shock. Intensive dual iron chelation therapy with deferoxamine and deferiprone may still allow reversibility of this dramatic picture, despite the apparent absence of response in the first week of treatment.
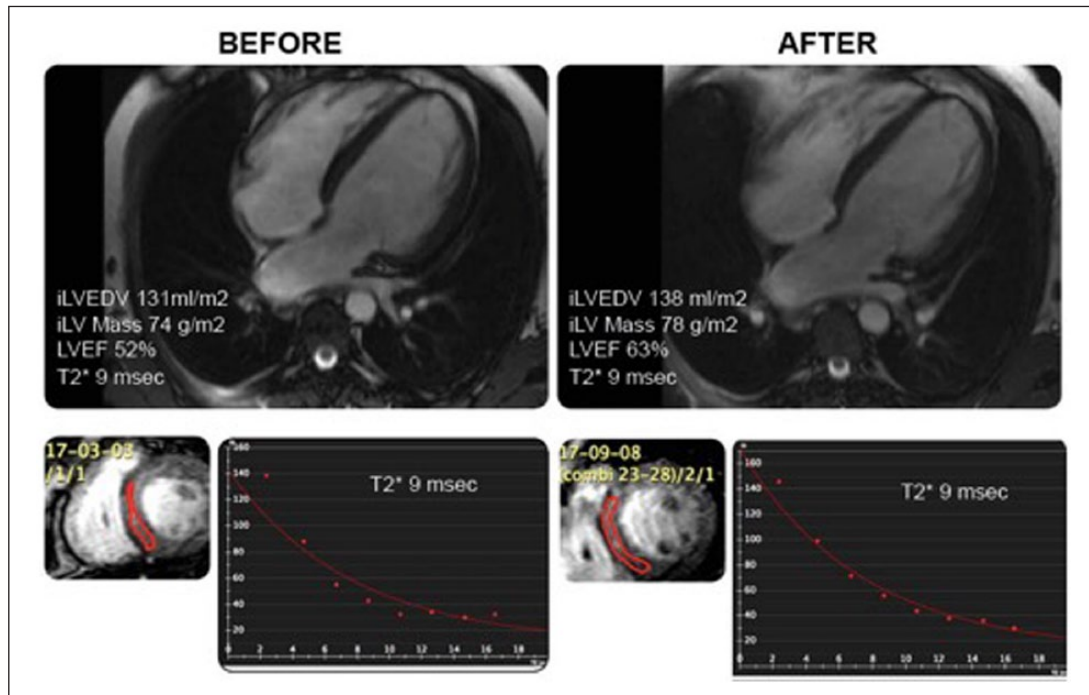
P130

Liver laceration with hemoperitoneum and haemorrhagic shock after cardiopulmonary resuscitation and thrombolysis for massive pulmonary embolism

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Introduction: External chest compression during cardiopulmonary resuscitation (CPR) is frequently associated with trauma to the heart, lungs, and chest wall. In comparison, intra-abdominal injuries related to CPR are less frequent events. We describe a case involving liver laceration with hemoperitoneum and haemorrhagic shock developing after CPR and thrombolysis for massive pulmonary embolism (PE).

Case description: A 43-year old woman presents to the emergency department (ED) complaining about acute dyspnea and chest pain. She had a past medical history of essential arterial hypertension and rheumatoid arthritis. On arrival, she was found agitated, severely hypotensive and tachycardic. Bedside echocardiography showed severe right ventricular dilation, and massive acute PE was presumed. While still in the ED, the patient developed pulseless electrical activity and cardiopulmonary arrest. Standard CPR maneuvers were initiated, and sustained recovery of spontaneous circulation was achieved after 20 minutes. Weigh-adjusted tenecteplase bolus was given during CPR.

The patient was then admitted to our intensive cardiac care unit. She was successfully extubated and cleared from vaso-pressor support in the first hours, and her evolution was expected to be good. However, approximately 12 hours after CPR and thrombolysis, neurological deterioration, hypotension, tachycardia, and decreasing haemoglobin (from 12 to 9 g/dL), unexpectedly occurred. Urgent abdominal echography documented fluid presence on pelvic peritoneal recesses (see figure), and abdominal computed tomographic angiography suggested hemoperitoneum and contrast extravasation from liver laceration. Exploratory laparotomy confirmed hemoperitoneum and liver laceration. Abdominal blood

drainage and hemostasis and ligation of liver laceration were undertaken. Meanwhile, transfusion with blood derivatives, such as erythrocyte concentrate, fresh frozen plasma and fibrinogen, were provided. Post-operatory recovery was uneventful, and the patient was successfully discharged 7 days later.

Conclusions: CPR-associated liver injury should be kept in mind in the setting of haemorrhagic shock occurring after successful resuscitation. Chest compressions performed too low in the sternum may be implicated in liver injury. Patients submitted to thrombolytic therapy are under particularly high risk. Low or dropping haematocrit should trigger suspicion. Bedside sonography revealing intra-peritoneal fluid helps in the differential diagnosis, and computed tomography may be considered in haemodynamically stabilized patients. Surgery may be warranted. Despite being a dreadful intercurrence, major liver injury did not appeared to influence the overall outcome.
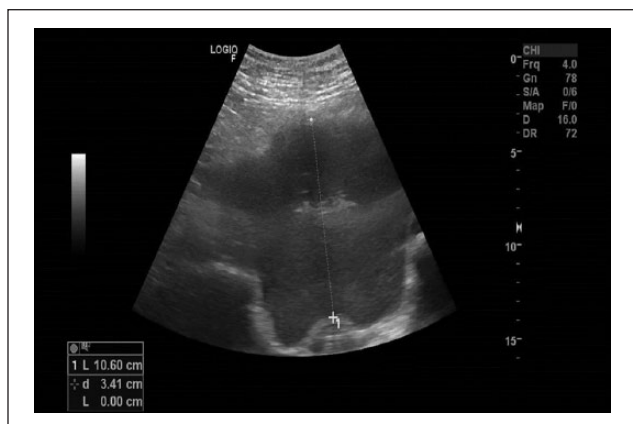
Fluid on pelvic peritoneal recesses

P131

An unusual presentation of pheochromocytoma crisis with shock

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A 43-year-old woman, with previous anterior non ST elevation myocardial infarction five months prior to hospital admission, with one vessel coronary disease treated with drug eluting stent to anterior descendent coronary artery. The day of admission, the patient started with sudden dyspnea. At first medical contact, she was in a situation of acute pulmonary oedema with decreased level of consciousness requiring mechanical ventilation. At her arrival to the hospital, the patient's blood pressure fluctuated between 190/110mmHg and severe hypotension with signs of peripheral hypoperfusion. Initial laboratory tests demonstrated leukocytosis, acute renal failure and elevation of myocardial necrosis markers (High-sensitive troponin 9506), left ventricular disfunction (proBNP>35000) and metabolic acidosis (Lactic 7). Echocardiogram showed akinesia of the basal and middle segments with hyperkinesia of the apical segments, conditioning a severe functional mitral insufficiency. A Swan-Ganz catheter was placed showing parameters suitable with distributive shock. Vasoactive amines were needed to maintain adequate peripheral perfusion. Renal function showed progressive deterioration, requiring renal replacement therapy. Urgent coronary angiography and aortography showed no signs of acute coronary nor aortic syndrome. Patient later presented fever and abdominal distention, which lead to the performance of an abdominal ultrasound that showed signs of ischemic colitis and an incidental suprarenal mass. Subsequently an abdominal CT scan and a magnetic resonance were performed confirming the suspicion of pheochromocytoma. 24 hour urine also supported the diagnosis with elevated vanillylmandelic acid (32 mg/24h, normal 4-7 mg/24h). After patient improvement, allowing amine and mechanical ventilation weaning, alpha-blockers were initiated, with subsequent introduction of beta-blockers, improving the clinical and hemodynamic situation of the patient. The inverse stress cardiomyopathy observed at admission progressively improved until normalization of ejection fraction and disappearance of mitral insufficiency. Eleven days after admission, the patient underwent surgical resection of the mass, confirming anatomical diagnosis. This case illustrates an unusual debut presentation of pheochromocytoma in a young woman with prior ischemic cardiomyopathy, involving severe shock, inverse stress cardiomyopathy and ischemic colitis.
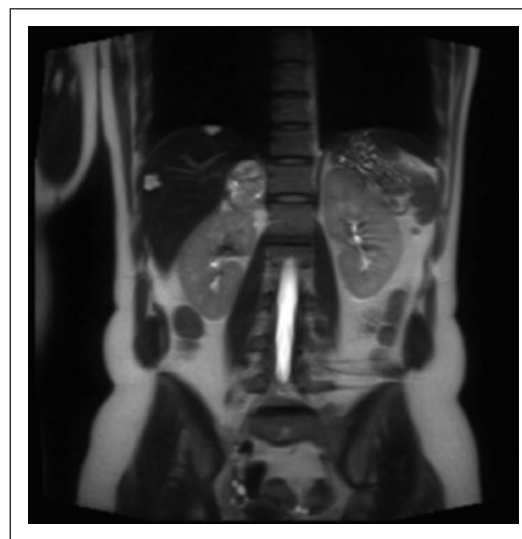
Right suprarrenal mass

P132

Disease profile, length of stay and in-hospital mortality in the cardiac intensive care unit

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Purpose: To evaluate the disease profile in patients admitted to the CICU in a multiprofile teaching hospital without invasive cardiology and cardiac surgery, and to determine the association of cardiovascular and noncardiovascular illnesses with the length of stay (LOS) and in-hospital mortality.

Methods: We studied 950 admissions between June 1, 2016 and May 31, 2017. Through retrospective systematic review of the electronic database we collected data about the leading and concomitant diagnoses, demographic and clinical data, LOS and causes of death.

Results: The leading diagnosis was cardiovascular in 72% of patients - decompensated heart failure (33%), atrial fibrillation (15%), stroke (11%), acute coronary syndrome without ST elevation (6%), pulmonary embolism (3%), infective endocarditis (1%), pericarditis (2%), other arrhythmias (1%). Pneumonia, exacerbated chronic obstructive pulmonary disease (COPD) with respiratory failure (6%), exacerbated chronic kidney failure (4%), diabetes mellitus (4%), gastrointestinal diseases (3%) and sepsis (2%) were the most frequent noncardiovascular leading diagnosis. A respiratory and kidney failure and sepsis were found in 10% of all patients as secondary diagnosis. The median LOS was 6 days cardiovascular and 10 days in non-cardiovascular patients. In-hospital mortality was 13% and stroke was the most common cause (40%). The other cardiovascular diseases were 28% of the in-hospital mortality. Acute and exacerbated respiratory and kidney failure, gastrointestinal bleeding, decompensated diabetes mellitus and sepsis accounted for 32% of in-hospital mortality.

Conclusion: A significant number of patients with acute or exacerbated non-cardiovascular diseases as a leading or concomitant diagnosis were treated in the CICU. These patients, as well as patients with severely decompensated heart failure and stroke had prolonged LOS and increased in-hospital mortality. The diversity of diseases treated in CICU necessitates more complex management by a multidisciplinary team.

P133

Cardiogenic shock as debut of pheochromocytoma

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A 47-year-old man was admitted to the emergency department for treatment of shortness of breath. The patient did not have self-reported cardiovascular risk factors, such as hypertension, and had no significant past medical history. Two weeks ago, the entire family suffered from viral gastroenteritis resolved spontaneously within a few days.

On the day of the admission, he referred acute chest discomfort accompanied by shortness of breath for an hour, thereafter the pain extended to abdomen and groin. Physical examination showed tachycardia (160 bpm), tachypnea and signs of poor tissue perfusion. The admission blood pressure was 120/70mmHg, O_2sat 75% with oxygen mask with reservoir bag. Cardiac auscultation presented a gallop rhythm while pulmonary demonstrated widespread crepitations. ECG showed sinus tachycardia and unknown LBBB. Clinical worsening was managed with furosemide, etomidate, succinil colin, orotracheal intubation, mechanical ventilation, midazolam and rocuronium. TTE highlighted firstly an akinetic anterolateral wall. CT showed the classical appearance of acute phase ARDS, and a 5x4.7cm right adrenal mass which underwent differential diagnosis. Cardiac catheterization revealed no coronary artery stenosis. He was transferred to the CCU. In the first hours, he presented abrupt onset of fever and blood testing showed neutrophil count increased (left shift) and procalcitonin elevated. No circulatory mechanic support was needed to manage BP, HR and O^2 sat. On the other hand, he remained in anuria which required CVVH.

Differential diagnosis included myocarditis, pheochromocytoma and stress myocardiopathy due to sepsis. Broad-spectrum antibiotics and corticosteroids were administered. Titration of alpha-adrenoreceptor antagonists was contraindicated due to the patient's condition. Repeated TTE revealed a progresive severe disfunction of the LV, with sparing of the basal segments, RV function was midly impaired. Within 16 hours after admission, ECG-monitoring showed a QRS complex clearly wider, followed by a severe drop in blood pressure. Volume replacement in addition to norepinephrine and dobutamine infusion was started, and an IABP was implanted. Implantation of an ECMO in setting of cardiogenic shock and multiple organ dysfunction syndrome was carried out. Unfortunately, the patient suffered from electromechanical dissociation. Consequently, advanced cardiopulmonary resuscitation was initiated. TTE showed no pericardial effusion. CPR was cessated after 30 minutes and the patient remained in asystole, consequently a medical certification of death was made.

Necropsy revealed a 53mm pheochromocytoma in the right adrenal gland confirmed by inmunohistochemistry. Heart

detailed examination only showed mild subendocardial ischaemic changes, but no data regarding to myocarditis. Other necropsic findings were pulmonary alveolar oedema, bone marrow embolism in lung arteries, gastric stress ulcers and bilateral renal acute tubular necrosis.
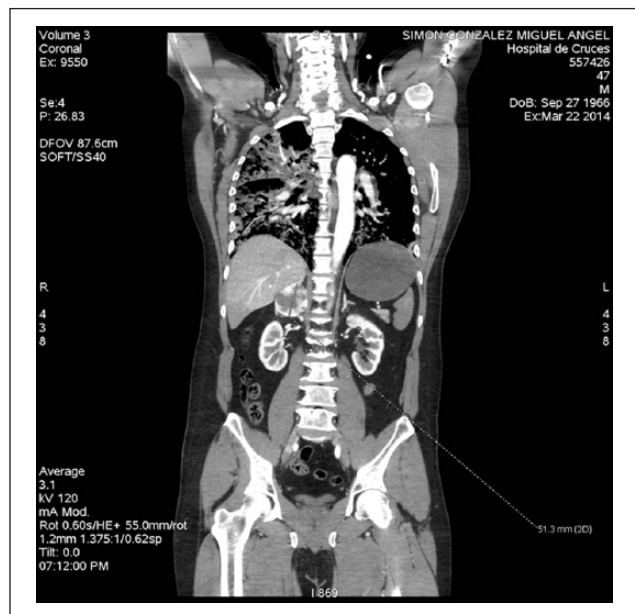
Right adrenal mass

P134

Profound refractory hypotension with relative bradycardia following percutaneous coronary intervention: an adverse reaction to iodinated contrast medium

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Introduction: An 82-year-old woman underwent elective percutaneous coronary intervention (PCI) to a critical right coronary artery (RCA) stenosis, which had been identified 2-months previously on diagnostic angiography. PCI was performed from the right radial artery, using 150ml iodinated contrast medium (ICM), 6000 units unfractionated heparin and 5mg verapamil. She was normotensive at the end of the procedure. 1-hour following the procedure, she became hypotensive with a blood pressure of 80/48mmHg.

Examination and Investigations: Clinical examination was unremarkable with no signs of anaphylaxis or bleeding complications. 12-lead electrocardiogram showed sinus bradycardia (heart rate 58bpm) with no ischaemic changes. Transthoracic echocardiography excluded tamponade and demonstrated hyperdynamic left ventricular function. Arterial blood gas showed a metabolic acidosis with pH 7.30 and lactate 4.2. A repeat coronary angiogram with

IVUS confirmed a well-expanded patent stent and no dissection.

Management: She received 4 litres of intravenous crystalloid fluid therapy, but became more hypotensive. Her heart rate did not exceed 65bpm, she was not taking beta-blocker therapy. She was admitted to intensive care for vasopressor support. She subsequently developed an acute kidney injury and deranged liver function tests, both due to ischaemic aetiology from global systemic hypoperfusion. Her condition thereafter completely resolved over the next 3 days with basic supportive therapy.

Differential Diagnosis: The cause of this patient's profound refractory hypotension was initially unclear. There were no mechanical procedural complications. Echocardiographic findings were consistent with excellent stroke volume. The hypotension likely resulted from gross peripheral vasodilation with relative bradycardia. Given the context, the unifying explanation for this clinical condition is an adverse reaction to ICM.

Discussion, Conclusion & Implications for Clinical Practice

Adverse ICM reactions can be classified as anaphylactoid or non-anaphylactoid. Anaphylactoid reactions present within minutes and are non-dose dependant. Non-anaphylactoid reactions are variable in onset and manifestation and are dose-dependant; they are due to upset of circulatory haemostasis caused by ICM osmolality and ionicity. Manifestations of non-anaphylactoid reactions include nausea, vomiting, neuropathy and an exaggerated vasovagal response, which would explain this patient's refractory hypotension and bradycardia.

The management of non-anaphylactoid reactions are largely supportive. The role for steroid therapy is unknown. Of note, this patient did not have an adverse reaction during initial diagnostic coronary angiography 2-months previously, this may be explained by the significantly lower ICM dose used (75ml).

Adverse reaction to ICM should be considered in patients with hypotension following PCI, once more frequently encountered causes have been excluded.

P135

A patient with high degree A-V block and repeated ventricular fibrillation treated with PCI and CRT-D

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Introduction: In patients with acute myocardial anterior infarction complicated by new onset BBB and transient AV block short and long term mortality is high, irrespective of

permanent pacing. We present a complex case of a patient who is hospitalised on the acute-subacute fase of anterior myocardial infarction, complicated with repeated ventricular fibrillation (VF), permanent high degree A-V block as well as severe reduction of systolic function (EF 0.15-0.18).

Materials and methods: H.I ,57 years old,male, presented at the hospital with severe bradycardia. He had a history of nearly 8 days with viral condition, high fever,diarrhea, nausea and weakness, dyspnea and chest dyscomfort. ECG at the entrance: high degree AV block, left fascicular hemiblock, RBBB and long Q-T (510 ms), HR:35/min. The patient complicated with several episodes of VF recovered with electrical defibrillation. Personal data: smoking, alcohool, non treated arterial hypertension. ECHO TTE: Dilatated ischemic cardiomyopathia with very low ejection fraction due to anterior myocardial infarction (EF 0.15-0.18), spontaneous contrast in the left ventricule, moderated mitral regurgitation, RVSP 40 mmHg. Laboratory data: leucocytosis($19.1 \times 10^3/mm^3$), high level of troponine 7.68ng/mL (0.00 – 1.00),AST 87U/L , ALT 60U/l, hypokalemia and hyponatremia, high level of Reactive C Protein. In the emergency coronary angiography resulted LM and 2-vessel CAD, with suboclusion of the proximal LAD until the LM. A temporary PM, with femoral approach was implanted and PCI of the LAD and LM were achieved. There were no complications during the procedures, but it remained a residual stenosis in the distal LAD. The patient was PM dependent. On the control coronary angiography, the stents were normal and PCI of distal LAD was performed.

Results: AV block complicating acute myocardial infarction most often resolves itself within 2-7 days. Since the patient continued to persist high degree A-V Block after 12 days of hospitalisation, we discussed to implant ICD vs. CRT-P vs. CRT-D. But since the patient had an urgent need for pacing and, right ventricular pacing would lead to a worsening of the heart failure, it was concluded that the best option was the implantation of CRT-D.

Conclusions: Due to Guidelines on cardiac pacing in patients with acute myocardial infarction with low systolic function : CRT rather than right ventricular pacing is recommended for patients with HfrFE regardless of NYHA class, who have an indication for ventricular pacing due to high degree AV block in order to reduce morbidity. When a CRT is planned, implantation of CRT-D device should be considered in patients with specific clinical conditions, so we performed CRT-D to our patient. In a six month follow up the patient had a clinical outcome and echografic data improvement (EF 0.25-0.27, reduction of mitral regurgitation, no presence of spontaneous contrast).

P136

A particular case of severe acute heart failure: two actors on the same scene

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Introduction: Among the types of heart failure (HF), patients with left ventricular ejection fraction (EF) >50% are defined as affected by HF with preserved EF (HFpEF). They are often elderly, have more comorbidies and may have more advanced HF, especially in case of coexistent atrial fibrillation. We report a case of acute HFpEF, triggered by two concomitant factors, evolved in cardiogenic shock and successfully treated in Intensive Cardiac Care Unit.

Case report: A 82-year-old woman was urgently carried to Emergency Room for breathlessness. She suffered by hypertension, paroxysmal atrial fibrillation (AF) in therapy with flecainide, hyperthyroidism and chronic obstructive pulmonary disease (COPD). Lab tests, arterial blood gas (ABG) and chest X-ray showed an exacerbation of COPD associated with acute HF and AF with wide QRS complex. In few hours the patient developed cardiogenic shock with hypotension, anuria and severe mixed acidosis with hyperlactatemia. ECG showed low-rate AF with wide QRS and markedly prolonged QTc (figure A1). A transthoracic echocardiography (TTE) demonstrated preserved EF in presence of left ventricular apical akinesia, as in Takotsubo syndrome (figure B). We decided to start with non-invasive ventilation (NIV), performing a close ABG and hemodynamic monitoring, and to prescribe hydration and continuous infusion of furosemide. In few hours hemodinamycs and diuresis improved and ABG progressively normalized with lactate decrease. In the next days she was weaned by NIV, ECG showed normal-rate AF with QRS narrowing and QTc shortening (figure A2), and a TTE displayed resolution of apical akinesia. After two weeks, the patient was discharged in stable conditions.

In this case of acute HF there are two triggers, closely related to patient comorbidies: Takotsubo syndrome and flecainide intoxication. Exacerbation of COPD is a cause of secondary Takotsubo syndrome, that, sometimes, can evolve in cardiogenic shock. We have successfully adoperated NIV in this scenario, even if it could be indicated mechanical ventilation, first for a probable difficulty of weaning due to COPD, and second because, if NIV reduces venous return, it also decreases left ventricular afterload, being safe if adequate filling state is guaranteed. Flecainide collateral effects have been unmasked by acute renal failure. It has contributed to EF deflession, to QRS widening and to QTc lenghtening. Forcing diuresis to facilitate its elimination is the key to solve flecainide intoxication.

Conclusions: Our case underlines the importance to have an holistic approach towards HF patients. HFpEF can evolve

in advanced HF due to comorbidities, therefore it is crucial to recognize and to treat all them. Furthermore, we highlight the possible usefulness of NIV in hemodinamically unstable patients with acute respiratory failure, and the role of a right balance between volemic filling and diuresis to prevent acute renal failure and a consequent drugs intoxication.
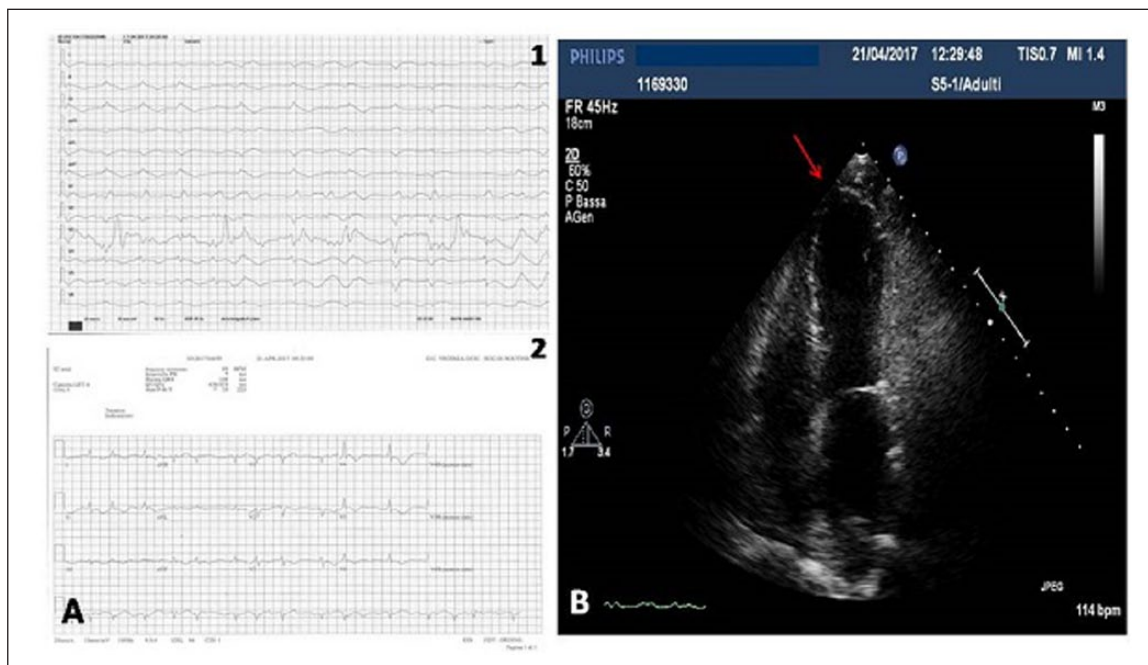

figure 1

P137

Acute thrombosis on mechanical mitral prosthesis

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Introduction: Thrombosis of a prosthetic valve is a complication that can seriously compromise the patient's life. The traditional therapeutic solution has been reoperation, with thrombectomy or replacement of the affected valve, with a high mortality rate (up to 38%). Thrombolysis is a clear alternative to surgical treatment (80% success rate, but the procedure has the drawback of embolic complications (20%) and major hemorrhages (5%) leading to a mortality of approximately 6%. At the present time, the most appropriate therapeutic modality for these patients is not well defined, especially for those with a severe obstructive condition.

Clinical Case: A 58-year-old woman underwent mechanical aortic prosthesis in 2005. She was scheduled to have mitral valvular replacement (due to severe mitral regurgitation) and aortic prosthesis resustitution and aortic tube due to dilatation of aortic root and ascending aorta. After the surgery she stayed in the ICU, presenting a worsening postoperative clinical evolution requiring vasoactive drugs and IMV. After 6 days of the surgical intervention, a transthoracic echocardiogram of control was performed, in which a possible dysfunction of the mitral prosthesis was observed, so that TEE was performed and the diagnosis was confirmed, identifying only the movement of one of the hemidisks (the medial hemidiscus was fixe) and a hypoechogenic image, compatible with thrombus was observed at posteroseptal level on the auricular face of the prosthetic ring due to thrombosis of the mitral prosthesis Besides elevated gradients (MG 9 mmHg). He was initially treated with intravenous heparin, without success. As the surgery was very risky and technically very complicated due to lack of usual approach; it was finally decided to perform thrombolysis by streptokinase at 500,000 IU in 20min, and 1,500,000 in continuous continuous infusion in 10h. The patient presented no complications. After a computed tomography of the control brain at 24 hours without evidence of bleeding, it was decided to initiate enoxaparin 0.7mg/kg/12h. A TEE was performed 48 hours after thrombolysis revealing thrombus dissolution. On the fourth day anticoagulation was rotated to vitamin K antagonists, achieving therapeutic range in 6 days. Given the good evolution, it was decided hospital discharge after prescribing aspirin in low doses in addition to anticoagulation with warfarin indicating an RIN target of 4.

Conclusions: Prosthetic mechanical valve thrombosis is a rare complication of valvular replacement, but with a high morbidity and mortality rate. Early diagnosis is essential in the course of this disease, since successful early therapy improves short- and long-term prognosis. The risk of embolism in mechanical prosthetic valve thrombosis depends on the size and mobility of the thrombus, with thrombus greater than 8 mm the risk of embolism is greater than 80%.
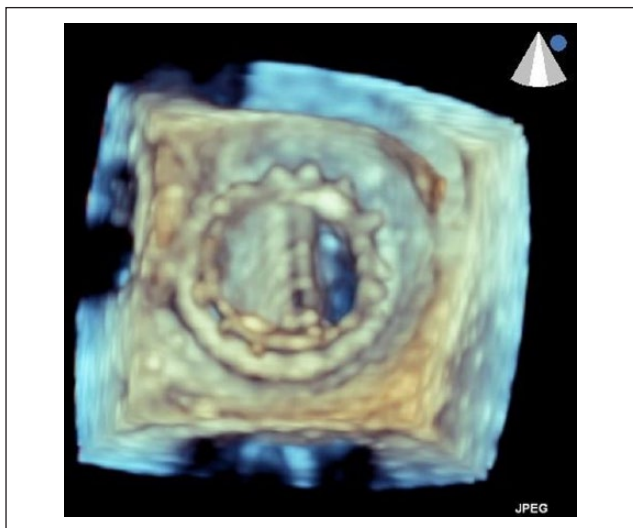
P138

Particular clinical presentation and outcome of aortic valve endocarditis

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Introduction: The heterogeneous clinical presentation and evolution of infective endocarditis provides difficulties in the diagnosis and in the optimal surgical timing, emphasizing the critical role of the Endocarditis Team.

Case report: A 74 years old female was admitted in the emergency department with severe urosepsis and septic shock. E. Coli ESBL was identified in the blood culture and antibiotherapy with Meropenem was initiated with resolution of the hemodynamic instability, neurologic disturbances and improvement of the renal function. Ten days later there was a reoccurrence of fever and fatigability, associated with complete atrioventricular block (35 bpm). A temporary pacemaker was inserted. Transthoracic and transoesophageal echocardiography were performed with visualization of a moderate aortic stenosis, small vegetations on the aortic valve and an aortic root abscess, extended to aortic-mitral continuity. Staphylococcus Aureus was

identified in repeated blood cultures and antibiotherapy with Vancomycin and Amikacin was initiated. A Heart Team consisting of cardiologist, infectionist, anaesthesist and cardiac surgeon took the decision to prepare the patient for early cardiac surgery in the next 48 hours. The following day the patient became hemodynamically unstable and the echocardiography revealed pericardial effusion with tamponade, due to perforation of the right ventricle with the pacemaker lead. Emergency open heart surgery with drainage of the hemorrhagic effusion and replacement of the aortic root and the aortic valve (modified Bentall procedure) was performed. After 5 days of acceptable postoperative course the patient developed a Clostridium Difficile colitis unresponsive to therapy, with rapid deterioration and multiple systemic organ failure, leading to exitus on the ninth postoperative day.

Conclusion: This case highlights particular outcome of staphylococcal endocarditis superimposed on E.coli severe sepsis, with several complications due to depressed immune system, paravalvular extension of the aortic valve infection and invasive medical procedures.

P139

Diagnostic and therapeutic difficulties in a patient with peripartum cardiomyopathy with advanced heart failure, complicated by thrombus in both ventricles and pulmonary embolis

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A 24-year old patient was admitted to Intensive Care Cardiac Unit with advanced heart failure and generalized edema (hydrops universalis). The patient was two months after labor by C-section due to obstetrics indications. Laboratory tests revealed features of renal and hepatic failure. Transthoracic echocardiography (TTE) revealed pericardial fluid, pleural effusion, ejection fraction of 23% and mitral and tricuspid valve regurgitation II/III°. Chest X-ray showed pleural effusion in both cavities with suggestion of inflammatory lesion in the right lower lobe area. Chest and abdominal computed tomography (CT) without contrast (due to renal failure) revealed the presence of scattered inflammatory lesions in the right lower lobe area, hepatomegaly and edema of other abdominal organs. Further TEE examinations revealed thrombus in the left ventricular apex area measuring 2,3x2,3cm and mural in the right ventricle measuring 1,3x4,4cm. Treatment with furosemide, unfractionated heparin, vasoconstrictor support of dopamine and dobutamin infusion and passive oxygenation was initiated. Due to heart failure symptoms in the postpartum period and suspicion of peripartum

cardiomyopathy, bromocriptine was initiated. Within the next few days her condition significantly improved, including renal function improvement, and angio-CT of the chest with contrast was performed. The examination confirmed pulmonary embolism with right lower lobe infarction and suspicion of thrombus in both ventricles (Fig). Additionally, examination revealed thrombus of the right internal jugular vein, subclavian vein and common iliac vein. Surgical treatment-trombectomy or thrombolytic therapy were considered. Due to the long time since the onset of illness symptoms (few weeks), she was qualified for conservative treatment. Firstly she was treated with unfractionated heparin infusion, secondly enoxaparin subcutaneously. Because of heart failure symptoms still present, we administered levosimendan infusion. Her condition significantly improved. In the follow-up control TEE we observed left ventricular ejection fraction improvement, significant reduction of mitral and tricuspid regurgitation. Thrombus size in both ventricles were gradually reduced and in the control investigations disappeared.

Conclusions: 1. Heart failure symptoms appearing in a short time after labor may be a serious manifestation of peripartum cardiomyopathy.

2. General hypercoagulability with biventricular and venous system thrombus, may be a symptom of peripartum cardiomyopathy complicated by heart failure.

3. Moreover, pulmonary embolism can complicate clinical cause of peripartum cardiomyopathy combined with heart failure and hypercoagulability.

Fig.Right lower lobe infarction (red arrows), lower lobe artery thrombus (green arrow) and thrombus in the left ventricle (blue arrow).

Fig
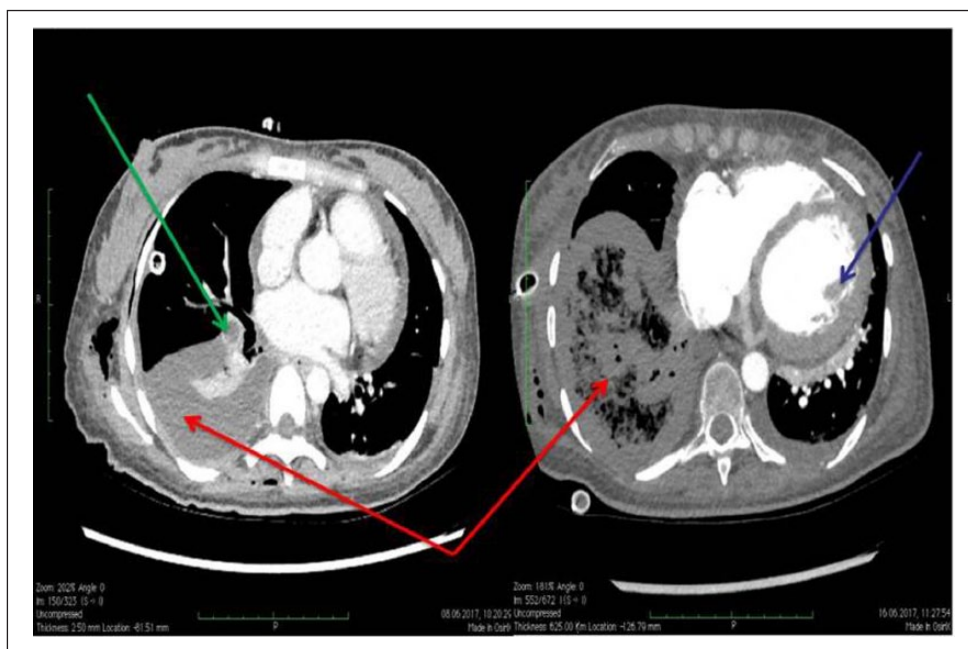
P140

An uncommon cause of left ventricular systolic dysfunction

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A 46-year-old male patient was admitted in our ED because of a 2-hour evolution of intense vomiting and an altered state of consciousness. He had a previous known history of type 1 diabetes mellitus, treated with insulin therapy, and is a previous smoker. He denied consumption of illicit drugs or alcohol. At first medical observation, it was noted that he had a ketonic breath, was hypotensive (77/52mmHg) and tachycardic (HR 112bpm). The capillary blood glucose was unmeasurable (HIGH) and the ketonemia was 3 (normal <1.2). The arterial blood gas analysis showed a severe metabolic acidosis (pH 7.1, pCO2 9.2, pO2 139, HCO3- 2.9) and a hyperkalemia (7.52). A diagnosis of diabetic ketoacidosis (DK) was established and he was started on IV continuous perfusion of insulin and hydration. The decompensation factor was a default in the insulin administration. In the first venous blood analysis an elevated

troponin level was discovered (2.01, normal <0.02 ng/ml), with a rise to a maximum peak of 3.23ng/ml, 12 hours after admission. The patient denied any chest pain, current or previous, or any HF symptoms. EKG showed sinus rhythm [109bpm], ST rectification in V5-V6, I e aVL; proBNP was 17316 pg/ml (N <125). The TTE showed a non-dilated left ventricle with a severe left ventricular systolic dysfunction (EF 25%) due to diffuse hypokinesia. With the DK resolved, the patient was admitted in the Cardiology ward. During the investigation it was found that the patient has had a previous hospitalization, 15 months after this one, also for a DK, during which, also because of an elevation in Troponin, a TTE was performed in the ED showing a severe left ventricular systolic dysfunction; during that hospitalization, 8 days after admission another TTE was performed in the Echo Lab, and at that time the patient had a normal systolic function; it was considered that the first TTE had been incorrectly related, and no FUP was programmed. This time a coronagraphy was performed: normal coronary arteries. There was no family history of HF, cardiomyopathy, sudden death. Another TTE, 7 days after the first one, showed an EF of 46% with a mild reduction in global longitudinal strain (-16%). At the day of hospital discharge the patient was in NYHA I, with a proBNP of 448 pg/ml, and medicated with an ACEi and a beta-blocker. Discussion: Although rare, there are a few case reports of left ventricular systolic dysfunction associated with DK. The mechanism proposed is based on severe acid-base and electrolytes disturbances, associated with the fact that H+ ions have a direct cardiac depressant action. This case is a demonstration of this rare cases. In two different occasions, our patient developed reversible left ventricle systolic dysfunction in association with ketoacidosis.

Conclusion: Although rarely considered, the acid base disturbances, namely, DK, can be a cause of left ventricle systolic dysfunction, and should be considered in the differential diagnosis.

P141

Two pseudoaneurysms, one patient

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Introduction: Ventricular pseudoaneurysms are rare pathological entities that arise primarily in the context of myocardial infarction or post-cardiac surgery. Usually the clinical presentation is nonspecific, and may in some cases be asymptomatic. Mortality is high, even with timely surgical intervention.

Clinical Case: The authors present a case of a man with a prior history of myocardial infarction 16 years before, who underwent anterior descending and circumflex angioplasty. As a sequel, he had an apical aneurysm of the left ventricle. Five years ago, he was hospitalized in the context of a myocardial infarction without ST segment elevation, and a large left ventricular pseudoaneurysm was found on echocardiogram and ventriculography. This pseudoaneurysm originated from the true aneurysm, whose cavity was filled with bulky thrombi. In addition, coronary angiography showed restenosis in the anterior descending artery at the site of the previous stent. The patient was referred for cardiac surgery, and resection of pseudoaneurysm and true aneurysm and aorto-coronary bypass were performed. Since then, he has remained asymptomatic. One year ago, he was diagnosed with a prostate neoplasm and performed chest CT with contrast for staging, which revealed a massive left para-cardiac mediastinal mass in continuity with the left ventricle and in close relation to the chest wall, which opacified with intravenous iodinated contrast and was compatible with recurrence of ventricular pseudoaneurysm. He repeated an echocardiogram, which confirmed the findings, also showing a severe mitral regurgitation of probable functional etiology. A new surgical intervention was proposed, which the patient refused on the grounds of professional reasons. After 2 months, the patient accepted to undergo surgery, and a new resection of left ventricular pseudoaneurysm and mitral annulus implantation was performed, with a good postoperative result.

Conclusions: Although pseudoaneurysms are rare entities with a poor prognosis, there are conditions well tolerated clinically by patients. Good results are possible even in case of reintervention.

P142

The worst case scenario

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Case Description: 69 years old caucasian female, history of hypertension, diabetes, dyslipidemia and three-vessel coronary artery disease.

• 2009 Coronaryography, with PCI of the anterior descending and circumflex arteries. Right coronary artery chronically occluded at its proximal portion.

• 2017 Echocardiogram with preserved ejection fraction and no segmental hipo/akinesia.

Patient on regular cardiology consultation complaining with a month-long CCS 3 angina. Stress test positive for

residual ischemia. Patient began double anti-platelet therapy with aspirin and clopidogrel and an elective coronaryography was programmed.

The coronaryography displayed a calcified left descending coronary artery with a diffuse lesion in its proximal and medial portion, with maximum stenosis of 80%, including a 70% intra-stent stenosis.

PCI of the proximal and medial portions of the LAD ensued with mediocre final result despite aggressive post-stenting dilation with non-compliant balloons (Picture 1. A)

After right femoral catheter was removed and puncture closed with device, patient complained of chest tightness and dyspnea. ECG performed in the cath-lab displayed ST elevation in the anterior pre-cordial leads with hyper-acute T Waves. New coronaryography ensued through the left femoral artery, displaying a hyper-acute thrombosis of the LAD's proximal stent (Picture 1. B). New PCI ensued with poor end result due to stent-in-stent placement in a calcified proximal LAD artery.

After the second PCI, the patient developed sinus tachycardia, hypotension (72/54 mmHg), diaphoresis, and obnubilation. New ECG displayed normalized ST-T changes in the precordial leads. Echocardiogram displayed absence of pericardial-effusion, normal left ventricular function without segmental hipo/akinesia, collapsed inferior-vena cava and under-filled cavities. Abdominal palpation diffusely painful. No hematoma or ecchymosis on both of the femoral puncture sites.

Abdominal contrast computed tomography displayed an extensive retroperitoneal hemorrhage without active extravasation of contrast (Picture 1. C).

Patient stabilized with vasopressors, fluid therapy, and immediate blood transfusions. Local cold and pressure were applied. The patient remained with double anti-platelet therapy with aspirin and clopidogrel without recurrence of bleeding or thrombosis.

Patient's daughter then admitted irregular consumption of medical therapy.

Discharged at the 5th day of admission. 6 Month follow up with normal blood hemoglobin and no angina with exertion.

Conclusion: With the advent and widespread use of modern PCI, the procedure-related complications become more noticeable. This case illustrates an uncommon situation of two antagonistic and fearsome PCI related complications: acute stent thrombosis and hemorrhagic shock due to retroperitoneal bleeding. Despite this patient's good outcome, management of this complex clinical situations is extremely challenging.
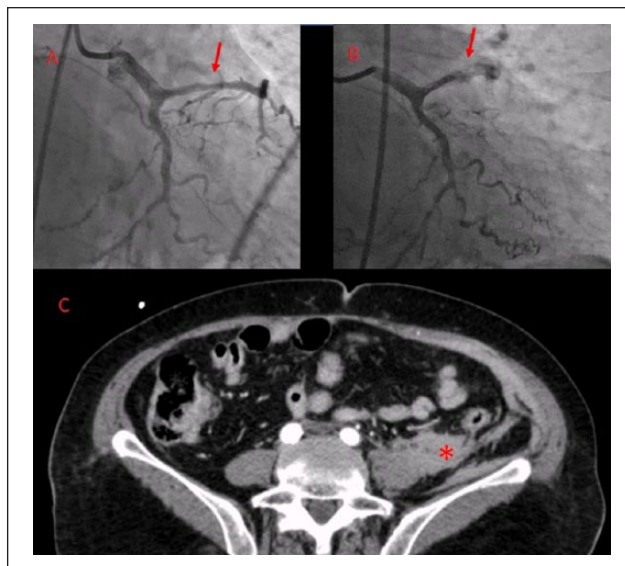
Picture 1

P143

Cardiac masks of the Boerhaaves syndrom

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On August 10, 2017, at 9:30 am, the emergency team delivered the patient M. with a diagnosis of ACS in the SRI KKB #1 n.u. professor Ochapovsky. At admission, he complained of intense pain behind the breastbone, a pressing, compressive nature, intensifying with breathing, extending into the interlopar and lumbar regions, intensifying with deep inspiration, diminishing in the position on the diseased side, a feeling of lack of air. On examination: complaints of pain of moderate intensity in the same areas of the chest with irradiation into the interlopacal and lumbar regions, accompanied by a feeling of lack of air, attracted attention to the patient's forced position on the left side, paleness and moisture of the skin, frequent shallow breathing. Cardiac tones are clear, rhythmic, heart rate - 106 per minute. The arterial pressure is 110 and 70 mm Hg. When palpating the abdomen is painless. ECG: sinus tachycardia, an increase in the amplitude of the T wave. ECHO: EDD 40mm, EF> 55% normal local contractility, RV 25 mm. Laboratory: leukocytosis (25.30 10e9 / l) with neutrophilia, cardiac troponin was normal. Chest X-ray within the age limit. CT of the chest, abdominal and aortic: in the mediastinum, from the level of the upper aperture to the diaphragm, along

the course of the main vessels, esophagus and bronchi, an extensive accumulation of air. A detailed search revealed a defect in the left wall of the distal part of esophagus up to 2.7 mm, which communicates the lumen of the esophagus and the paraeophageal space (Fig. 1). On 10.08.17 at 11:30 a.m. the patient was diagnosed: Boerhaave's syndrome. The patient was transported to the surgical department SRI KKB #1 n.u. professor Ochapovsky. It was made easophagorrhaphy and he was discharged 13 days later. So, a rare disease with a prevalence of 1: 10,000 was diagnosed in just 2 hours and the patient was rescued.
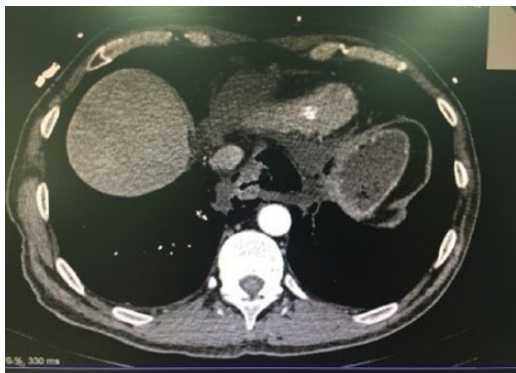
CT Fig1

P144

Use your wits: is not a simple case of pericardial effusion

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A 61-year-old woman with a background of asthma, nasal polyposis presented in the Emergency Department for medical evaluation about pericardial and pleural effusion. She had a CT scan done for a 2-weeks history of chest pain and dyspnea, suggesting a pulmonary disease. She didn't report any cardiovascular risk factor. The patient was afebrile, the blood pressure was 130/70 mm Hg, heart rate 80 beats per minute, no pericardial friction rubs or pulses paradoxus. At the time of the presentation there were non-specific ST-changes on the ECG, high sensitivity troponin was increased (4000 ng/L) as the blood eosinophil count (10 x 10(9)/L) and PCR (30 mg/L). Echocardiogram showed inferior and posterior wall hypokinesis with mild reduction of the left ventricular ejection fraction (EF), diffused pericardial effusion (max 1.5 cm) without signs of cardiac tamponade. She was admitted to the Cardiology Department

with suspicion of perimyocarditis. During hospitalization were performed coronary CT scan, not indicative of significative vessels stenosis and cardiac magnetic resonance (CMR) demonstrating inferior, posterior and lateral areas of subepicardial late gadolinium enhancement with an EF of 37% and nonhemorragic pericardial effusion. The most common infectious causes were excluded by lab tests (including tuberculosis and human immune deficiency virus). To rule out non infectious causes autoimmune tests were performed: rheumatoid factor was elevated with normal values of antinuclear antibody test, anti-neutrophil cytoplasmic antibodies and complement factors. The patient reported episodes of left foot paresthesia, scotomas and blurred vision that required neurological evaluation, head CT scan, brain magnetic resonance angiography both resulted normal and electroneurography that showed left L4-L5 mononeuritis. After multispecialist team discussion, we agreed on the execution of parasitological lab tests in order to exclude parasitosis eosinophilia and also on the research of the genetics mutation of hypereosinophilic syndrome. All of these tests resulted normal and we concluded with the diagnosis of eosinophilic granulomatosis with polyangiitis (EGPA). We decided to treat the patients with corticosteroids and cyclofosfamide. This combination treatment suddenly allowed to reduce both the hematic levels of eosinophils, troponin and the patient's symptoms. The CMR done two months later demonstrated the reduction of pericardial effusion and of the dimensions of subepicardial lesions. In conclusion, as heart involvement is the most critical systemic manifestation in EGPA and is a strong predictor of cardiovascular mortality early diagnosis and prompt initiation of appropriate treatment is imperative in order to improve the outcome of these patients. The multiorgan involvement in EGPA requires a multi-imaging approach and the cooperation between different medical professionals as cardiologist, neurologist and rheumatologist.

P145

Heart failure due to neoplastic origin in women with uterus adenocarcinoma

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Pericarditis of neoplastic origin is often the first manifestation of the disease, when a cancer has not been established yet.

A clinical case of a patient with paraneoplastic pericarditis, hospitalized with a clinical picture of heart failure is presented.

A woman of 56 years was hospitalized to the therapeutic department with complaints of cough without sputum, inspiratory dyspnoe/orthopnea, edema of the lower extremities to the middle of the hips, the increase of the abdomen. Heart failure level was IV. Complaints appeared and intensified within 3 months prior to admission. Additional complaint was bleeding from genital tract during 1 month. Medical history: arterial hypertension II stage, mild chronic iron deficiency anemia.

Based on X-ray examination of the chest ("spherical heart shadow"), ECG, Echo CG (divergence of pericardial leaflets for all the walls of 5-6 cm, the walls of the right ventricle and atrium were collapsed, vienna cava inferior didn't response to breathing) pericarditis was diagnosed. By pericardiocentesis more than 2 liters of turbid serous fluid was evacuated. Viral, tuberculosis, bacterial, autoimmune pericarditis were not confirmed. Based on gynecological examination, MRI of the pelvic organs, increase level of tumor markers (CA125, CA19-9), histological examination the diagnosis of endometrial carcinoma G1 was done.

After treatment of heart failure patient was referred to an oncologist.

Follow-up 2 month after pericardiocentesis on ECH CG dilatation of the left atrium was marked, left ventricle was not enlarged, left ventricular contractile ability of the myocardium is satisfactory. The discrepancy between the sheets of pericardium behind the posterior wall was 4.1 cm; of the inferior wall was 2.5 cm., of the lateral was 4,5 cm., of the right ventricle - 2.3 cm., of the right atrium - 3.0 cm. Vienna cava inferior was expanded, collapsed on inspiration> 50%. The clinical manifestations of heart failure was at level II NYHA.

Thus, the presented clinical case proves once again that when searching for the causes of heart failure, the patient should be aware of the possible genesis of neoplastic lesions of the pericardium.

P146

Percutaneous mechanical thrombectomy: when the last line treatment is the patient salvage

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We present a clinical case of a 64-year-old woman with history of arterial hypertension, dyslipidemia and left parietal meningioma submitted to neurosurgical intervention with craniotomy, five months before. The postoperative period was compl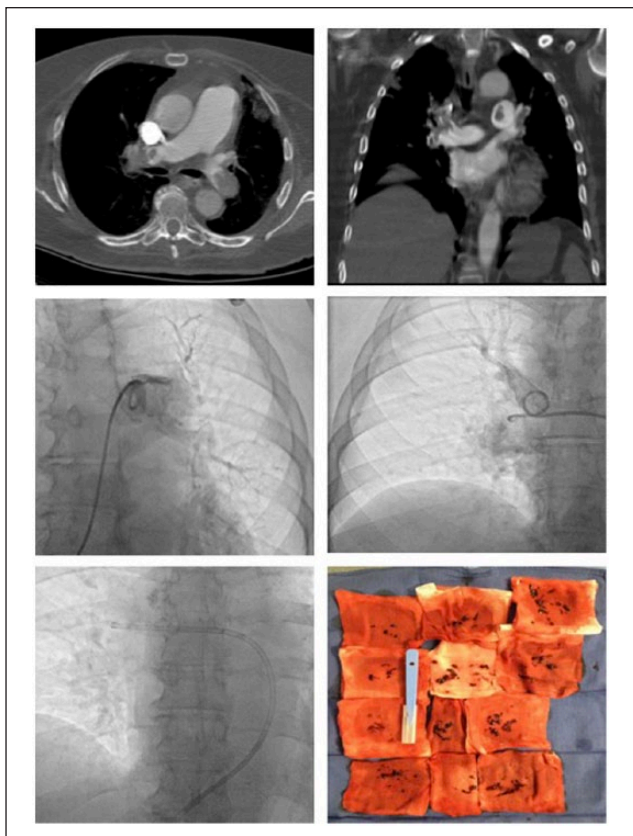icated by surgical wound infection and bacterial meningitis, treated with two surgical re-interventions, the last three months prior to new hospital admission.

The patient was taken to the Emergency Department by sudden onset dyspnea without other symptoms. At clinical examination, she was hemodynamically unstable and presented tachypnea, signs of decreased peripheral perfusion, jugular ingurgitation and lower limb oedema. Arterial blood gas revealed respiratory alkalemia, hypoxemia and hyperlactacidemia. Increased D-dimers and cardiac troponin T levels were present in the first blood tests. 12-lead electrocardiogram showed right ventricle (RV) strain pattern with a 1 mm ST elevation in V1 lead. Transthoraric echocardiogram (TTE) demonstrated systolic D-shape of left ventricle (LV); RV dilation with compromised systolic function and moderate tricuspid regurgitation with a RV/RA (right atrium) gradient of 75 mmHg.

On suspicion of acute pulmonary embolism (APE), a computed tomographic (CT) pulmonary angiography was performed, which confirmed the suspected diagnosis showing thromboembolism of right and left main pulmonary arteries with extension to all lobar branches and several segmental branches. Given the absolute contraindication for systemic thrombolysis due to recent neurosurgical interventions, the patient was submitted to a percutaneous procedure. Conventional pulmonary angiography was first performed, confirming the CT findings. Right heart (RH) catheterization showed a mean pulmonary artery pressure (MPAP) of 41 mmHg. Then a thrombus fragmentation attempt was made with limit success, followed by aspiration with an 8F Multipurpose catheter. Complete repermeabilization of superior lobar branch of right pulmonary artery and partial repermeabilization of all other branches was obtained with a MPAP of 35 mmHg at the end of the procedure.

After percutaneous mechanical thrombectomy (PMT), the patient became asymptomatic and hemodynamically stable, without symptoms or signs of RH failure. Aetiology investigation revealed a large bilateral deep venous thrombosis involving left superficial femoral and popliteal veins and right popliteal vein. Pre-discharge TTE showed LV with normal dimensions, shape and systolic function; preserved contractile function of RV and mild tricuspid regurgitation without significant RV/RA gradient.

This clinical case illustrates a high-risk APE, an immediately life-threatening situation, with acute RV dysfunction, a critical determinant of outcome in those pts. It also exemplifies how PMT can be a safe and effective method of treatment when systemic thrombolysis is contraindicated, with potential to an apparently reversal of the hemodynamic and symptomatic consequences of APE.

Massive acute pulmonary embolism

Acute Heart Failure

P147

Worsening renal function in patients with acute decompensated heart failure, depending on ngal changes

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Background: Our purpose was to determine the value of worsening renal function (WRF) depending on the NGAL and in so-called "wet and warm" patients with acute decompensated heart failure (ADHF).

Methods: In 141 patients with ADHF at the age of 38 to 85 years old (mean age 66,4 ± 2,2) were involved in the prospective study. Worsening renal function (WRF) for creatinine occurred in 38 (27%) patients (WRF+), including 23 pts with increasing NGAL on D3 more than 15% relative to D1 (WRF+NGAL+) and 15 pts without (WRF+NGAL-)

Endpoints were CVP at days 4-6 (D 4-6), dyspnoe by Borg scale, ortho-oedema index Lala at discharge (Dsc) and duration of hospital period.

Results: The WRF group with elevated NGAL differed from patients with WRF without elevated NGAL in dyspnoe, ortho-oedema index Lala and CVP. In the same time the WRF group without elevated NGAL was comparable with no WRF group. The hospital period was the largest in WRF+NGAL+ group (see in table).

Conclusion: In the so-called "wet and warm" patients with ADHF WRF associated with an increase in signs of congestion only in patients with an increase in NGAL after 48 hours.

Table 1.

	No WRF (1)	WRF+ NGAL -(2)	WRF+NGAL+ (3)	P1-2	P1-3	P2-3
Dyspnea Borg D1	7,8 ± 0,47	8,1 ± 0,49	8,9 ± 0,53		p<0,05	
Dyspnea Borg Dsc	2,5 ± 0,15***	2,9 ± 0,17***	4,0 ± 0,24***		p<0,01	p<0,05
CVP, D1	174 ± 10,4	177 ± 10,6	196 ± 11,7		p<0,05	p<0,05
CVP D 4-6	83 ± 4,98***	89 ± 5,34***	110 ± 6,60***		p<0,01	p<0,05
Ortho-oedema index Lala D1	3,327 ± 0,20	3,458 ± 0,21	3,912 ± 0,23		p<0,05	
Ortho-oedema index Lala Dsc	2,025 ± 0,12***	2,102 ± 0,13***	2,711 ± 0,16***		p<0,01	p<0,01
Hospital period	11,8 ± 0,7	14,3 ± 1,0	16,7 ± 1,1	p<0,01	p<0,01	p<0,01

*- p < 0,05, ** - p < 0,01, *** - p < 0,001 compared to D1

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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).

Concusion: 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.

P149

Liver function tests in patients admitted with acute decompensated heart failure

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Background: Episodes of acute decompensated heart failure (ADHF) can affect multiple organs in an unfavorably way, which may have an adverse impact on outcomes. We aim to analyze the prevalence and implications of abnormal liver function tests (LFT) in patients during hospitalization for ADHF.

Methods: Retrospective study of 258 consecutive patients admitted in the emergency department for ADHF. The liver function tests included aspartate aminotransferase (AST) and alanine aminotransferase (ALT), which were evaluated during hospitalization (maximum values of AST and ALT) and at discharge. The cut-off values were those used by the central laboratory of our hospital (AST 15-37 U/L and ALT 12-78 U/L).

Results: The prevalence of abnormal LFT (above upper limit of normal for AST and ALT) was: during hospitalization AST 34.5%, ALT 14.3%; and at discharge AST 11.2%, ALT 6.2%. Abnormal LFT during hospitalization were associated with a higher risk of in-hospital death (12.4 vs. 0.8%, p < 0.001 for AST, 13.5 vs 3.8%, p=0.032 for ALT).

Conclusions: Abnormal LFTs are frequent in ADHF during hospital stay and predict worse outcomes, probably in association with a state of more severe hypoperfusion and/or the use of drugs that affect the liver function. However, whether this association is causal and what are the true underlying mechanisms involved require further study.

P150

Value of N-terminal pro-brain natriuretic peptide and high-sensitivity cardiac troponin T levels in acute decompensated heart failure after serelaxin infusion

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Introduction: The role of N-terminal pro-brain natriuretic peptide (NT-proBNP) and high-sensitivity cardiac troponin T (hs-cTnT) levels in clinical practice is evolving rapidly. Changes in NT-proBNP and hs-cTnT levels are potentially useful in the evaluation of treatment efficacy for patients with acute decompensated heart failure (ADHF).

Purpose: to evaluate of NT-proBNP and hs-cTnT levels in patients with acute decompensated heart failure with reduced systolic function after serelaxin infusion.

Methods: the study was a prospective, single-centre, randomized trial. We enrolled 30 patients admitted to our department with diagnosis of ADHF. The patients had reduced systolic function (left ventricular ejection fraction <40%), increased levels of brain natriuretic peptide (BNP > 500 pg/mL) and systolic blood pressure >125 mmHg. The exclusion criteria were: acute coronary syndrome; uncorrected obstructive valvular disease; hypertrophic obstructive cardiomyopathy; restrictive cardiomyopathy; estimated glomerular filtration rate (GFR)< 30 mL/ min/1.73 m². All patients were randomized according to a 1:1 scheme to receive standard therapy for AHF or an intravenous infusion of serelaxin 30 µg/kg/day for 48 hours added to standard therapy for AHF. We measured of NT-proBNP and hs-cTnT levels with a chemiluminescent immunoassay kit on an analyzers ARCHITECT i1000sr and

Cobas e 411; measuring range NT-proBNP of 5 to 35 000 pg/mL; measuring range hs-cTnT of 3 to 10 000 pg/mL. NT-proBNP and hs-cTnT levels were measured at baseline and immediately after infusion. Statistical significance was defined as P < 0.05.

Results: a total of 30 men (average age 64.2±10.9 years) hospitalized with acute decompensated heart failure were included. Baseline NT-proBNP and hs-cTnT levels were similar in the two groups. We found a significant decrease of NT-proBNP levels in the serelaxin group immediately after infusion [from 4612.0 (2002.0-10075.0) pg/mL at baseline to 2322.0 (677.5-3733.0) pg/mL (P = 0.001)] and a tendency to decrease of NT-proBNP levels in the standard therapy group [from 4416.0 (2503.0-9194.0) pg/mL at baseline to 3759.0 (1866.0-8463.0) pg/mL (P = 0.125)] but statistical significance was not achieved. At the same time, we noted a significant decrease of hs-cTnT levels in the serelaxin group immediately after infusion [from 32.17 (21.26-43.92) pg/mL at baseline to 28.93 (22.77-35.03) pg/mL (P = 0.011)] compared with the standard therapy group [from 32.78 (23.43-58.24) pg/mL at baseline to 32.93 (22.99-48.17) pg/mL (P = 0.036)].

Conclusion: N-terminal pro-brain natriuretic peptide and high-sensitivity cardiac troponin T levels are significantly reduced after serelaxin infusion in patients with acute decompensated heart failure with reduced systolic function.

P151

Lactate levels in patients admitted in the emergency department with acute decompensated heart failure

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Background: Acute decompensated heart failure (ADHF) may lead to subclinical tissue ischemia due to hypoperfusion from inadequate forward flow or congestion. The aim of this study is to evaluate if the lactate levels are elevated in patients admitted in the emergency department with ADHF and if there is a relation between these levels and in-hospital mortality.

Methods: Retrospective study of 258 consecutive patients admitted in the emergency department for acute decompensated heart failure. We considered the lactate levels collected in the first medical contact. Profiles were assessed according to the recent guidelines.

Results: 196 patients had lactate levels collected after first medical contact (40.3% male, mean age 75.2+-16.3 years). 67 (34.2%) had an elevated lactate level. Of the patients in profile B (wet and warm, n=189), 32.3% had an elevated lactate whereas of those in profile C (wet and cold, n=7),

85.7% had an elevated lactate (p < 0.001). There were no differences in hospital mortality among patients with and without elevated lactate levels (4.8% vs 6.1%, respectively, p=1.000), nor in heart rate at admission (mean 93.5 vs 104.4bpm, respectively, p=0.440) or maximum heart rate (mean 124.3 vs 109.8bpm, respectively, p=0.960) during in-hospital stay.

Conclusion: Only one third of patients with ADHF had an elevated lactate on presentation, mainly those in the profile C, a known state of hypoperfusion ("cold"). However, there were no differences in hospital mortality between patients with and without elevated lactate on presentation, probably associated with the fast implementation of therapy in these patients.

P152

Procalcitonin in early antibiotic interruption in patient with bacterial pulmonary infection and acute heart failure

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On behalf of: ROAD Registry

Background: Acute Heart Failure is frequently decompensated by pulmonary infection, but the diagnosis of pulmonary infection sometimes is difficult in these patients due to similar signals in both pathologies. On the other hand, procalcitonin (PCT) have been used like a biomarker to help to determine interruption period of antibiotic therapy in a safety way for the patient.

Purpose: Evaluate levels of PCT related to interruption of antibiotics in patients with decompensated acute heart failure (DAHF) with suspected bacterial pulmonary infection.

Methods: Were included prospectively 42 patients, randomized in two groups: group A (PCT levels guided the interruption of antibiotic at day 5) or group B (antibiotic period was determined by the physician without the knowledge of PCT levels). Antibiotic of therapy was suspended when PCT decreased 80% of the initial dosage. Were collected laboratorial and clinical data at days 0, 3 and 5. The primary endpoint was death in 30 days. Both groups were compared to evaluate combined events (death or hospitalization in 30 days), PCT levels and total period of antibiotic therapy. Comparison between groups was made by T-test and Q-square. Multivariative analysis were determined by logistic regression and was considered significate 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 PCT levels at day 1 and 5 and thoracic computed tomography confirming pneumonia. Confidence interval used was 95%.

Results: About 40.4% were male and the median age was 66.8 years, with median left ventricle ejection fraction of 42%. In group A, 39.1% of patients had antibiotic suspended at 5 day according with PCT value. Were not observed significant differences in baseline characteristics of patients between groups A and B. Mortality observed between groups A and B was 17.39% vs. 31.58%, p = 0.283 and combined events were 21.73% vs. 36.84%, p = 0.261. Initial median PCT levels were 0.90 + 1.71 vs. 0.22 + 0.35 ng/ml, p = 0.097 and total period of antibiotic therapy was 10.09 + 4.44 vs. 11.26 + 4.49 days, p = 0.727, comparing groups A and B. AUC of PCT at day 0 was 0.787 (CI 95% [0.615 – 0.959]) and at day 5 was 0.659 (CI 95% [0.448 – 0.870]). The cut-off scores were 0.14 ng/ml at day 0 (sensitivity = 75% and specificity = 73%) and 0.325 ng/ml at day 5 (sensitivity = 50% and specificity = 91%).

Conclusions: Until this moment, use of PCT in patients with ADHF was safe and not inferior to the conventional treatment related to pneumonia. A value of 0.325 ng/ml in PCT at day 5 showed great specificity compared with computed tomography.

and therapeutic variables. ROC curve was performed to find a GFR cut-off value. A logistic regression model was performed to verify the impact of renal impairment on HF patient's death. The HF profile was assessed as according to the ESC guidelines. The GFR was evaluated by the Modification of Diet in Renal Disease (MDRD).

Results: We evaluated 258 patients with ADHF (45.7% male, mean age of 74.6±16.6 years). Median baseline Cr was 1.29 (0.94-1.92) mg/dl, maximum Cr was 1.49 (1.14-2.13)mg/dl and discharge Cr was 1.21 (0.96-1.71)mg/dl. A total of 251 patients (97.3%) were in profile B, while only 7 patients were in profile C at admission (2.7%). The death rate during hospitalization was 8.1% (n=21); 1-month readmission rate was 18.2%% (n=47). Patients who did not survive hospitalization had significantly higher peak creatinine values (median 2.43 vs 1.40mg/dl; p=0.001) and subsequently lower GFR (median 26.6 vs 43.1mL/min/1.73m^2; p < 0.001). Multivariate analysis (using the univariate predictors significant valvulopathy, proBNP, nadir GFR) has showed that nadir GFR was an independent predictor of higher risk of death (OR 1.03, CI 95% 1.00-1.06, p=0.044)

Conclusions: This study establish that renal impairment during hospitalization for acute decompensated heart failure is an independent predictor of death.

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Impact of renal impairment in the outcomes of patients with acute decompensated heart failure

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Introduction: Renal dysfunction is highly prevalent among patients with Heart Failure (with reduced [HFrEF] and preserved ejection fraction [HFpEF]) and has previously been shown to be a powerful and independent marker of adverse prognosis.

Purpose: The aim of this study is to evaluate the influence of renal impairment in the HF patient outcomes (death during hospitalization and readmission) and to establish a Glomerular Filtration Rate (GFR) cut-off value that has an impact on those variables, in a population of patients admitted to the Emergency Department with Acute Decompensated Heart Failure (ADHF).

Methods: Retrospective study of 258 consecutive patients admitted in the emergency department for ADHF, defined by the presence of >= 2 signs or symptons of heart failure. Admission, maximum and discharge values of creatinine (Cr) were collected, along with other clinical, laboratory

P154

Prognostic value of random urine sodium in predicting outcomes of patients with acute decompensated heart failure

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Introduction: Heart failure is an urgent public health need being the leading cause of hospitalization and an important cause of morbidity and mortality in the world.[1] The science of prognostication attempts to identify patient's clinical and biological characteristics that are associated with poor outcome.[2] Risk prediction in patients admitted with acute decompensated heart failure remains a challenge hence this study was conducted to determine association between urine Na+ level of patients admitted for acute decompensation of heart failure and outcome.

Method: All patients >19 years old admitted at the Heart Center for acute decompensation of heart failure with normal creatinine level at admission and with consent to participate were included in the study. Random urine sodium level was determined during first 24 hours of hospitalization. Patients were then followed up and clinical outcomes noted.

Results: Study included 150 patients which were grouped into three groups. First group included 31 patients with low urine Na+ <30 mmol/L, 48 patients in the second group with normal urine Na+ 31-90 mmol/L and 71 patients in the third group with high urine Na+ >90 mmol/L. Baseline characteristics of the three groups were similar. The primary composite outcome of death occurred in 42 patients (28%): 42 patients (58%) in the 1st group, 11 patients (22%) in the 2nd group and 18 patients (25%) in the 3rd group which was statistically significant (p=0.002).

Conclusion: This study showed that there is an association between random urine sodium level and mortality of patients admitted for acute decompensation of heart failure. Low urine sodium level (uNa+ < 30 mmol/L) is associated with poor outcome.

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Which clinical findings can be crucial to differentiate pulmonary embolism and acute heart failure in patients presented with acute dyspnea?

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Introduction: Dyspnea is a common symptom in patients hospitalized with acute cardiopulmonary diseases. Unnecessary diagnostic tests are usually ordered to prove the diagnosis for patients with dyspnea. There is still a lack of knowledge which set of clinical findings could precisely indicate acute pulmonary embolism (PE) or acute heart failure (AHF).

Aim: To investigate the value of clinical findings collected in the emergency department as the crucial predictors of adjudicated diagnosis.

Methods: A prospective observational cohort study enrolled 668 consecutive patients admitted to the emergency department with acute dyspnea between March 2015 and September 2017. In total 38 (5,69%) patients were included in the analysis after the hospitalization and discharge with the final diagnosis of PE. Using random number generator, as a control group, 40 (5,98%) patients were included with the final diagnosis of AHF. Patients presenting with dyspnea related to cardiac arrhythmias, pulmonary infection, acute coronary syndrome, chronic obstructive pulmonary disease, cancer, hypertension, anxiety were excluded. Tested parameters: dyspnea severity score, the presence of atrial fibrillation (AF) and the value of left ventricular ejection fraction (LVEF) were collected at the admission. Patients were asked to rate dyspnea by visual-analogue dyspnea scale (VADS) from 1 to 10 points. Subsequently, data of 78 patients were analyzed using SPSS v.23 statistical package.

Results: The mean age in the analysed PE and AHF groups were 70.6±13.2 years, 45 pts. (57.7%) were male. The data analysis revealed that there was a difference between the age of patients, which was diagnosed in PE and AHF groups: 68.0±14.1 vs. 73.1±12.0 (p=0,039), respectively. Moreover, there were differences between the dyspnoea score and LEVF in analysed PE and AHF cohorts: 9.0±1.4 vs. 7.4±4.1 (p=0.027); and 48.6±15.3% vs. 32.2±15.1% (p<0.01), respectively. AF occurred more often in patients with the adjudicated diagnosis of AHF than the PE: 87,5% vs. 12.5% (p<0,05). Renal function measured by GFR did not differ in both patient's groups: 125.9±43.7 μmoll/l vs. 126.6 ±70.1 μmoll/l (p>0.05).

Conclusion: In the prospective observational cohort, the most significant factors which help to determine the pulmonary embolism and acute heart failure are the visual-analogue dyspnea score, value of LVEF and presence of AF. Greater dyspnea score combination with mid-range left ventricular ejection fraction indicates the presence of pulmonary embolism. Evidence of atrial fibrillation supports the acute heart failure diagnosis.

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Patterns of dyspnoea onset in patients with acute heart failure- clinical and prognostic implications

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Background: In patients with acute heart failure (HF) has not yet been established whether the patterns of symptoms onset preceding hospital admission are associated with clinical characteristics and the outcomes. As shortness of breath is a cardinal, most common presenting symptom related to hospital admission for acute HF, in this study we focussed on the pattern of dyspnoea development preceding hospital admission to categorize study population.

Purpose: The aim of this study was to characterize patients with acute HF and assess their in-hospital and long-term outcomes according to the duration of dyspnoea preceding hospital admission.

Methods: We investigated 137 patients (mean age – 65 ±13 years) hospitalized due to acute HF with dyspnoea as major reported symptom, who were divided according to the time of it's onset into those with acute (n=98) vs. subacute (n=39) onset – i.e. within 7 days vs. > 7 days preceding hospital admission, respectively.

Results: On admission, patients with acute onset of dyspnoea presented higher systolic blood pressure and more often moderate-severe pulmonary congestion (P < 0.05 in all comparisons). There were no other differences in baseline clinical characteristics and laboratory indices. During hospital stay, those with an acute dyspnoea onset required less often inotropic agents (7 vs. 21%), more often reported marked/moderate dyspnoea relief during first 48 hrs (80 vs. 4%), greater reductions in systolic blood pressure after 6 hrs (-10 [-25-0] vs. -4 [-20-5] mmHg) and 48 hrs (-20 [-30-(-2)] vs. -6 [-20-5] mmHg), less in-hospital HF worsening (13 vs 40%), had higher peak troponin level during first 48 hrs of hospitalization (18.9 [9.1-42.3] vs. 10.1 [5.2- 23.4] pg/mL) and more often experienced decongestion, assessed as ≥ 30% decrease in NT-proBNP level after 48 hrs and/ or increase in haematocrit after 24 hrs (54 vs. 32%; all P < 0.05). During 1-year follow-up cardiovascular mortality was higher in patients with subacute onset (41 vs 20 %, P=0.01).

Conclusion: In patients with acute HF, pattern of symptoms onset is associated with baseline differences in clinical characteristics, response to standard treatment and the long-term outcomes, which is a relevant information for planning future clinical trials.

P157

Impact of elevated liver enzymes in patients admitted with acute decompensated heart failure

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Background: Episodes of acute decompensated heart failure (ADHF) can affect multiple organs in an unfavorably way, which may have an adverse impact on outcomes. We aim to analyze the prevalence and implications of abnormal liver function tests (LFT) in patients during hospitalization for ADHF.

Methods: Retrospective study of 258 consecutive patients admitted in the emergency department for ADHF. The liver function tests included aspartate aminotransferase (AST) and alanine aminotransferase (ALT), which were evaluated during hospitalization (maximum values of AST and ALT) and at discharge. The cut-off values were those used by the central laboratory of our hospital (AST 15-37 U/L and ALT 12-78 U/L).

Results: The prevalence of abnormal LFT (above upper limit of normal for AST and ALT) was: during hospitalization AST 34.5%, ALT 14.3%; and at discharge AST 11.2%, ALT 6.2%. Abnormal LFT during hospitalization were associated with a higher risk of in-hospital death (12.4 vs. 0.8%, p < 0.001 for AST, 13.5 vs 3.8%, p=0.032 for ALT).

Conclusions: Abnormal LFTs are frequent in ADHF during hospital stay and predict worse outcomes, probably in association with a state of more severe hypoperfusion and/or the use of drugs that affect the liver function. However, whether this association is causal and what are the true underlying mechanisms involved require further study.

P158

Role of polymorphism of Met235Thr of the gene of AGT at the heart failure

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Purpose: Assessment of role of polymorphism of Met235Thr of gene of angiotensinogen (AGT) in development of the heart failure (HF).

Methods: In total have been inspected 71 patients of the Uzbek nationality with the coronary heart disease with the I-III functional class (FC) of HF (according to classification of the New York Association of cardiologists according to the test of six-minute walking and on the scale of an assessment of a clinical state (SACS) of patients. The control group was made 51 healthy faces of the Uzbek nationality. For carrying out the genetic analysis and definition of genetic markers of development of HF, carried out allocation of DNA from lymphocytes of peripheral venous blood with determination of polymorphism of Met235Thr of gene of AGT by standard polymerase chain reaction on termocycles of CG-1-96 "Corbett Research" and 2720 "Applied Biosystems", and also by polymerase chain reaction in real time on the Rotor Gene 6000 device, Model 65N0-100. Assessment of deviation of distributions of genotypes of the studied DNA polymorphisms from the canonical Hardy-Weinberg's distribution (HWD) carried out by means of the computer program of the analysis of genetic data of "Gene Pop" ("Genetics of Population").

Results: The molecular and genetic analysis of genotypes of polymorphism of Met235Thr of gene of AGT at persons of control group (n=51) and coronary heart disease patients with the HF of the Uzbek nationality (n=71) is carried out.

Distribution of genotypes of the studied AGT candidate genes in the analyzed group of patients and conditional and healthy donors corresponded to HWD that testifies to representativeness of selection of the studied group and correctness of results of genotyping. The molecular and genetic analysis of frequency of distribution of alleles and genotypes of polymorphism of Met235Thr of gene of AGT in groups of patients HF and control has revealed statistically significant distinction in distribution of frequency of alleles between control and main group of patients HF (p<0,05). The adverse allele of T met at patients in 52,8% of cases against 30,4% in group of control (χ^2=12.1; p=0,00001, OR=2.6; 95% of CI 1.501, 4.37). Distribution of frequencies of genotypes of polymorphism of Met235Thr of gene of AGT has also revealed reliable differences between the main group and group of control (p < 0,05). The reliable association of adverse homozygous genotype of T/T is found in sick CHF - 26,8% in comparison with group of conditionally healthy donors of 7,8%. The risk of course of a disease at carriage of this genotype is 4,3 times higher, than at the persons which do not have it (χ^2=6,9; p=0,008, OR=4.3; 95% of CI 1.362, 13.53).

Conclusions: Thus, the homozygous genotype of T/T of polymorphism of Met235Thr of gene of AGT is significant predictor of the increased risk of development of heart failure.

P159

Prognostication of heart failure in patients with myocardial infarction

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Introduction: It is necessary to identify the patients with higher risk of heart failure developing, but haven't the clinical symptoms of this complication. It has previously been shown that progress of systolic and diastolic dysfunction of left ventricle in volume load allows selecting the patients with high risk of heart failure in post-infarction period. In present time the major role of the developing congestive heart failure is given to the left ventricle remodeling processes. The purpose of the study is alteration of left ventricle geometry in volume load to forecast heart failure in patients with anterior myocardial infarction.

Purpose: To determine whether the alteration of left ventricle geometry in volume load can predict the heart failure in patients with anterior myocardial infarction.

Methods: There were examined 54 patients with the first anterior myocardial infarction without heart failure signs

(EF>40%), 10 patients with the first anterior myocardial infarction and acute heart failure, and 10 healthy volunteers. Short adjustable volume load was created by a negative pressure on the lower part of the body. The lower extremities of the patient were horizontal, were placed in a sealed chambers of device "Vakuum-2". The device was sealed by elastic belts at the upper thigh and then for 1-2 min. the pressure in chambers was reduced till 40 mmHg below atmospheric pressure and maintained at this level for 20 min., about 600-800 ml of blood was leaded to lower limbs. Data recorded by two-dimensional and Doppler echocardiography at rest, at the volume load, at volume overload, on the 5th min of recovery period. Within 6 months we conducted a prospective surveillance, were evaluated endpoints: death, development of congestive heart failure.

Results: In patients with MI and acute HF oppositely was severe diastolic LV dysfunction, the form of LV in the initial state was more spherical, in volume load LV sphericity increased, progressed the diastolic dysfunction of LV and in the fifth minute of recovery period load changes saved, it was regarded as pathological reaction.

Conclusions: In volume load on the heart of patients with MI without HF (EF LV more than 40%) identify two types of reaction of LV geometry: normal (elliptification of LV) and pathological (spherification of LV). HF during 6 months develops only in patients with MI and pathological reaction in volume load (28.1%).

P160

Impact of arterial hypercapnia in patients admitted for acute decompensated heart failure

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Background: Blood gas assessment (BGA) is recommended in the evaluation of patients with acute heart failure only in those where oxygenation cannot be readily assessed by pulse oximetry, and when a precise measurement of O2 and CO2 partial pressures is needed. We aim to evaluate the prevalence and characteristic of hypercapnia in acute decompensated heart failure (ADHF).

Methods: Retrospective study of 258 consecutive patients admitted in the emergency department for acute decompensated heart failure. We included patients in whom a BGA was performed at admission. Hypercapnia was defined as pCO2 at admission > 45mmHg. The HF profile was assessed as according to the recent guidelines.

Results: 206 patients with ADHF as the primary reason for hospitalization performed BGA at the hospital admission

(46.1% male, mean age 74.7+-16.9 years). 201 (97.6%) patients were classified as profile B (wet and warm); of these 135 patients (65.5%) were classified as having acute pulmonary edema (APE). Profile C was less common (2.4%). Hypercapnia was observed in 70 patients (30.7%), more frequently in patients with APE (50.7% vs 25.9%, p=0.001). Of the group of patients in APE, the use of bi-pressure airway ventilation was 55.9% for those with hypercapnia and 12.1% for those without hypercapnia (p < 0.001).

Conclusion: Hypercapnia is present in up to one third of the patients admitted with ADHF, more frequently in those with APE. The potential need for the use of bi-pressure airway ventilation and its prevalence in this population suggest that the knowledge of the CO_2 level may be important in these patients.

P161

Clinical features and inpatient outcomes of takotsubo syndrome in patients with psychiatric disorders

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Background: It is known, that patients diagnosed with TTS are more likely to have a premorbid psychiatric disorders compared with age-matched and gender-matched acute coronary syndrome and general population controls. Although there is little data concerning outcomes in psychiatric patients TTS when compared to TTS in patients wuth no history of psychiatric diseases.

Methods: We have analyzed 28 cases of Takotsubo syndrome (TTS) according to Mayo clinical criteria, hospitalized in the Hospital in year 2016. There is a psychiatric department in our hospital. We divided our patients in two groups according to evidence of psychiatric disease: 13 (46,4%) patients had psychiatric disorders, 15 (53,3%) patients had no psychiatric disorders.

Results: In psychiatric group emotional triggers seem to be more often, when compared to non psychiatric patients: 10 (76,9%) versus 7 (38,8%), RR 1,64 [0,89; 3,06]. Of 13 patients with TTS and psychiatric disorders 3 (23%) were alcohol abused and developed delirium, that could have caused TTS, 6 (46,2%) of patients had senile psychosis and 4 (30,7%) had psychosis due to schizophrenia. The psychiatric patients were older: mean age 70,6 and 66,1 years respectively. 5 (38,5%) of psychiatric patients developed sever acute heart failure (cardoigenic shock and lung edema), when in non psychiatric group incidence of

sever ACF was 4 (26,6%): RR 1,44 [0,49;4,27]. All alcohol abused patients developed sever ACF. The mortality was similar in both groups: 4 (30,7%) versus 4 (26,6): 1,15 [0,36; 3,72].

Conclusions: The incidence of sever AHF and mortality rate didn't differ significantly between two groups. It seems like alcohol abused patients have worse prognosis when suffering from TTS. Treatment approaches and prognosis are to be further investigated.

P162

Impact of loop diuretics dosage on worsening renal function during hospitalization for acute decompensated heart failure

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Background: Worsening renal function (WRF) during heart failure (HF) hospitalization is common. Loop diuretics are increasingly being considered as a potential cause of worsened HF outcomes, perhaps via WRF. However, the magnitude of worsening in renal function attributable to loop diuretics is not well defined.

Methods: Retrospective study of 258 consecutive patients admitted in the emergency department for acute decompensated heart failure. Admission, maximum and discharge values of creatinine (Cr) were collected, along with first dose, dose in the first 24 hours of admission and maximum dose of furosemide (Fur), the only loop diuretic in the hospital prescription set. We further divided each of the preceding parameters according to dose of Fur: Group 1 - Low (<40mg); Group 2 - Medium (40-80mg); and Group 3 - High (>80mg). The first Cr value or eGFR in the emergency department was considered baseline. A 20% relative decrease in eGFR defined WRF.

Results: We included 228 patients (45.6% male, mean age of 74.6 ± 16.4 years). Baseline Cr was 1.47 ± 0.87mg/dl, maximum Cr was 1.79 ± 1.07mg/dl and discharge Cr was 1.38 ± 0.73mg/dl. The mean initial dose of Fur was 39.6 ± 32.2mg; the mean maximum dose in the first 24 hours was 88.4 ± 73.9mg and the mean maximum dose was 69.7 ± 39.2mg. There were no significant association between the various doses of Fur and the incidence of WRF: initial doses of Fur (incidence of WRF group 1 15.8% vs group 2 27.1% vs group 3 20.0%, p=0.137; figure 1), maximum dose in the first 24 hours (incidence of WRF group 1 25.0% vs group 2 17.9% vs group 3 26.9%, p=0.289; figure 2)

and the maximum dose of Fur (incidence of WRF group 1 12.5% vs group 2 19.7% vs group 3 34.3%, p=0.128; figure 3).

Conclusions: While loop diuretic exposure and its dose is empirically associated with WRF among hospitalized HF patients, this study demonstrate that the association between WRF and the dose of furosemide in three separate times during ADHF hospitalization change is very small, and so loop diuretics explain little of the variability in renal function during hospitalization
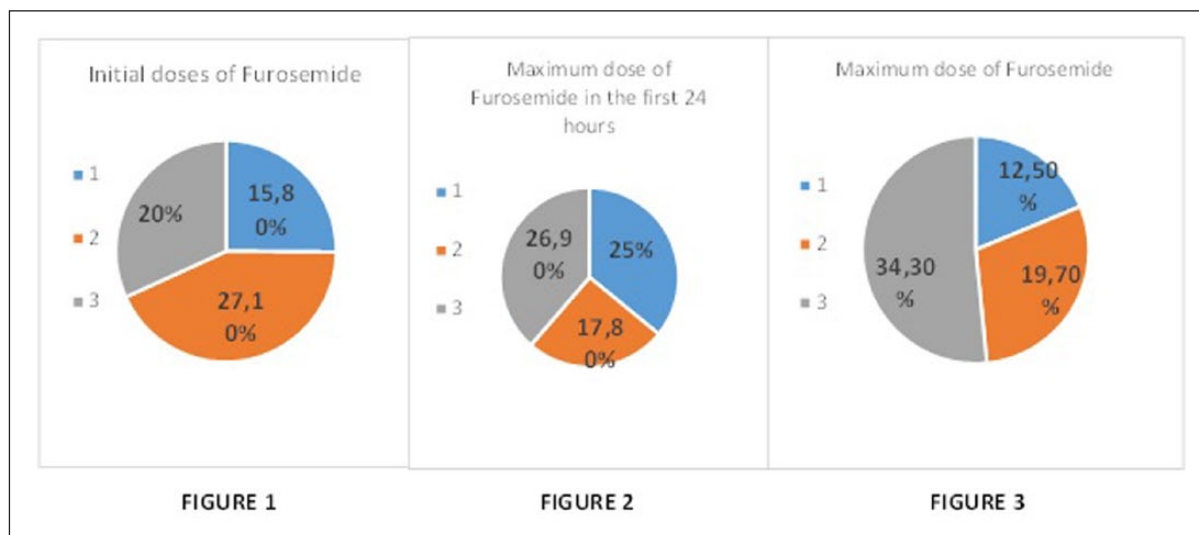
Furosemide dosage per group proportions

P163

Continuous infusion of furosemide versus intermittent boluses in acute heart failure: effect on thoracic fluid content

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The administration of loop diuretics in the management of acute decompensated heart failure (ADHF) whether IV boluses or continuous infusion is still controversial. We intended to evaluate differences between the two administration routes on the thoracic fluid content (TFC) and the renal functions.

Sixty patients with ADHF admitted to the critical care medicine department were initially enrolled in the study. Twenty patients were excluded due to EF > 40%, myocardial infarction within 30 days, and baseline serum creatinine level > 4.0 mg/dL. Furosemide (120 mg/day) was given to the remaining 40 pts who continued the study after 1:1 randomization to either continuous infusion (group-I, 20 pts) or three equal intermittent daily doses (group-II, 20 pts). Subsequent dose titration was allowed after 24 hours, but not earlier, according to patient's response. No other diuretic medications were allowed. All patients were daily evaluated for NYHA class, urine output, TFC, body weight, serum K+, and renal chemistry.

The median age (Q1-Q3) was 54.5 (43.8-63.8) years old with 24 (60%) males. Apart from TFC which was significantly higher in group-I, the admission demographic, clinical, laboratory and co-morbid conditions were similar in both groups. There was statistically insignificant tendency for increased urine output during the 1st and 2nd days in group-I compared to group-II (p=0.08). The body weight was decreased during the 1st day by 2 (1.5-2.5) kg in group-I compared to 1.5 (1-2) kg in group-II, (p=0.03). These changes became insignificant during the 2nd day (p=0.4). The decrease of TFC was significantly higher in group-I than in group-II [10 (6.3-14.5) vs 7 (4-10)1/kΩ during the first day and 8 (6-11) vs 6 (4-9)1/kΩ during the second day in groups-I&II respectively, P=0.02 for both]. There was similar NYHA class improvement in both groups (p=0.7). The serum creatinine was increased by 0.2 (0.1-0.5) vs 0 (-0.1-0.2) mg% and the eGFR was decreased by 7.4 (4.5-12.3) vs 3.1 (0.2-8.8) ml/min/1.73m^2 in groups-I&II respectively (p=0.009 and 0.02 respectively). We concluded that continuous furosemide infusion in ADHF might cause greater weight loss and more decrease in TFC with no symptomatic improvement and possibly with more nephrotoxic effect.

P164

Beneficial impact of levosimendan on the dynamics of N-terminal pro-brain natriuretic peptide levels in acute decompensated heart failure

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Introduction: N-terminal pro-brain natriuretic peptide (NT-proBNP) levels are elevated in patients with acute decompensated heart failure (ADHF). Changes in NT-proBNP levels can be used to assess the effectiveness of treatment for patients with ADHF.

Purpose: to assess the effect of levosimendan infusion on the dynamics of NT-proBNP levels in patients with acute decompensated heart failure with reduced systolic function.

Methods: the study was a prospective, single-centre, randomized trial. We enrolled 30 patients admitted to our department with diagnosis of ADHF. The patients had reduced systolic function (left ventricular ejection fraction <40%), increased levels of brain natriuretic peptide (BNP > 500 pg/mL) and systolic blood pressure >125 mmHg. The exclusion criteria were: acute coronary syndrome; sustained ventricular tachycardia or ventricular fibrillation; severe aortic or mitral regurgitation; uncorrected obstructive valvular disease; hypertrophic obstructive cardiomyopathy; restrictive cardiomyopathy; estimated glomerular filtration rate (GFR) < 30 mL/min/1.73 m^2. All patients were randomized according to a 1:1 scheme to receive standard therapy for AHF or an intravenous infusion of levosimendan 0.1 µg/kg/min for 24 hour added standard therapy for AHF. We measured of NT-proBNP levels by sandwich enzyme immunoassay technique (Cobas Roche Diagnostics, Germany) at baseline, immediately after levosimendan infusion and at discharge. Statistical significance was defined as P < 0.05.

Results: a total of 30 men (average age 62.5±9.7 years) hospitalized with acute decompensated heart failure were included. Baseline clinical characteristics, as well as cardiovascular variables, were similar in the two groups. We found a significant decrease of NT-proBNP levels in the levosimendan group immediately after infusion [from 4541.0 (3313.0-7590.0) pg/mL at baseline to 2720.0 (1850.0-3523.0) pg/mL (P = 0.001)] compared with the standard therapy group [from 4416.0 (2503.0-9194.0) pg/mL at baseline to 3759.0 (1866.0-8463.0) pg/mL (P = 0.125)]. At discharge, we noted a decrease of NT-proBNP levels in both groups, but a significantly greater decrease of NT-proBNP levels was noted in the levosimendan group [from 4541.0 (3313.0-7590.0) pg/mL at baseline to 1898.0 (1385.0-3774.0) pg/mL (P = 0.001)] compared with the standard therapy group [from 4416.0 (2503.0-9194.0) pg/mL at baseline to 2982.0 (1785.0-3887.0) pg/mL (P = 0.001)].

Conclusion: levosimendan infusion significantly reduces of N-terminal pro-brain natriuretic peptide levels in patients with acute decompensated heart failure with reduced systolic function.

P165

Positive effect of levosimendan on renal function in acute decompensated heart failure

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Introduction: renal dysfunction is common in patients with acute decompensated heart failure (ADHF) and is linked to worse prognosis and quality of life. Levosimendan is a clinically used drug in the treatment of patients with acute heart failure (AHF) and a severe reduction in cardiac output. The inodilator levosimendan combines positive inotropic, vasodilatory and cardioprotective effects.

Purpose: to evaluate impact of levosimendan on renal function in patients with acute decompensated heart failure with reduced systolic function.

Methods: we analyzed 30 men (average age 62.5±9.7 years) hospitalized with ADHF. The patients had reduced systolic function (left ventricular ejection fraction <40%), increased levels of brain natriuretic peptide (BNP > 500 pg/mL) and systolic blood pressure >125 mmHg. The exclusion criteria were: acute coronary syndrome; sustained ventricular tachycardia or ventricular fibrillation; severe aortic or mitral regurgitation; uncorrected obstructive valvular disease; hypertrophic obstructive cardiomyopathy; restrictive cardiomyopathy; estimated glomerular filtration rate (eGFR) < 30 mL/min/1.73m^2. All patients were randomized according to a 1:1 scheme to receive standard therapy for AHF or an intravenous infusion of levosimendan 0.1 µg/kg/min for 24 hour added standard therapy for AHF. GFR was calculated by the Chronic Kidney Disease Epidemiology Collaboration formula (CKD-EPI). We evaluated the levels of serum creatinine, eGFR and blood urea nitrogen (BUN) at baseline and immediately after levosimendan infusion. Statistical significance was defined as P < 0.05.

Results: levosimendan infusion significantly increased the eGFR levels [from 65.4 (45.0-99.0) mL/min/1.73m^2 at baseline to 76.0(64.0-94.3) mL/min/1.73m^2 (P = 0.008)] compared with standard therapy [from 65.0 (40.0-82.0) mL/min/1.73m^2 at baseline to 62.3 (43.0-71.0) mL/min/1.73m^2 (P= 0.315)]. The levosimendan group showed significant decrease serum creatinine [from 1.17 (0.90-1.55) mg/dL at baseline to 1.05 (0.81-1.19) mg/dL (P = 0.005)] compared with the standard therapy group [from 1.17 (0.96-1.66) mg/dL at baseline to 1.18 (1.09-1.64) mg/dL (P = 0.363)]. Moreover, levosimendan treatment decreased BUN in comparison with standard therapy [from 53.45 (39.64-69.07) mg/dL at baseline to 43.24 (31.23-57.06)mg/dL in the levosimendan group (P = 0.015), and from 51.05(46.25-69.07) mg/dL at baseline to 52.25 (45.65-69.07)mg/dL in the standard therapy group (P = 0.776)].

Conclusion: levosimendan infusion improves renal function in patients with acute decompensated heart failure with reduced systolic function.

P166

Does the severity of acute heart failure impact the long-term prognosis of patients surviving an acute myocardial infarction?

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Introduction: Heart failure (HF) during an acute myocardial infarction (AMI), classically evaluated using the Killip Kimbal scale, is associated with worse in-hospital outcomes. Clinical presentation in acute pulmonary oedema or cardiogenic shock display the worse prognosis.

Objective: Evaluate if the severity of heart failure impacts the long-term prognosis of patients surviving an acute myocardial infarction

Methods: 1346 consecutive patients admitted with an AMI between October 2009 and September 2015. Patients previously diagnosed with heart failure, without heart failure during admission and patients who died during in-hospital stay were excluded. In 2 groups: A) patients with low degree heart failure, Killip-Kimbal = 2 (n=108, 56,5%) vs B) patients with high degree heart failure, Killip-Kimbal = 3 (n=58, 30,4%) or 4 (n=25, 13,1%) (n=83, 43,5%), the groups were compared according to the composite primary endpoint (CPE) (re-infarction, stroke, cardiovascular death) and secondary endpoints at 1 year of follow-up (FU).

Results: Groups similar regarding mean age (A=72,06±11,1 vs B=70,40±13,0), male gender (A=64,8% vs B=63,9%), previous AMI (A=21,3% vs B=20,5%), hypertension (A=76,9% vs B=72,3%), diabetes (A=49,1% vs B=45,8%) dyslipidemia (A=43,5% vs B=42,2%).

Group A with higher prevalence of chest pain upon admission (A=67,6% vs B=41,0%, p < 0,001). Group B with higher heart rate A=71,7±36,9 vs B=98,5±29,3, p=0,010). ST elevation myocardial infarction was similar between groups (A=34,3% vs B=43,4%).

Regarding in-hospital treatment, no difference was found in the usage of drugs with prognostic impact in heart failure. No difference between groups concerning invasive stratification (A=84,3% vs B=78,3%, p=0,193) and angioplasty (A=56,5% vs B=60,2%). Similar prevalence of three vessel disease (A=38,9% vs B=35,4%).

In-hospital mortality significantly higher in group B (A=5,3% para n=114 vs B=36,2% para n=130, p < 0,001).

Medication upon medical discharge from the hospital was similar between groups

At 1 year follow up the overall mortality (A=21,3% vs B=22,9%, p=0,463) and the CPE (A= 23,1% vs B=24,1%, p=0,506) were similar between groups. No significant differences were found regarding new AMI (A=3,7% vs B=1,2%) or new hospital admission (A=3,7% vs B=2,4%). Similar number of patients on NYHA > 1 (A=29,6% vs B=19,3%, p=0,070).

Conclusion: The severity of acute heart failure of patients surviving an acute myocardial infarction did not impact the long-term prognosis

P167

Clinical phenotype of patients with heart failure with preserved versus mid-range ejection fraction - a pilot study

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Background: The European Society of Cardiology 2016 Heart Failure Guidelines reclassified heart failure (HF) based on the left ventricular ejection fraction (LVEF), introducing a new, intermediate category: heart failure with mid-range LVEF (HFmrEF). This category remains still in a grey area with little available data describing its clinical phenotype, specific associated comorbidities and the biomarker profile.

Purpose: Our aim was to describe phenotypic characteristics and biomarker differences between HFmrEF (LVEF between 40 and 49%) and HF with preserved LVEF (HFpEF, LVEF >50%) in a cohort of hospitalized heart failure patients.

Methods: 518 HF patients admitted to our clinic from January 2011 to December 2014 were retrospectively included in this study. We have excluded acute coronary syndromes, pulmonary embolisms, as well as readmissions of the same patient or incomplete laboratory data.

Clinical, laboratory and echocardiographic parameters were recorded for all patients on admission. Survival status was assessed in January 2017.

Results: 314 (60.74%) were females, with a mean age of 69.28 ± 11.20 years. 168 patients (32.37%) had HFmrEF.

HFmrEF patients were significantly older than those with HFpEF (73.88±9.88 vs 67.09±11.14, p<0.001), with no differences in gender distribution between the two groups.

Diabetes mellitus (35.12% vs 26.78%, p=0.05), prior myocardial infarction (13.69% vs 7.41%, p=0.02), atrial fibrillation (49.4% vs 21.9%, p<0.001), prior stroke (15.67% vs 6.23%, p=0.008) and chronic kidney disease (59.52% vs 41.6%, p<0.001) were more prevalent in the HFmrEF group compared to HFpEF. There were no significant

differences between the two groups regarding stable coronary disease, hypertension, dyslipidemia or obesity.

Severity of NYHA functional class was significantly increased in the HFmrEF group compared to HFpEF: 12.73% HFmrEF patients presented with class IV NYHA on admission, compared to 2.87% of those with HFpEF (p<0.001). A similar pattern was observed for class III NYHA (59.39% for HFmrEF vs 25.79% for HFpEF, p<0.001).

HFmrEF patients had higher NTproBNP levels on admission compared to HFpEF, with a median of 1117,5 (464,7-2603) versus 188.9 (86,38-628,4), p < 0.001. HFmrEF subjects also had higher high sensitivity troponin T levels compared to those with HFpEF, with a median of 14.95 (9.52-25.96) versus 8.51 (5.67-14.56), p<0.001.

HFmrEF patients had a longer length of hospital stay compared to HFpEF (6,2±5.76 vs 4.78±2.12, p<0.004) and a higher long term all-cause mortality rate (36.9% vs 20.51%, p<0.001).

Conclusions: Significant differences were observed between HFmrEF and HFpEF. HFmrEF patients have a more severe clinical and biological profile, and they need longer hospitalizations. The mortality is higher in HFmrEF patients.

Further prospective studies are needed to specifically optimize the standard of care of this heart failure phenotype.

P168

Clinical outcome and prognosis of patients with acute pulmonary oedema

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On behalf of: COPP APO

Introduction: Acute pulmonary oedema (APO) is associated with significant morbidity and mortality. Many published series of patients with APO are small and historical and offer only descriptive data on selected patients following acute myocardial infarction (AMI).

Objective: To provide a description of clinical factors and outcomes in an unselected consecutive series of patients with APO.

Methods: Case records were reviewed for all patients admitted to our institution with a primary diagnosis of APO in 2015. National databases were interrogated for readmission and mortality.

Results: 921 patients (mean age 70.99 and 70.90 years for male and female respectively with SD of 11.92 years for former and 11.95 years for latter, n= 526 (63%) male, n 335 (36.3%) females) were identified. 165 patients (17%)

had ejection fraction (EF>40%). Established ischemic heart disease (IHD), hypertension and diabetes were present in 61%, 83% and 55% respectively. Precipitating factors for APO included fluid indiscretion (21%) atrial fibrillation (8%) IHD (7%), infection (5%), hypertension (4.8%). We followed these patient for 14 months +/− 8 months. The total mortality was 194 patients (21.06%) during the study period. Predictors for mortality were low EF (<35%) with high pulmonary artery systolic pressure (> 40mmHg) in the setting of AMI, sepsis and out of hospital collapse.

Conclusion: The outlook of APO in the present era remains substantial but may have improved from historical series. With present data's we can conclude the predictors of high mortality rates is low ejection fraction with high pulmonary pressure.

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Clinical characteristics and prognosis of elderly patients admitted for acute decompensated heart failure

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Introduction: The proportion of elderly patients is continuously increasing worldwide with an associated raise in the prevalence of heart failure (HF). The frailty of this group of patients makes acute decompensated heart failure (ADHF) a common reason for admission to the emergency department (ED).

Purpose: The aim of this study is to evaluate the clinical characteristics and prognosis of very elderly patients (≥80 years) who were evaluated in the ED for ADHF.

Methods: Retrospective study of 258 consecutive patients who were evaluated in the ED for ADHF. The total sample was divided in 2 groups: ≥80 years (the very elderly, group 1, n=112; 85.7±4.5years) and a control group (<80 years, group 2, n=146; 68.8±9.9years).

Results: NYHA functional class was not significantly different between groups (p=0.293). At hospital admission, the proportion of patients under guideline directed medical therapy or diuretics was not substantially different between groups (p=0.740 and p=0.440, respectively). For the acute treatment of the ADHF there was no significant difference in the time to first administration of therapy (group 1 median 15 vs 30 mins in group 2, p=0.264). Maximum daily dose of furosemide was not different between the 2 groups (p=0.467). At discharge, the proportion of patients discharged under optimized medical therapy was lower for the group 1, considering beta-blockers (63.6 vs 78.3%, p=0.015), ACE inhibitor/ARB (65.8 vs 78.6%, p=0.032),

spironolactone (13.5 vs 30.7%, p=0.001) and ivabradine (0.7 vs 5.9%, p=0.082). In-hospital death was higher in group 1 (14.3 vs 3.5%, p=0.003).

Conclusion: Acute treatment of ADHF was similar in different aged group, and so was the time to first drug administration. However, the guideline medical therapy for HF was substantially different at discharge. The very elderly showed high intra-hospital mortality. More tailored therapeutic strategy may be required to improve prognosis in very elderly patients

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Anemia in acute heart failure

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Background/Introduction: Anemia is a frequent comorbidity in heart failure (HF). Anemia is associated with a marked decline in quality of life and high morbidity and mortality in patients with heart failure.

Purpose: Heart failure patients strongly express their desire in improving their life, their effort intolerance, their physical and psychological capacity (score) and their functional status. It is mandatory to establish in patients with HF the degree of anemia in order for theme to benefit from the treatment that suites them more and improve their outcomes.

Methods: A total of 374 patients presented consecutively in our clinic were evaluated during emergency department, hospitalization and also after discharge periodically. The patients included had acute heart failure and anemia. The follow-up period of 15 months performed included surveillance. Besides the hemoglobin, hematocrit, iron level, and red blood cells size and color, ferritin and transferrin were measured also. The patients were divided into 3 groups, depending on whether they had or not anemia: 108 (28.87%) patients had severe anemia and HF at presentation in the emergency department; 149 (39.83%) patients presented with moderate anemia and HF; and 117 (31.28%) patients had mild or no anemia at presentation.

Results: Anemia is common in heart failure but nevertheless is associated with poor outcomes. The patients that had sever anemia and HF at presentation received blood transfusion, those who had moderated anemia and HF received intravenous iron supplementation, and the last group received oral iron supplements. The group that received intravenous iron supplementation had a favorable balance between efficacy, safety and poorer outcomes compared with the other two groups. Improvements in symptoms, exercise capacity and quality of life were seen in parallel with rises in hemoglobin levels in these patients.

Conclusion(s): Anemia turned out to be an ominous sign in patients with acute heart failure. Quality of life in heart failure patients is lower compared to other healthy persons, or compared with that of patients who suffer from other comorbities like: hypertension, diabetes mellitus, stroke patients, parkinson disease, renal failure. Anemia as an independent risk factor for acute heart failure is controversial but it is linked to other comorbidities.

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Hyperkalemia in heart failure: a reality and a therapeutic challenge

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Introduction: Hyperkalemia (Hiperk) is a frequent complication in patients (pts) with heart failure (HF). This complication leads to discontinuation or doses reduction of RAASi, exposing the pts to a higher cardiovascular risk. New molecules have been developed to the treatment of hyperk (Potassium chelating polymers) that may allow the maintenance of therapy with RAAS inhibitors in this subgroup of pts.

Aim: To evaluate the prevalence and prognostic impact of hyperk alone and associated with renal dysfunction (RD). Determine the need to reduction / discontinuation of RAASi and which pts are candidates for the new "potassium-chelating drugs".

Methods: Were evaluated 157 consecutive pts in a HF clinic. The population was characterized according to baseline and therapeutic characteristics. The prevalence of hyperK alone and associated with RD was determined as well as the need to reduction / discontinuation of therapy. Were determined the pts with hyperk isolated or without RD with criteria for withdrawal of RAASi, in which new "potassium chelating" could be used.

Results: Were studied 157 pts (71% male, mean age 67 years ± 11). Patients medicated with ACE inhibitors in 77% (n = 121); ARA 16% (n = 25); Spironolactone 42% (n = 66). HyperK was determined in 46% (n = 72) of the population, isolated or associated with different degrees of RD. (Table I) The RAASi were suspended and reduced respectively in 4% (n = 5) and 20% (n=31) of the pts by hyperK isolated / without RD criteria for suspension. In 4% (n = 6) of the pts the RAASi were discontinued by hyperk associated to important RD. According to the current recommendations, 14% (n = 22) of pts would have indicated to discontinue RAASi by hyperK isolated / without RD criteria for suspension and in 28% (n = 44) to reduce the dose. In 42% (n = 66) of the population, new "potassium chelating" drugs could be the alternative to the suspension / dose reduction

of the RAASi. There was no association between hyperK and cardiovasculars events, higher BNP values or lower functional capacity.

Conclusion: HyperK is frequent in pts with HF and limits the use of drugs with prognostic benefit. The prevalence of hyperK isolated or without significant RD was high in this population. In these pts the new "potassium chelating" drugs could be a solution to avoid the suspension /reduction of the RAASi. However, more studies are needed in this area to evaluate the benefit.

Table 1. Hyperkalemia and renal dysfunction.

Hyperk isolated (Cr <1,1 mg/dl)		Hyperk + Cr entre 1,1 e 3,5 mg/dl		HiperK + Cr > 3,5mg/dl ou increase of 100 % Cr	
K+ > 5 e ≤ 5,5 mEq/L	K+ > 5,5 mEq/L	K+ > 5 e ≤ 5,5 mEq/L	K+ > 5,5 mEq/L	K+ > 5 e ≤ 5,5 mEq/L	K+ > 5,5 mEq/L
11% (n=18)	6% (10)	17% (n=26)	8% (n=12)	1% (n=2)	3% (n=4)

Hiperk - hiperkalemia; Cr -creatinine

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Sacubitril/Valsartan: which patients are eligible for this therapy?

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Introduction: Sacubitril / Valsartan is a new therapeutic class recommended in the treatment of chronic heart failure (HF) (Class IB) in all patients with reduced ejection fraction who remain symptomatic with optimized medical therapy (ACE inhibitors + Beta-blocker + spironolactone).

However, their eligibility in clinical practice is unknown.

Aim: To evaluate eligibility for sacubitril / valsartan therapy in a population of patients followed at an HF clinic.

Methods: Were evaluated 157 consecutive patients. The population was characterized according to baseline characteristics, etiology of HF, LVEF, functional class of NHYA and therapeutic. Were determined the patients with conditions to make sacubitril / valsartan: LVEF <40%, NYHA ≥ II and medical therapy at the maximum tolerable doses associated with BNP > 150 pg /ml or > 100 were hospitalized in the last 12 months.

Results: Were studied 157 patients (71% male, mean age 67 years ± 11). The main etiology of HF was ischemic in 46% of patients (n = 72). Sixty-eight patients (43%) had reduced LVEF (<40%) of the patients; 29% (n = 45) mid-range LVEF and 22% (n = 33) preserved. In this population 13% (n = 20) of patients are eligible for the switch with sacubitril / valsartan.

Conclusion: In this population there is a low prevalence of patients with conditions for the switch with sacubitril / valsartan. New studies will be needed in the clinical practice to evaluate the impact of this switch.
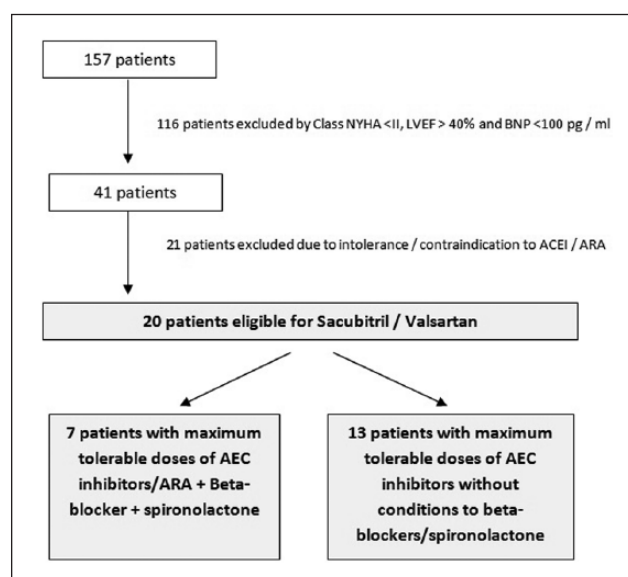
Patients eligible sacubitril/valsartan

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Clinical characteristics and outcomes of patients with cardiac tamponade: a seven-year study in a centre without cardiothoracic surgery

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Introduction: Cardiac tamponade (CT) is a life-threatening condition requiring immediate heart compression relief. Causes of CT have been changing over the last decade, which makes it crucial to collect and know the current data of CT patients (pts).

Purpose: To assess the clinical features and outcomes of pts submitted to pericardiocentesis owing to CT.

Methods: All percutaneous pericardial drainages performed in our centre between 01/2010 and 02/2017 were reviewed and we selected those pts whose procedure indication was CT. CT was defined by clinical and echocardiographic criteria. Outcomes of interest included effusion recurrence, in-hospital mortality and 6-month mortality rates.

Results: We selected 32 pts, 17 (53.1%) male, with a mean age of 67.06 ± 17.1 years. Highly suspected or definite aetiologies of all patients was: malignancy in 9 (28.1%, 5 newly diagnosed); iatrogenic pacemaker implantation in 6 (18.8%, 5 temporary pacemakers and 1 permanent pacemaker); complicated coronary angioplasty in 3 (9.4%); infection, myocardial revascularization surgery and myocardial infarction complications were each the considered aetiologies in 2 (6.3%) pts; rheumatic disease, acute type A aortic dissection, hypothyroidism and central venous catheter iatrogenic placement were, individually, the cause in 1 (3.1%) patient. In 3 (9.4%) pts aetiology remained unknown. Breathlessness [24 (75%)] was the most frequent initial complaint. At presentation, 10 (37%) pts were hemodynamically unstable and 5 (16.1%) had cardiac arrest. Non-malignant aetiologies were significantly associated with lower systolic blood pressure (p=0.03). In 13 (56.5%) of the 23 pts with detailed echocardiographic findings, the pericardial effusion (PE) presented circumferential distribution, being its largest diameter 25.64 ± 7.8 mm. Malignancy was significantly associated with higher PE dimensions (p=0.04). Late diastolic collapse of the right atrium [18 (78.3%)] was the most common echocardiographic diagnostic criteria finding. The mean total volume drained was 740.9 ± 373.8 ml. PE had exudate characteristics in all pts and was bloody in 21 (77.8%). Pericardiocentesis was unsuccessful in 3 (9.4%) pts, of whom 1 died and 2 were transferred for surgical drainage. In-hospital mortality was 18.8%. There was recurrence in 3 (11.5%) of the 26 survivors, who underwent pericardial window surgery. At 6 months, 23 pts were alive (6-month mortality 6.3%).

Conclusions: Similarly to previously published data, our study shows: a striking decrease in some historical causes of CT (as tuberculosis); an increase in malignancy; and a higher number of iatrogenic pericardial hemorrhage, an apparently increasing cause of CT since interventional Cardiology has become a commonly used technique. Although CT seems to be a worsening prognostic event during cancer development, in our study no significant difference was found in outcomes between malignant and non-malignant aetiologies.

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Heart failure after acute coronary syndrome in elderly patients: determinants and impact prognosis

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Introduction: little data available on the clinical impact of heart failure (HF) associated with an acute coronary syndrome (ACS) in elderly patients.

Methods: Prospective observational registry of patients ≥ 70 years hospitalized for one SCA. Data were collected from 223 patients (92 women, 78 [73-83] years) with no history of HF nor cardiogenic shock as presentation of ACS. In-hospital mortality and year of event

Results: Of the total, 40 patients (17.9%) had a diagnosis of HF at admission (class Killip II-III; HF-i), which was associated with higher in-hospital mortality (6.0% vs 17.5% p = 0.02) and at 12 months (12.8% vs 21.2%, p = 0.2), compared to patients with ACS without HF-i. Although they presented multivessel disease and trunk disease more frequently (40,8 vs. 24.6%; p = 0.04), patients with HF-i had similar rates of intervention / complete coronary revascularization (57.5 vs 60.7%, p = 0.85) compared to ACS without IC-i. Using logistic regression analysis, HF-i was an independent predictor of mortality (OR 3.2, CI: 1.14-9.01, p = 0.03). The development of HF during hospitalization (compared to CI-1) was associated with higher in-hospital mortality (24.6% vs. 17.5%, p & lt; 0.001). HF-i was associated with longer hospital stay and greater number of readmissions hospitalizations at one year follow-up.

Conclusions: In this observational register, the clinical presentation of HF-i in elderly patients with ACS was associated with lower in-hospital survival and a worse prognosis.

Shock, ECMO, IABP

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ACS patients in shock: who dies and who does not die?

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On behalf of: B2MIR

Background: Hospital survival of ACS patients with cardiogenic shock has not improved over the last decade while survival of ACS patients without schock has increased. The main treatment approach for ACS patients with shock

is PCI. On top of PCI IABP and other assists devices (i.e. Impella, ECMO) have been used without convincing success and with still high death rates of 40%-50%. If death rates remain high even with assist devices the questions arises how those ACS shock patients dying differ from those who do not die, because those with a higher possibility of dying may be those patients that may profit from assist devices. We therefore compared ACS patients with shock who died in the hospital to those who survived their hospital stay.

Method: We included patients enrolled from 1.4.08-31.12.16. We included 1050 ACS patients with shock (9.1%) from a total of 11,499 ACS patients. We compared 634 shock patients (60.4%) who survived to 416 shock patients (39.6%) who died during their hospital stay. Among ACS patients without shock hospital mortality was 3.9%.

Results: ACS patients with shock who died during their hospital stay were older (69 vs 63 yrs. p<0.001), more often women (26.5% vs. 22.7%, p=0.165), had a longer median time from symptom onset to hospital arrival (86 vs. 79 min. p=0.114), showed a STEMI more often (78.4% vs. 76.5%, p=0.462), showed more comorbidities (renal failure: 34.2% vs. 19.1%, p<0.001; CHF: 41.5% vs. 27.8%, p<0.001; diabetes: 41.9% vs. 26.7%, p<0.001), were less often treated with PCI (83.9% vs. 92.6%, p<0.001) and had a LV-function <=30 in 60.4% (compared to 26.4%, p<0.001). Those shock patients treated with PCI who died had a longer median door to balloon time (97 vs. 78 min. p<0.001) and only 62.7% (compared to 75.7%, p<0.001) of those patients had their balloon in place within 60 minutes.

According to a logistic regression analysis and after adjustment for age, sex, STEMI, renal failure, diabetes, CHF, severe LV dysfunction, PCI and time from symptom onset to balloon placement <=/> 120 minutes influence on hospital mortality for ACS patients with shock was as follows: age in yrs OR: 1.03 (95% CI: 1.02-1.05); women OR: 1.34 (95% CI: 0.83-2.18); STEMI OR: 1.93 (95% CI: 1.15-3.23); renal failure OR: 1.40 (95% CI: 0.84-2.33); CHF OR: 0.94 (95% CI: 0.58-1.53); diabetes OR: 1.32 (95% CI: 0.84-2.07); severe LV dysfunction OR: 3.36 (95% CI: 2.15-5.25); Time from symptom onset to balloon >120 minutes (compared to <=120 min.) OR: 1.90 (95% CI: 1.02-3.53).

Conclusion: ACS patients with shock dying in the hospital differ from those who do not die. Time seems to play an important role (not only for STEMI patients but also) for shock ACS patients to survive. Our analysis with registry data supports the idea of a randomised clinical trial on time frames within which it may make sense to apply assist devices in ACS patients with shock.

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Prevalence of heart failure and cardiogenic shock in patients presenting with acute myocardial infarction: a Middle East perspective

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Purpose: To estimate the prevalence of congestive heart failure (CHF) and cardiogenic shock in patients presenting with acute myocardial infarction (AMI).

To identify risk factors predisposing to CHF and cardiogenic shock.

Methods: We analysed all patients presenting to our center with AMI between 2014 and 2017 that were initially treated conservatively. Patients with heart failure were diagnosed based on Killip classification, with class 2/3 labelled as CHF and class 4 as cardiogenic shock. Data was analysed further to identify whether the type of myocardial infarction, age, history of diabetes, peak Troponin-T value, eGFR level and left ventricular ejection fraction (LVEF) at presentation had an effect on the development of heart failure and cardiogenic shock.

Results: 283 patients presented with acute myocardial infarction (NSTEMI and STEMI) between 2014 and 2017. 51 patients out of 283 (18%) developed congestive heart failure (Killip class 2/3). 12 patients (4.2%) developed cardiogenic shock (Killip class 4).

51 patients with CHF were compared with 51 patients without CHF (post-AMI). There was no significant difference between the gender (males 84% vs 88%), type of MI (STEMI 43% vs 47%) and mean age (57 vs 51 years). However, patients with CHF had more prevalence of DM (63% vs 33%), had higher peak Troponin-T values (4.1 vs 2.72 ng/ml), had lower eGFR (76.6 vs 93.2 ml/min) and lower LVEF (42% vs 52%).

12 patients with cardiogenic shock (out of 51 CHF patients) were compared with 39 patients without cardiogenic shock. There was no significant difference between mean age (56.3 vs 57.6 years) and prevalence of DM (66.5% vs 61.5%). However, patients with cardiogenic shock had more ST-elevation MI (66.6% vs 35.9%), higher peak Troponin-T values (6.42 vs 3.54 ng/ml), lower eGFR (63.3 vs 79.5) and lower LVEF (32.5% vs 44.1%).

Conclusion: Congestive heart failure and cardiogenic shock remain a common complication in immediate post-acute myocardial infarction period that pose a significant challenge to manage. Risk factors include present of ST-elevation MI, diabetes, high Troponin-T, low eGFR and low LV ejection fraction. Such patients must be closely monitored and managed in a CCU setting to ensure early recognition and treatment that will improve morbidity and mortality.

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Longterm follow-up (up to 10 years) in patients supported by va-ecmo for refractory cardiogenic shock and cardiac arrest; a single center expirience

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Background: Veno-arterial Extracorporeal membrane oxygenation (VA-ECMO) is a well-established technology used to stabilize patients with acute myocardial infarction (AMI) complicated by refractory cardiogenic shock (CS) and cardiac arrest (CA). Currently, few data are available on early and long-term clinical follow-up of these patients and no strategies have been defined so far.

Purpose: To evaluate early and long-term survival of patients supported by VA-ECMO for refractory CS and CA.

Methods: We reviewed retrospectively the data of a group of patients affected by CS or cardiac CA following AMI. Between January 2004 and June 2012, sixty-six patients were supported by ECMO.

Results: Twenty-seven patients (40.9%) were weaned from VA-ECMO and 21 patients (31.8%) survived to hospital discharge. Brain death was the most frequent cause of early death and it was present in 27 patients (40.9%); in these patients VA-ECMO was withdrawn. No patients who required VA-ECMO support for refractory CS suffered from brain death. Twenty-five patients underwent surgery, while percutaneous coronary intervention was performed during VA-ECMO in 34 patients. Bleeding was one of the most observed complications. Survivor patient received fewer blood transfusions than nonsurvivors (6.2 ± 3.66 versus 13.75 ± 12.25, respectively; p = 0.009). Intra-aortic balloon pump was present in 19 patients (28.8%) before ECMO implantation and 12 of them (57.1%) survived to hospital discharged. Multivariate analysis revealed that non use of IABP before ECMO, blood lactate levels pre-ECMO and at 2nd day of ECMO and number of blood transfusions, were independent predictors of in-hospital mortality. Overall follow-up mean time was 2.8 ± 0.5 years. Overall cumulative survival at 1, 5 and 10 years was 34.3% ± 5.9 %, 27.4% ± 5.6 % and 21.5% ± 5.8 %, respectively (Fig. 1A). In survivor patients follow-up mean time was 7 ± 0.9 years and survival at 1, 5 and 10 years was 87% ± 7 %, 69.6% ± 9.6 % and 47.8% ± 12.5 %, respectively (Fig 1B).

Conclusion: Extracorporeal membrane oxygenation can be considered an acceptable rescue tool for the treatment of refractory CS and CA secondary to AMI. Although the early mortality is still high, survivors patients had a notable long-term survival.

Fig. 1

cardiogenic shock has just started. Therefore, it should be considered the ideal target for treatment.

Purpose: To evaluate efficacy and safety of a management algorithm uniformly applied to pre-cardiogenic shock patients with acute decompensated heart failure (worsening or de novo) (ADHF) not related to acute myocardial infarction (AMI) based on step-by-step progression in the treatment, including epinephrine, intra-aortic balloon pump (IABP) and veno-arterial extracorporeal life support (ECLS).

Methods: Phase II study with a Simon two-stage design. Twenty-four consecutive patients with ADHF were included in the study. Epinephrine was used as a fast hemodynamic stabilizer at doses ≤ 0.12 mcg/Kg/min, followed within 4 hours by IABP implantation according to clinical and hemodynamic parameters. If required according to well-defined criteria, ECLS was implanted. The primary endpoint was survival at 60-day follow up.

Results: The median systolic blood pressure at admission was 90 mmHg (86-112), cardiac index 1.7 (1.1-2.3) L/min/m², right atrial pressure 14 (7-20) mmHg, wedge pressure 27 mmHg (22-28), serum lactates 1.6 (1.4-2.3), SVO2 48% (36-68), whereas the mean left ventricle cardiac power index was 0.28 w/m. All the patients were treated with epinephrine at maximum dose of 0.09 mcg/Kg/min (0.04-0.1). Other concomitant vasopressor and vasodilator agents were allowed according medical discretion (seven patients were treated with concomitant low dose dopamine, 1 with dobutamine, 1 with milrinone and 9 with levosimendan). Sixteen patients (66.7%) were treated with a mechanical circulatory support: fifteen patients were treated with IABP and only one with IABP and ECMO. The follow up will end the 28th, September 2017. At the moment the survival rate is 87.5%, with 2 heart transplantation and 12 permanent left ventricle assist devices successfully implanted.

Conclusions: CS in not AMI setting is a challenging disorder whose treatments are usually based on local expertise. A main stem for management should be to avoid organ failure at the earliest stage detectable. The algorithm proposed aimed at suggesting an early treatment escalation for a quick unload and hemodynamic stabilization as bridge to decision.

P179

Which criteria do we use to indicate oxygenator with extracorporeal membrane in cardiogenic shock?

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Introduction: The main indication of venoarterial oxygenator with extracorporeal membrane (ECMO-VA) is to provide cardiopulmonary support in cardiogenic shock (CS) with no clear criteria to indicate its use.

Purpose: Analyse the characteristics of CS patients (p) in which we indicate ECMO.

Methods: We analyzed all cases of ECMO-VA implantation in CS in our center compared to a sample of CS p without ECMO use in the last year.

Results: 18 patients in CS required VA-ECMO between 2013-2017 (group A). We also recruited 24 p in CS without ECMO in 2016 (group B).

ECMO p were younger, with worse LVEF and tended to have a higher rate of right ventricular dysfunction (Table 1). Levosimendan and IABP were most frequently used in group A, as well as a trend toward increased use of norepinephrine and adrenaline (Table 1).

Complications rate was significantly higher in ECMO cases (Figure 1). Survival was similar in both groups at discharge (A 50%, B 62.5%, p 0.42) and at 6 months follow up (A 41.2%, B 47%, p 0.73).

Conclusion: Mortality in cardiogenic shock continues to be high with and without mechanical circulatory support. In our study, p selected for VA-ECMO support were younger and under a worse hemodynamic situation, being probably the p most benefited from its use despite higher complications rate.

VA-ECMO allowed the use of levosimendan in shock context.

Table 1. Baseline characteristics and situation at admission.

	A- ECMO (n=18)	B- No ECMO (n=24)	P value
Age (media + SD)	58 (±10)	67,5 (±12)	0,021
Male (%)	83,3	62,5	0,14
Arterial hypertension (%)	44,4	58,3	0,37
Diabetes mellitus (%)	27,8	16,7	0,38
Previous cardiopathy (%)	27,8	37,5	0,51
LVEF (media% + SD)	33 (±16)	40 (±14)	0,002
RV dysfunction (%)	50	25	0,09

(Continued)

Table 1. (Continued)

	A- ECMO (n=18)	B- No ECMO (n=24)	P value
Creatinine (mg/dl)	2,05 (± 2,8)	1,4 (± 0,6)	0,74
Lactate pre-implantation (mmol/L + DS)	5,2 (± 3,7)	3,8 (± 2,5)	0,1
Cardiac arrest	82,5	62,5	0,17
Dobutamine (%)	88,9	86,4	0,81
Noradrenaline (%)	100	81,8	0,06
Adrenaline (%)	11	0	0,11
Levosimendan (%)	16,7	0	0,042
IABP (%)	83	45,8	0,013
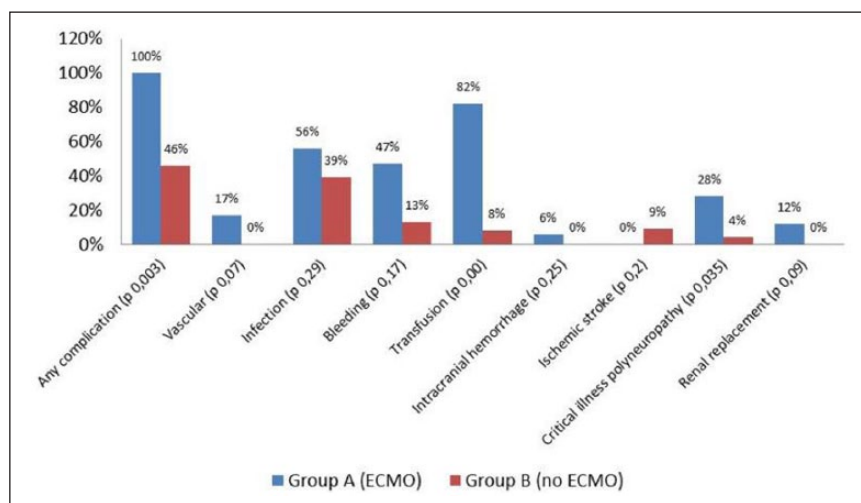
Figure 1. Complications

P180

Heart rate / systolic blood pressure ratio as a predictor of cardiogenic shock in acute coronary syndrome

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Background: Acute coronary syndromes (ACS) are potentially unstable clinical situations, especially in their progression to pump failure. That being said, the prediction of cardiogenic shock through a simple relationship between vital signs could be a useful and practical tool.

Purpose: The authors aimed to analyse the heart rate (HR) / systolic blood pressure (SBP) ratio known as Shock Index in patients who have suffered ACS and to study it as a possible predictor of cardiogenic shock.

Methods: Retrospective, observational study, with data from 470 patients who underwent coronary angiography in our Catheterization Laboratory. We've selected patients with ST elevation and non-ST elevation ACS.

Two groups were formed: the group of patients with cardiogenic shock (Killip IV) and the group of patients without evidence of shock (Killip I, II and III). We've evaluated HR, SBP, heart rhythm and presence of cardiovascular risk factors (hypertension, diabetes, dyslipidaemia and smoking). The HR / SBP ratio was calculated for each individual.

Results: The 470 patients studied were aged between 20 and 96 years (mean 67.2 ± 13.3 years), with 68.5% being male.

The group of patients in cardiogenic shock was formed by 42 individuals with a mean age of 68.8 ± 12.7 years, with 73.8% being male. The mean HR was 87 ± 23.7 bpm, and 76.2% were in sinus rhythm. Regarding risk factors, 69% were hypertensive, 35.7% had dyslipidaemia, 45.2% were diabetics and 23.8% were smokers. The mean HR / SBP ratio was 0.91 ± 0.28.

The group of patients without evidence of shock consists of 428 patients, with a mean age of 67.1 ± 13.2 years and 68.6% of males. The mean HR was 74 ± 14.8 bpm, with the majority of patients being sinus rhythm (92.1%). Regarding risk factors, 74% had hypertension, 44% had dyslipidaemia,

30.4% were diabetics and 24% had smoking habits. The mean HR / SBP ratio was 0.55 ± 0.18.

The ratio was related to the presence of shock, translating that for each increment of 0.1, it would increase the probability of shock by 9 times (OR 90, $p < 0.001$).

Through an Area Under Curve (AUC) analysis, the optimal cut-off point was 0.7, with a sensitivity of 83% and a specificity of 79%. The area under the ROC curve was 0.870.

Conclusions: In the studied population, a HR/SBP ratio of 0.7 was an optimal cut-off value to point out which patients had cardiogenic shock at admission, reaching a sensitivity of 83% and a specificity of 79%. The use of a ratio between two easily measured variables, such as HR and SBP, is a predictor of cardiogenic shock in the context of ACS (AUC 0.870), which could represent an integrated measure of the cardiovascular system and haemodynamic status, contributing to a faster diagnosis and treatment.

Figure 1

P182

Cardiogenic shock in intensive care unit: a retrospective study

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Introduction: Cardiogenic Shock (CS) is characterized by the failure of the pump function, due to interference with inotropism and / or chronotropism, performed by the heart. Early hemodynamic support plays a crucial role in preventing dysfunction and organic failure.

Objectives: Epidemiological characterization of patients admitted in our Intensive Care Unit (ICU) with the diagnosis of CS.

Material and methods: Retrospective analysis of patients admitted in our ICU with diagnosis of CS, within a period of 10 years. We analyzed common epidemiological variables, established therapeutics, severity / mortality indexes and evolution in hospitalization. Results were expressed in mean, standard deviation and median, considering $p < 0.05$ statistically significant.

Results: 125 patients with a diagnosis of CS were admitted, with a predominance of males (55.2%). The mean age of the population was 69.45 ± 13.05 years, with the majority coming from the Emergency Room (41.6%). Admission SOFA of 10.74 ± 3.23. The main causes of CS were Acute Coronary Syndrome (ACS) (44%), decompensated heart failure (14.4%) and sepsis (13.4%). Regarding the medical therapy instituted, 97.6% required invasive ventilation and 43.2% non-invasive ventilation (NIV). The use of levosimendan in only 7.2% of patients is also highlighted. At medical release, the patients presented median hospitalization of 4 days with SOFA, APACHE and SAPS of 8, 27.47 ± 9.72 and 59.38 ± 19.06, respectively. ICU mortality of 51.2% (56% of hospital mortality).

We found a statistically significant association between outcome and: SOFA, APACHE, SAPS and length in ICU. We also point out that patients submitted to NIV had an odd 2,1x greater to show clinical improvement compared to patients who did not perform NIV.

Conclusion: CS requires rapid diagnosis and appropriate therapy to have a positive influence on the outcome. In our study, we found that CS is associated with a high mortality, with ACS being the main causal factor.

P183

Relationship of vitamin D to profound cardiogenic shock in patients resuscitated from sudden cardiac arrest

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Background: Vitamin D deficiency is related to various cardiovascular diseases, including sudden cardiac arrest (SCA). Profound cardiogenic shock is associated with morbidity and mortality in patients with SCA. This study investigated the relationship of vitamin D to profound cardiogenic shock in patients resuscitated from SCA.

Methods: We enrolled patients who were successfully resuscitated from out-of-hospital cardiac arrest of presumed cardiac cause. Profound cardiogenic shock was defined as hypotension requiring mechanical circulatory support such as extracorporeal membrane oxygenation (ECMO) in spite of adequate intravascular volume and high-dose vasopressor infusion. The vitamin D level was measured

as plasma 25(OH)D concentrations and severe vitamin D deficiency was defined as 25(OH)D <10 ng/mL.

Results: A total of 123 patients [91 men (74%), mean age 56.1 ± 16.2 years] were included in this study. First monitored rhythm was shockable rhythm in 76 patients (62%) and non-shockable rhythm in 47 (38%). Bystander cardiopulmonary resuscitation (CPR) was performed in 101 (82%) and mean arrest and CPR time were 27.9 ± 22.1 and 25.3 ± 21.8 minutes, respectively. Profound cardiogenic shock was observed in 32 patients (26%). The mean vitamin D level was 10.4 ± 5.4 ng/mL and vitamin D deficiency was diagnosed in 67 patients (55%). Vitamin D level was significantly lower (7.0 ± 3.9 vs. 11.6 ± 5.4 ng/mL, $p < 0.001$) and vitamin D deficiency was observed more frequently (84 vs. 45%, $p < 0.001$) among patients with profound shock. Patients with profound shock were likely to have longer CPR time (32.6 ± 32.5 vs. 22.7 ± 16.0 minutes, p=0.028) and more non-shockable rhythm (53 vs. 33%, p=0.044), left ventricular systolic dysfunction (LVEF <40%, 81 vs. 45%, $p < 0.001$), and baseline renal dysfunction (88 vs. 52%, $p < 0.001$). In multivariate logistic analysis, vitamin D deficiency was the significant independent predictor of profound shock after SCA (OR 6.04, 95% CI 1.97-18.53, p=0.002) with left ventricular systolic dysfunction (OR 5.14, 95% CI 1.77-14.93, p=0.003) and baseline renal dysfunction (OR 3.59, 95% CI 1.06-12.10, p=0.039) after adjusting for confounding variables such as first monitored rhythm, CPR time, and acute myocardial infarction.

Conclusion: Vitamin D deficiency was strongly related to profound cardiogenic shock in patients resuscitated from SCA.

P184

V-a ecmo program: a learning curve is mandatory

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To start and manage an extracorporeal membrane oxigenator (ECMO) program in a tertiary University Hospital can be very challenging. Aim of the study is to look back at our route in terms of number of assist devices implanted , patients treated, transfusions needs and outcomes.

Methods: Since march 2011, 37 patients (pts) (mean age 58.3 ± 12.3 yrs) have been implanted with extracorporeal life support systems (ECLS). 18 pts were postcardiotomy because of failed weaning from cardiopulmonary by pass (CPB), 11 because of cardiogenic shock (CS) after acute coronary syndrome, 7 suffered cardiac arrest (CA) refractory to cardiopulmonary resuscitation (CPR), 1 has been implanted because of adult respiratory distress syndrome (ARDS) conditioning right ventricular failure

and shock. 31 (83 %) pts arrived in postop ICU with closed chest. 24 (64.8 %) with peripheral cannulation.

Results: the lenght of VA- ECMO support was 131 hrs ± 113. The total amount of bleeding for each pt was 3477 ± 4584 cc, 15 ± 14/pt RBC were transfused, 3.91 ± 4.52 FFP and 3.63 ± 3.2 Plt. Units. 12 pts died in course of ECMO (32 %), 12 pts died after weaning from ECMO 32 %, 13 pts discharged alive (36%).

Conclusions: ECMO is a life saving and feasible option in pts with lifethreatening cardiovascular conditions. But to reach a reasonable costeffectivennes the learning curve is mandatory.

P185

Early and midterm results in patients supported with va-ecmo for mechanical complications of acute myocardial infarction

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Background: Ventricular septal defect (VSD), left ventricle free wall rupture (LVFWR) and papillary muscle rupture (PMR) are infrequent but catastrophic mechanical complications of acute myocardial infarction (MC-AMI). The impact of veno-arterial extracorporeal membrane oxygenation (VA-ECMO) on early and midterm outcome is still undefined.

Purpose: To evaluate the early and midterm outcome in patients underwent surgical repair of MC-AMI and supported by the VA-ECMO during the postoperative period.

Methods: We retrospectively analysed 71 consecutive patients (mean age, 70±8 years; 66.2% male) underwent surgery for MC-MI from January 2000 through April 2017.

Patients were divided into two groups: No-ECMO patients (n=52, 73.7%) if subjects did not receive VA-ECMO during the postoperative period and ECMO patients (n=19, 26.7%) if subjects were supported by VA-ECMO during the same period.

Results: Overall 30-day mortality was 28.2% (n=20). LVFWR was the most frequent MC-AMI (n=32, 45%), followed by VSD (n=21, 29.6%) and PMR (n=18, 25.4%). No-ECMO patients were older than ECMO subjects (71.4±8.3 vs. 66.8±7.8 years, p=0.037, respectively). Cardiopulmonary resuscitation (p=0.001), pericardial tamponade (p=0.024), V-A ECMO before operation (p < 0.0001), right ventricular failure (p=0.033) cardiac arrest at presentation (p=0.001) are preoperative variables more frequent in VA-ECMO patients. Ventilation duration (p < 0.0001), surgical revision for bleeding/tamponade (p < 0.001), blood transfusion rate (p=0.035), acute kidney injury (p=0.020), pneumonia (p=0.034) and in-hospital mortality (63.2 % vs 15.4%, p < 0.0001) were more represented in ECMO group. Univariate logistic regression analysis revealed that VA-ECMO support [odds ratio (OR)=9.42; P < 0.0001], cardiac arrest at presentation (OR=8.51; P < 0.0001), right ventricular failure at presentation (OR=4.88; P=0.001), resternotomy for bleeding/tamponade (OR, 3.39; P=0.02), blood transfusion (OR, 7.29; P=0.03), acute kidney injury (OR=3.80; P=0.02), dialysis (OR=8.55; P=0.02) and pneumonia (OR=3.33; P=0.03) were associated with 30-day mortality. Multivariate logistic regression analysis revealed that cardiac arrest (OR=29.09; 95% CI=7.61 to 111.12; P < 0.0001) and right ventricular failure (OR=6.44; 95% CI, 1.63 to 25.43; P=0.008) were independent predictors of 30-day mortality. Overall 5-year survival was 40.5%±6.1% (Fig. 1). Five-year survival of 30-day survivors was 59.9%±7%. Comparing patient supported by VA-ECMO with not supported patients, 5-year survival of 30-day survivors were 57.1%±18.7% and 70.8%±7.2%, respectively (p=0.15) (Fig. 2).

Conclusions: Surgery for MC-AMI is still affected by a high operative mortality, mainly in patients presented with cardiac arrest and right ventricular failure. VA-ECMO is a useful emergency rescue system but in-hospital mortality remains high. However, midterm survival after surgery is encouraging even for those patients survived after VA-ECMO support.

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ECMO program in regional hospital without cardiosurgery

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Introduction: Extracorporeal membranous oxygenation (ECMO) is method of extracorporeal circulation with rising usage by patients with cardiogenic shock or refractery cardiac arrest. The care is almost in all cases binded on hospitals with cardiosurgery. Technical progress facilitated implantation without surgical approach and simplification of extracorporeal circulation management doesn't require presence of perfusionist. This presentation describe 18 month expiriences of ECMO program in regional hospital without cardiosurgery.

Methods: Prospective registry of all patients treated with ECMO since April 2015 regardless to reason for implantation. We assessed technical success, duration of treatment, complication and hospital mortality.

Results: Since April 2015 till August 2016 we provided 15 ECMO implementation (14 veno-arterious and 1x ve-venous). All were provided in cathlab under X-rays control with bifemoral approach (V-V ECMO with femoro-jugular approach). Patients with refractery cardiac arrest were during implementation resucitated with LUCAS II device. Circuit priming was managed by CCU nurse without presence of perfusionist simultaneously with canullas insertion by invasive cardiologist.

We provided 15 connections (93,6% men, average age 61,3+/−8,1 years). Indications were: 1x protected PCI of stem of left coronary artery, 7x cardiogenic shock with previous cardiac arrest, 3x refractery cardiac arrest, 3x cardiogenic shock without cardiac arrest and 1x refractery lung failure.

Etiology was 4x pulmonary embolism, 6x myocardial infarction with ST elevation, 1x dilatated cardiomyopathy, 1x precutaneous coronary intervention by high risk patient, 1x aortic stenosis,1 x nonSTEMI a 1x respiratory failure.

Cannulation were 100% successfull in all cases without any technical complication or trauma with bleeding. 27% of patients required distal protection for leg ischemia. 20% of patients required intervention for manifestation of diseminated coagulopathy. Successfull weaning was provided by 9 (60%) of patients, average time on ECMO was 6.6+/−2.5 days. Only 2 patients were subsequently transfered to cardiosurgery (1x aortic valve substitution and 1x LVAD implantation).

We observed 30-days outcome in good neurological condition (CPC 1 and 2) by 8 (53%) of patients. Hospital mortality was 47% (3x refractery cardiac arrest, 1x pulmonary embolism, 2x heart failure,1x multiorgan failure). Refractery cardiac arrest had 100% mortality, cardiogenic shock 33% (the mortality was the same for both group-cardiogenic shock with or without cardiac arrest).

Conclusion: We provided 15 ECMO implementation in 18 months from vital indication without any technical complications. Only 2 patients required subsequnet cardiosurgery care. 30 days survival in good neurological outcome was 53%, succefull weaning 60%. Our expiriences indicate feasibilty of ECMO program in regional centers without cardiosurgery.

P187

Results after the implantation of an extracorporeal life support program in a referral hospital

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Introduction: Veno-arterial extracorporeal membrane oxygenation (VA-ECMO) provides effective cardiopulmonary support in different conditions with circulatory compromise not free from mortality and complications.

Purpose: Analyze the results of VA-ECMO multidisciplinary program in our center, as well as to identify predictive factors that influence the prognosis.

Methods: We collected data from an institutional experience with VA-ECMO (baseline characteristics, implant conditions, complications and survival).

Results: From 2013 to 2017 39 VA-ECMO were implanted. The implant indications were cardiogenic shock (42,5%), high-risk percutaneous intervention (15%), cardiac arrest (15%), electrical storm (7,5%), postcardiotomy shock (12,5%) and others (2,5%). Baseline characteristics were described in table 1. 92,5% of p presented some complications (figure 1).

52,5% of p suffered cardiac arrest prior or during ECMO implant. The longer duration of cardiopulmonary resuscitation was associated with higher sepsis rate (p 0,002), peripheral ischemia (p 0,046) and lower survival (p 0,007).

Survival was 52,5% at discharge, and 43,6% (n=35) at six months, without differences according to the indication. The most frequent cause of death was anoxic encephalopathy (15%) and refractory shock with MODS (15%). High pre-implantation lactate and development of infection or peripheral ischemia were significantly associated with lower survival (p 0.01, p 0.046, p 0.019, respectively).

Conclusion: VA-ECMO is an effective tool for hemodynamic support in cases of circulatory compromise with but it has high morbi-mortality. It should be initiated early in the disease course and be avoided when MODS is established or in long cardiac arrests with probable irreversible neurological damage.

Table 1. Patients characteristics.

Characteristics	Study Population (n=39)
Male (n+%)	32 (80%)
Age (me dia + SD)	60 (±9)
Arterial hypertension (n+%)	22 (56%)
Diabetes mellitus (n+%)	16 (41%)
Smoking (n+%)	26 (61,5%)
Previous cardiopathy (n+%)	19 (48,7%)
Left ventricular ejection fraction (% ± SD)	30 ± 15
Right ventricular dysfunction (n +%)	20 (52,5%)
Lactate pre-implantation (mmol/L + SD)	5,12 ± 4
pH pre-implantation (media + SD)	7,28 ± 18
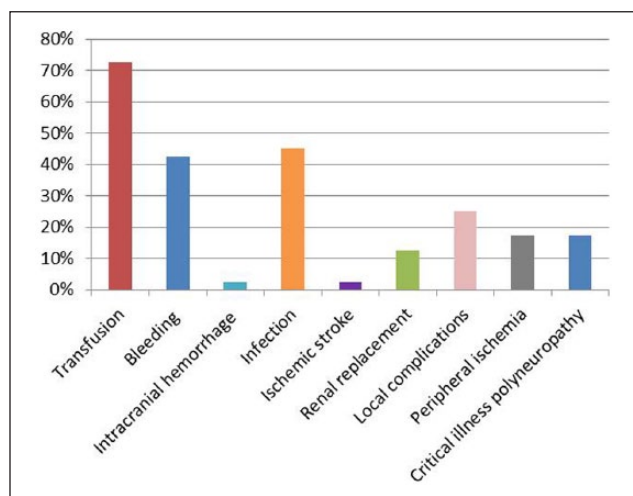
Figure 1. Complications.

P188

Intra-aortic balloon pump in patients with acute decompensated heart failure (ADHF) not related to acute myocardial infarction: bridge to decision

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Background: Cardiogenic shock (CS) is a clinical disorder that portends a dismal prognosis and there is not a therapeutic "reference standard" associated with an improved survival at short and midterm. Current evidences do not support the use of intra-aortic balloon pump (IABP) in patients with acute myocardial infarction (AMI). However, limited data exist about the IABP use in patients with acute decompensated heart failure (ADHF) not related to AMI.

Purpose: To retrospectively evaluate the association between IABP and 30-day survival in patients with ADHF not related to AMI complicated by CS. To describe the association between IABP use and clinical, laboratory and hemodynamic parameters and time to weaning from pharmacological and mechanical support.

Methods: The study population included 29 consecutive patients treated with IABP as first line mechanical circulatory support (MCS) on top of inotropic agents between September 2014 and December 2016. Data on hemodynamic and lab parameters, as well as pharmacologic support were described immediately before IABP placement and after 12,24, 48 hours and immediately after the device weaning.

Results: Thirty-day survival was 86%. Among survived patients 3 underwent left ventricle assist device implantation (12%), whereas 9 patients (36%) heart transplantation. IABP placement was associated with a statistically significant increase in mean arterial pressure and diuresis and decrease of central venous pressure (p for trend < 0.001). IABP placement was further associated with a fast decrease in serum lactates (the baseline and 48-h values were respectively 4.0 ± 2.2 versus 1.1 ± 0.4 p for trend <0,001) and an increase in SvO2 (the baseline and 48-h values were respectively 44.1 ± 7.9 versus 63.9 ± 7.5; p for trend < 0.001). Finally, inotropic support was steadily decreased from IABP placement to weaning. The median support time with IABP was 8 days (IQR 5-20), with a complications rate < 4%.

Conclusions: In patients with ADHF not related to AMI, IABP may still reserve a role as first line MCS and allow time to decision to more complex therapeutic strategies.

Poster Session 2 - Non ST Elevation ACS Saturday, 03 March 2018 - 14:00 - 17:30

Case Reports

P189

Chronic occlusion of the left main artery in a young patient

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Introduction: The chronic total occlusion of the left main artery is a rare entity, but with clinical relevance given it's poor prognosis and the need for surgical therapy. Because older age is a risk factor for ischemic heart disease, chronic total occlusion of the left main artery in young is rarely described in the literature.

Clinical case: The authors describe the case of a 37-year-old male with a history of difficult-to-control hypertension (under therapy with lisinopril and amlodipine) and smoking. He denied other personal and family background.

He referred in the last 5 months exertional angina CCS 2, associated with malaise, sweating and palpitations, which relieved with rest. It never occurred in rest and never lasted for more than 5 minutes.

On the day of admission, the patient had syncope preceded by malaise and dizziness during an intense isometric physical effort. He had time to sit before he lost consciousness and he denied dyspnea, chest pain or palpitations immediately before and after the event and denied previous episodes of syncope.

He was transported to Emergency Department of our hospital, where he was admitted hemodynamically stable (with heart rate and blood pressure within normal parameters) and without relevant changes to the objective examination.

The first EKG was in sinus rhythm with heart rate of 65cpm, left ventricular hypertrophy, embryonary rised to 1076 pg/mL (33pg P99th/mL). Echocardiography showed slight left ventricular hypertrophy, left ventricle ejection fraction of 50%, with hipokynesia of apical segments, without other relevant changes.

The patient was admitted with the diagnostic hypotheses of syncope with severity criteria and myocardial infarction without ST segment elevation.

In monitoring showed periods of not sustained ventricular tachycardia and frequent premature ventricular contractions. He had no other complications.

The next day, the patient performed coronariography, which showed the occlusion distal segment of the left main artery, with retrograde filling of the anterior descending and circumflex arteries from right coronary artery. In this context, the patient was transferred to another hospital for performing coronary artery bypass surgery.

Conclusions: Syncope can be a manifestation of heart disease, especially when presents criteria of gravity. The occurrence with the effort is suggestive of cardiac etiology and coronary heart disease should be suspected, even in young individuals. This case portrays the importance of proper screening of cases of syncope in the emergency room.

P190

Power of small thing in creating the big issue

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67 year-old female patient presented with feeling unwell for 4 days associated with central chest heaviness, palpitation and dizziness. Consulted with general practitioner and was told to have chest infection. Not improved with oral medication and developed severe onset of chest pain 1 hour prior to come to hospital. Known to have hypertension, diabetes, chronic kidney disease and dyslipidemia for regular medication. Neurosurgical team follow up for suprasellar meningioma. Not known to have ischemic heart disease before. On examination, dyspneic and tachypneic with bibasal crepitation on auscultation of the lungs. JVP not raised, no pedal edema is noted. Treated as acute coronary syndrome medically with aspirin, Plavix and subcutaneous arixtra. In view of increasing in trend of cardiac enzymes with persistent chest discomfort, the patient was brought in for percutaneous coronary intervention.

Angiogram was done from right radial approach, using 6F TIG catheter. On diagnostic angiogram, 80% lesion in mid left anterior descending artery (LAD) after first bifurcation of diagonal branch with aneurysmal dilatation and bridging artery was noted in mid LAD. Left main stem, is normal with tortuous coronaries (left circumflex artery and right coronary artery) are identified. Planned for angioplasty to significant mid LAD lesion. Using XB 3.0 6F as guiding catheter and runthrough wire as guiding wire. After proper balloon dilatation of LAD lesion with Sprinter Legend 3.0 x 10 mm, the coronary flow was checked. No dissection was noted. Proceeded with ONYX 3.5 x 15 mm (stent) followed by post dilatation with NC EUPHORA 4.0 x 8 mm. Good result (TIMI III) flow in LAD with diagonal artery was preserved. In mean while, the operator noticed the contrast staining in distal LAD. Further shots confirmed that

arterio venous fistula in the small branch of distal LAD connecting to small venule and finally drains into venous system. Tracing back revealed distal wire accidentally create the iatrogenic fistula in the distal LAD. Persistent contrast staining is noted under fluoroscopic examination 15 minutes after the procedure.

Bedside echocardiogram was done, no pericardial effusion with normal LVEF was noted. Plavix was changed to brillinta (ticagrelor) 90 mg bd together with aspirin 100mg od. Continue subcutaneous fondaparinux for 3 more days. Patient had been completely asymptomatic with vital signs were stable. Planned for relook angiogram in 1 month time.

Learning points

1. Need to know the possible complications of the devices that we used.

2. To check the position of distal wire as it may cause perforation and even can cause fistula especially in tortuous coronaries.
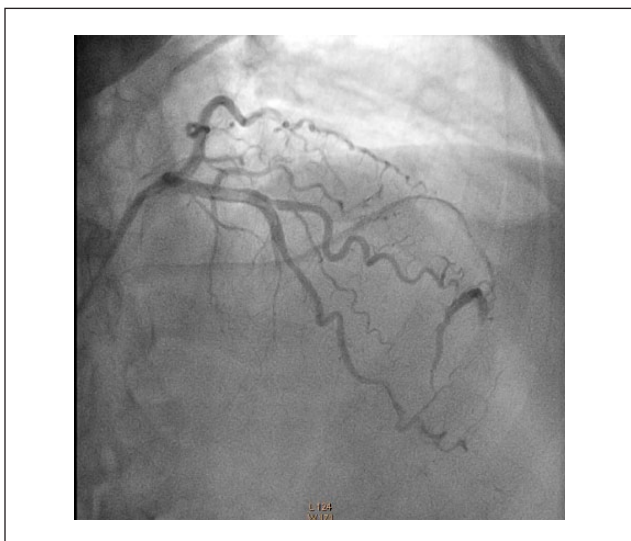
New Channel

P191

Kounis syndrome: an unusual cause for transmural ischaemia and associated ventricular tachycardia

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Introduction: Kounis syndrome is characterized by acute myocardial ischaemia triggered by coronary artery spasm induced by inflammatory mediators released during systemic allergic reactions. We describe one case of Kounis syndrome and associated ventricular tachycardia where metamizole was believed to be the allergic insult.

Case description: A 62-year-old smoker man without comorbidities presents to the emergency department complaining about pain after spraining his ankle. For pain management, i.v. metamizole infusion was initiated. Shortly after, the patient developed generalized erythematous rash, wheezing and chest pain. First ECG showed self-terminating ventricular tachycardia (figure A). Second ECG showed inferior injury current (figure B). Cardiology consultation was sough.

Coronary arteries were found to have no atherothrombotic disease on emergent coronary angiography. Transthoracic echocardiogram, performed after chest pain resolution, disclosed no contractility defects. Maximum troponin I was 1.73 ng/mL (normal <0.04 ng/mL). Medication with calcium antagonist (diltiazem) and oral nitrate was initiated, and the patient was advised to stop smoking. Long-term follow-up was uneventful.

Discussion: Our case refers to type I variant of Kounis syndrome, related to endothelial dysfunction, and where patients have no pre-existing coronary artery disease. Kounis syndrome shares many features with Prinzmetal angina, a syndrome of ischaemic pain and ST-segment elevation at rest, resulting from spasm of a proximal coronary artery and associated transmural ischaemia. Ventricular tachycardia has not been explicitly described in Kounis syndrome, but has being described in Prinzmetal angina, where it may occur during periods of ST-segment elevation and transmural ischaemia.

Coronary spasm may be provoked at the time of coronary angiography by hyperventilation, intracoronary acetylcholine, and intracoronary ergonovine; however, provocative tests have been abandoned over the past decades. Elevated serum histamine and tryptase levels strongly support the diagnosis in Kounis syndrome, but are impractical for routine use as they have very short half-lives.

Our patient initiated calcium antagonist and long-acting nitrate given their beneficial effects on vasospastic angina. Some authors argue aspirin to be best avoided in Kounis syndrome, since it may aggravate ongoing allergic reactions. Beta-blockers may induce more vasospasm and should be avoided. Morphine and meperidine should be used cautiously since these opiates can induce mast cell degranulation and aggravate allergic reactions.

Conclusions: Kounis syndrome should be suspected when acute myocardial ischaemia occurs in the setting of acute allergic reactions. Coronary artery spasm induced by inflammatory mediators is the fundamental pathologic mechanism. There are no definitively established diagnostic markers. Anti-vasospastic agents are the mainstay of long-term treatment.
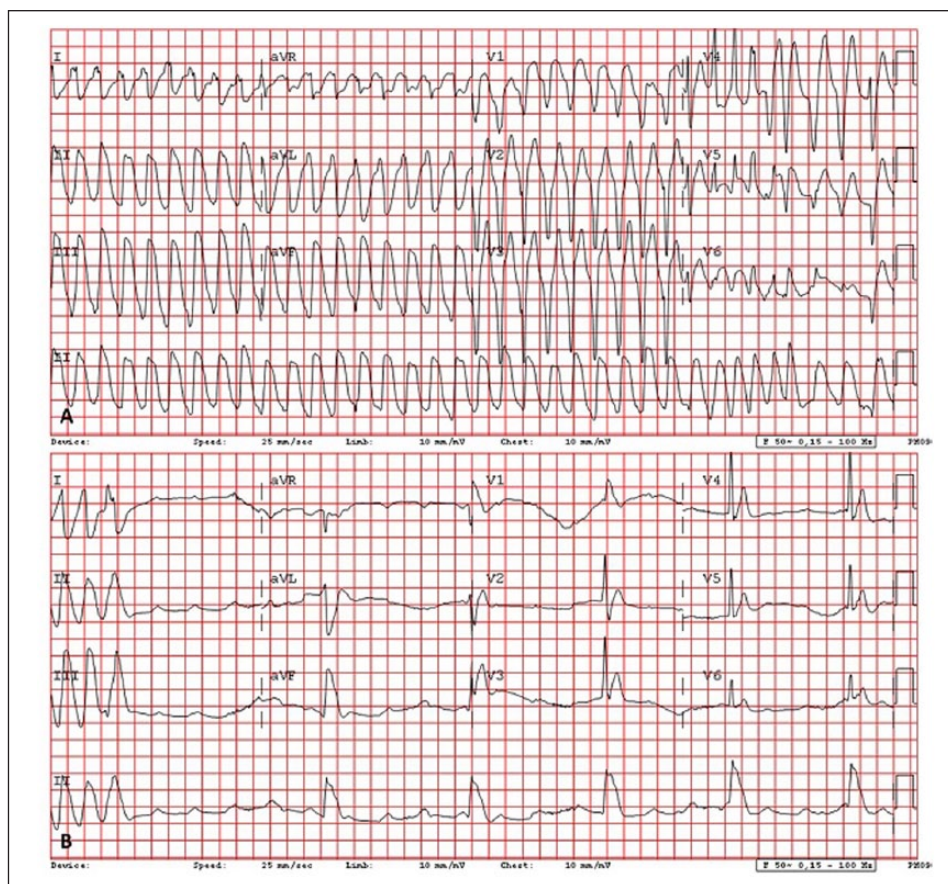
VT (A) and inferior injury current (B)

P192

Acute coronary syndrome in the context of congenital anomaly

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Introduction: Coronary artery fistulas are rare congenital anomalies or rarely acquired due to iatrogenesis. They consist in an abnormal communication between a coronary artery and one of the cardiac chambers or a great vessel, the right and anterior descending coronary arteries being the most involved.

Most patients are asymptomatic, symptoms and complications increase with the age and size of the fistula.

Case report: A 67-year-old male patient, previously asymptomatic, was admitted in the context of chest pain. The electrocardiogram showed a sinus rhythm with ST elevation in precordial leads.

Coronary angiography revealed significant stenoses in the middle segment of the left anterior descending coronary artery (LAD) and a coronary artery fistula from LAD to the main pulmonary artery. The left circumflex artery with a fistula from the proximal segment to the pulmonary artery. (Image I)

In the impossibility of angioplasty, fibrinolysis was started, which occurred without intercurrences.

Angio-CT showed fistulous pathways of the main coronary arteries to the root of the pulmonary trunk, being the largest with origin in LAD.

The cardiac NMR showed absence of viability in the territory of the LAD, so patient without criteria for invasive intervention.

Currently, the patient is asymptomatic under optimized medical therapy.

Conclusion: This case is a good example of a congenital anomaly, where the fistulas were found to arise from the tree coronary arteries, which makes the case more interesting

There is no consensus about the closure of the coronary fistula via surgical versus percutaneous intervention. The therapeutic should be evaluated case-by-case basis, being the most frequent option in acute coronary syndrome, the surgical treatment. In this case, the patient only had conditions for pharmacological therapy.
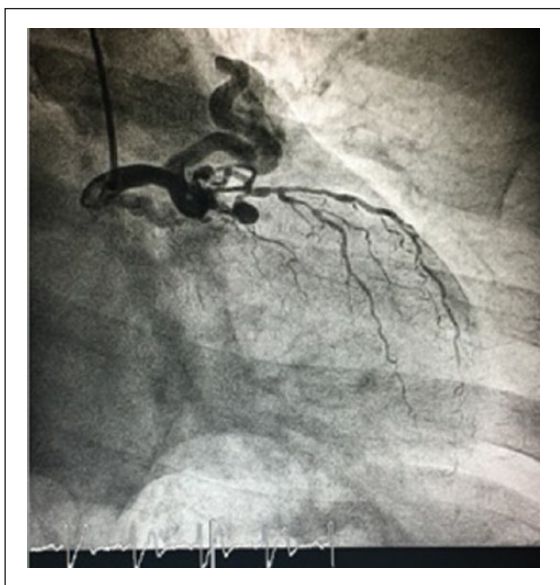
Coronary angiography

P193

Acute coronary syndrome in a patient with HIV: an unexpected evolution

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We report the case of a 41 year-old man with poorly controled HIV and HCV co-infection, smoking habits and previous history of iv drug abuse, who presented with chest pain and palpitations.

On admission he was hypertensive (150/85 mmHg), with a HR of 60 bpm. The remaining examination was unremarkable.

Laboratory evaluation revealed elevated hs troponin T (maximum 502 ng/L). ECG showed sinus rhythm with LVH criteria, alternating with idioventricular rhythm with broad QRS complexes with RBBB morphology (fig A). TTE showed no significant changes.

He was admitted with the differential diagnosis of ACS or myocarditis.

Coronary angiography revealed no significant lesions, so a probable diagnosis of HIV myocarditis was established. Anticoagulation and antiplatelet therapy were suspended, and HAART therapy was optimized.

In the following days there was no recurrence of chest pain and the rhythm normalized.

Cardiac MRI documented a small area of transmural late enhancement on the lateral wall (fig B). On the images intersecting the spleen there were lesions suggestive of splenic infarcts. Given this, an ACS of embolic source was considered.

The next day, the patient presented a new episode of chest pain and the ECG showed ST-segment elevation in V3-V6 (fig C).

Emergent coronary angiography showed significant thrombus on the distal LM, involving the ostia of the LAD and CX arteries, with distal TIMI III flow (fig D). These findings were confirmed by OCT (fig E). Thrombus aspiration was attempted but due to the presence of residual thrombus the patient was submitted to systemic fibrinolysis with tenecteplase. Coronary angiogram and OCT were repeated and documented significant reduction of the thrombus. There was no evidence of plaque.

Search for an embolic source, with 24-hour Holter monitoring and TOE was unremarkable. Thoracoabdominal CT confirmed splenic infarcts.

The patient remained stable and asymptomatic, and was discharged with triple antithrombotic therapy.

Over 2 months of follow-up the patient remained asymptomatic and free of clinical events. Thrombophilia study will be performed when it is considered safe to stop anticoagulation temporarily.

This acute thromboembolic event might be explained by the thrombotic potential of HIV infection. There is also some evidence of the thrombotic potential of HCV infection, although it is mainly associated with venous thrombosis.

Various factors are known to increase the risk of cardiovascular disease in HIV patients. This population has a high prevalence of conventional risk factors, and complex pathophysiological mechanisms related to the virus also play a part, due to immune dysregulation and inflammation. Endothelial dysfunction is also a key element, resulting from direct and indirect injury (including via immune reactions or drugs).

This case shows that the differential diagnosis of chest pain in HIV patients may be complex, and that a multidisciplinary approach is essential for optimal management.
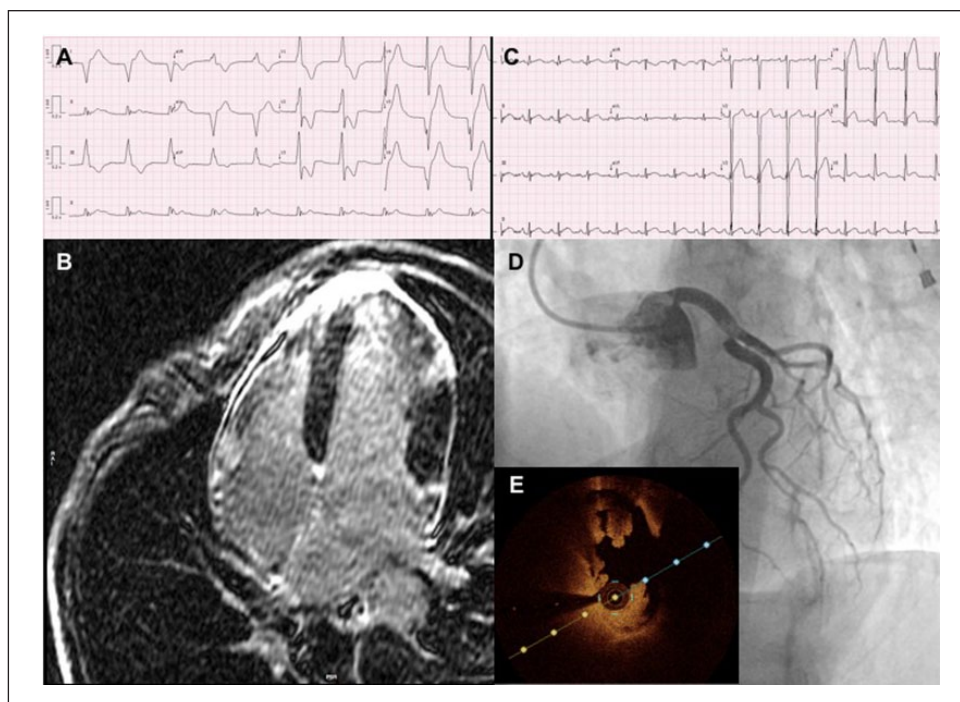
P194

STEMI as first manifestation of anomalous origin of left main coronary artery

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Introduction: Anomalous origin of left main coronary artery (LMCA) originating from the right coronary artery (RCA) is a congenital anomaly that has been associated with ischemia and sudden death during or following exercise in young patients. However, reports of presentation as STEMI in a previously asymptomatic older patient with no stenotic lesions is lacking in the literature. Therefore, evidence regarding anti-platelet treatment in such patients is non-existent.

Case description: We present the case of a previously asymptomatic 60-year-old male patient, smoker and with non-treated hypertension, who presented to our emergency department with acute onset chest pain with 1 hour of evolution. ECG showed normal sinus rhythm with ST-segment elevation on leads V5-6, DI and aVL, hyperacute T waves on leads V3-6 and reciprocal ST-segment depression with negative T waves on leads III and aVF. Coronary angiography showed no stenotic lesions or thrombus, but revealed a long LMCA originating in the RCA ostium. On transthoracic echocardiogram,he had preserved left ventricle ejection fraction, with hypokinesis of the apex, anterior and lateral wall. Patient then underwent coronary angio-CT scan which showed the LMCA trajectory between the aorta and the pulmonary trunk. Patient stayed asymptomatic during the remainder of his hospital stay, with no complications and was later discharged medicated with dual anti-platelet therapy. He was proposed to coronary artery bypass surgery.

Discussion: In this case, we interpreted the STEMI as a result of the compression of the LMCA between the aortic root and pulmonary trunk. However, since the patient was physically active and previously asymptomatic, we hypothesized that the formation of a thrombus that was no longer present on coronary angiography might have contributed to the development of an acute coronary syndrome, and decided to treat the patient with dual anti-platelet therapy. However, surgery will be necessary to correct the anatomical anomaly, and prevent future events.

P195

Successful short term treatment with rivaroxaban in addition to dual antiplatelet therapy in a patient with recurrent STEMI and left ventricular thrombus

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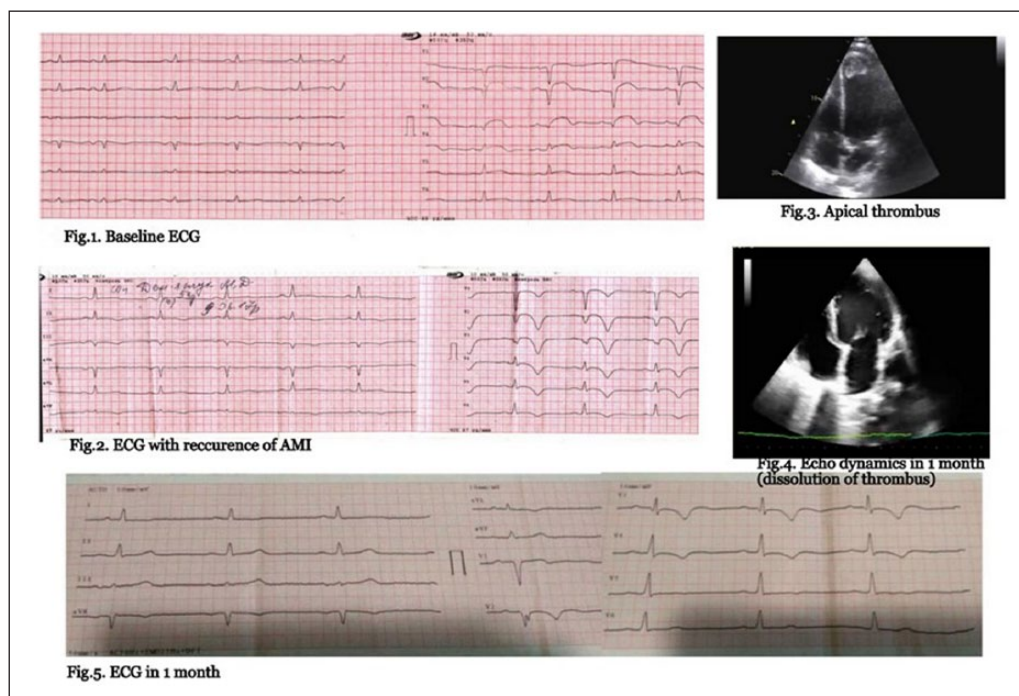[1]Ternopil State Medical University, Ternopil, Ukraine

Introduction: Left ventricular thrombus is usually seen in clinical situations with reduced left ventricular (LV) function including dilated cardiomyopathy and LV aneurysms or after myocardial infarction (MI). Anticoagulant therapy with oral vitamin K antagonist, warfarin is considered to be standard management according to ESC guidelines. The data about the role of new oral anticoagulants is deficient.

Case report: A 53 years old male with no prior medical history presented with an anterior ST segment elevation myocardial infarction (MI) on third day after initiative chest pain. A 12-lead ECG showed sinus rhythm, an acute anterior ST elevation MI with QS in V1-V3, ST elevation up to 5 mm in V1-V4 (Fig.1). On 9 day of stay at intensive care unit recurrence of new chest pain with negative T wave in II, III, AVF, V5-V6 (Fig.2), and re-raised Troponin -I were observed. The patient refused decidedly from any coronary intervention. Transthoracic echocardiography revealed apical dyskinesis with thrombus 1,4 *1,8 cm, antero-septal akinesia, hypokinesia of inferior segments (Fig.3). Ejection fraction – 40 %. The calculated HAS-BLED score was 0. The patient received dual antiplatelet therapy (aspirin 100 mg, clopidogrel 75 mg), enoxaparin

for 7 days, after which - rivaroxaban 15 mg/day, also metaprolol 25 mg, ramipril 2,5 mg, atorvastatin 20 mg, pantoprazol 20 mg, periodically isosorbide dinitrate 10 mg. In 6 weeks transthoracic echocardiography revealed complete dissolution of the apical thrombi, however apical dyskinesia and anteroseptal hypokinesis were preserved, but kinesis of inferior segments were renewed. EF 46% (Fig.4). Positive ECG dynamics was revealed (Fig.5). The patient informed about asymptomatic microhematuria (he had urolithiasis (left side concrement 9 mm and right side cyst 18 mm). In order to prevent major bleeding event he continued dual antiplatelet therapy without rivaroxaban.

Discussion: Anticoagulation with triple antithrombotic therapy increases bleeding risk substantially. As a result, time of its initiation and duration should be adjusted according to the atherothrombotic, cardioembolic and bleeding risk of the patients. Most of the studies (PIONEER AF-PCI study, RT-AF trial) deal with the patients with atrial fibrillation and acute coronary syndrome. The results of ATLAS ACS 2-TIMI 51 trial and GEMINI-ACS-1 are quite encouraging, but in these studies low doses of rivaroxaban were used. Our patient had triple therapy for 6 weeks. Since positive dynamics on Echo (complete dissolution of thrombus) was found and microhematuria was appeared, therapy with rivaroxaban was stopped.

Conclusion: Short-term rivaroxaban treatment was effective as a component of "triple therapy" with aspirin and clopidogrel for LV thrombus dissolution. Randomized controlled trials are required to confirm these promising results and to ascertain the optimal dosage and duration of therapy.

Fig.1. Baseline ECG

Fig.2. ECG with reccurence of AMI

Fig.5. ECG in 1 month

Fig.3. Apical thrombus

Fig.4. Echo dynamics in 1 month (dissolution of thrombus)

ECG and Echo dynamics

P196

Atherosclerotic plaque composition and significance of non-culprit intermediate coronary lesions. IVUS and QCA study in acute coronary syndrome

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Background: Detection of potentially vulnerable plaques inducing ACS improves prevention of cardiovascular events. We aimed at using IVUS for morphological assessment, anatomical significance of atherosclerotic plaques of non-culprit intermediate coronary lesions and correlation with QCA in ACS.

Methods: Intravascular ultrasound was performed on sixty one non-culprit intermediate coronary lesions in twenty eight patients with the diagnosis of Non ST elevation acute coronary syndromes. Percent area stenosis > 70% was the cut-off value for intervention.

Results: Mean age was 53.2 ± 9.1 years. Males=20 (71.4%). Culprit vessels represent 42% of affected vessels. Higher lipid content in lesions of culprit vessels (P<0.001). Six lesions were revascularized based on IVUS measures (QCA accuracy = 90.1%, sensitivity=77.8% & Negative predictive value=85%). MLA & plaque burden are the main predictors for lesion anatomical significance with (P <0.001, OR=0.25, 95% CI = 0.12-0.55) and (P=0.011 , OR=2.0 , 95% CI = 1.2-3.3) respectively. A positive strong correlation between QCA minimal lumen diameter and MLA (P<0.001, r=0.695). An inverse moderate correlation between QCA minimal lumen diameter and percent area stenosis (P<0.001, r=-0.449). A significant concordance between QCA & IVUS regarding percent stenosis (P-value=0.01, ICC=0.451, 95%CI=0.084-0.67) while disconcordance in measurement of the lesion length (P=0.2,ICC=0.22,95%CI=-0.3 -0.53).

Conclusions: IVUS might be valuable for assessment of non-culprit lesions in ACS. High vulnerability for plaque rupture in intermediate lesions of culprit vessels. MLA and plaque burden are the main predictors for lesion anatomical significance. QCA is a reliable tool for detecting severity of coronary artery disease.

P197

To pace or not? A challenge in vasospastic angina associated with paroxysmal atrioventricular block

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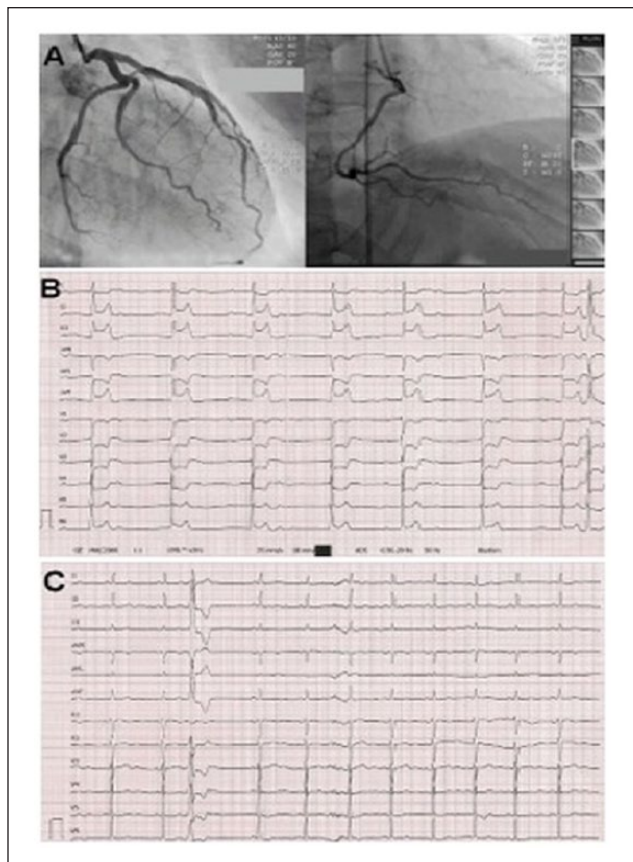[1]Colentina University Hospital, Bucharest, Romania

A 50-year-old hypertensive woman, active smoker presented to a community hospital within an hour after the onset of an intense retrosternal pain that had awaken her at night, followed immediately by a syncope. On arrival to the emergency department she was asymptomatic with no abnormalities on the clinical examination. The electrocardiogram was normal. The troponin assay was negative. Shortly after presentation she experienced another episode of chest pain followed again by syncope. The ECG monitoring during the event revealed ST-segment elevation in the inferior leads and bradycardia. The working diagnosis was inferior STEMI and the patient was then transferred to a tertiary hospital for primary percutaneous coronary intervention. The coronary angiogram revealed small atheromatous plaques on the left main and left anterior descending arteries, minimal atheromatous infiltration of the right coronary artery, and a normal circumflex artery, all coronary vessels with TIMI 3 flow (panel A). She was then diagnosed with inferior STEMI with spontaneous reperfusion and received a beta-blocker, dual antiplatelet therapy, low molecular weight heparin, angiotensin-converting-enzyme inhibitor and high dose statin. The patient was then referred to our hospital for further follow-up.

After 24 hours hospitalization in the coronary unit she complained of the same chest pain during the night associated with near syncope. The ECG performed during this episode revealed significant bradycardia (35 bpm) with complete AV block and ST segment elevation in the inferior leads (panel B). The symptoms and ECG changes disappeared rapidly after short-acting nitrate administered sublingually (panel C).

In the presence of transient ST-segment elevation during angina and the absence of significant coronary atherosclerosis we considered the diagnosis of vasospastic angina. The pharmacological therapy was reconsidered consisting in long-acting nitrate, non-dihydropyridine calcium channel blocker, angiotensin-converting-enzyme inhibitor, aspirin, and statin. After two days free of symptoms, a permanent DDD pacemaker was implanted.

Only 2-3% of people with retrosternal pain who perform coronary angiography have vasospastic angina. In these patients the mortality is related to multiple factors including severe arrhythmias and conduction disturbances. There are no specific guideline indications for the indication for a permanent PMK in this setting. In the reported cases found in literature this decision was based on clinical judgement. In this patient only partial adherent to therapy in whom the cause cannot be certainly eliminated, there is a high risk of AV block recurrence.

In patients with vasospastic angina associating life-threatening conduction block establishing the correct diagnosis and optimal treatment is challenging. In patients with syncope due to severe conduction disturbances the implantation of a permanent pacemaker seems to be a reasonable approach.

P198

A rescued case with refractory severe coronary vasospasm induced by hyperthyroidism required coronary artery bypass grafting surgery

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Introduction: Hyperthyroidism is known to be one of the causes of coronary vasospasm. The combination drug therapy with vasodilators and anti-thyroid medication are usually effective to improve coronary vasospasm for such patients. We present here an interesting case of hyperthyroidism accompanied with refractory severe coronary vasospasm of both coronary artery ostia required coronary artery bypass grafting(CABG) surgery.

Case Report: A 46-year-old female came our hospital because of 4-week history of palpitation and dyspnea. She had no past medical history. She also had no family history of premature coronary artery disease(CAD). She had no habit of both smoking and drinking. She was 156cm tall and weighted of 62kg. Her consciousness was clear. Her vitals were as follows: blood pressure,106/72 mmHg; pulse rate 115 beats/min; respiratory rate, 18/min; and body temperature, 38.1°C. Physical examination of the neck by the cardiologist did not reveal a palpable neck mass or exophthalmos. Electrocardiogram revealed sinus rhythm with HR 118/min and ST depressions in leadsI, aVL, V3-6. Chest X-ray showed moderate cardiomegaly and pulmonary congestion. Cardiac markers such as creatinine phosphokinase, CK-MB were with in normal limits. Troponin-I was elevated 8834.5 pg/mL. BNP was also elevated 526 pg/mL.Thyroid function tests revealed that her free T4 was 2.47 ng/mL and TSH was below 0.01mU/L. On echocardiogram, left ventricular ejection fraction was about 50% with severe hypokinesis of apical region, and grade 3 mitral regurgitation was also seen. We began the treatment for heart failure using diuretics. On the third hospital day, she complained of severe back pain. Emergent contrast CT revealed no aortic dissection, so we performed coronary angiography(CAG) to rule out CAD. CAG showed severe stenosis at the ostium left main trunk(LMT), and moderate stenosis at the ostium of right coronary artery(RCA). Under supporting intra-aortic balloon pumping(IABP), we tried to insert the guidewire into the ostium of LMT, but we failed it. The blood pressure fell below 90mmHg. We decided to perform the emergent CABG to save her life. Although CABG itself was done successfully, refractory ventricular fibrillation(Vf) occurred after surgery. She was treated by anti-arrhythmic agents and mechanical circulatory support(PCPS). To confirm the bypass graft flow, we performed CAG again. We confirmed no graft failure and no stenoses at ostia of both LMT and RCA. After CABG we knew that the titer of TSH receptor antibody was very high(47.9IU/L), we diagnosed her as the Graves' disease and coronary spasm induced by hyperthyroisim. After we started anti-thyroid medication, her condition was gradually improved. Finally, we could rescue the patient.

Conclusion: We encountered a patient with severe coronary vasospasm by hyperthyroidism required CABG. Early aggressive treatment with vasodilators and anti-thyroid medication could avoid CABG and lethal complications in such patients.

P199

Severe case of kounis syndrome, probably induced by levofloxacin, with non-immediate allergic reaction due to concomitant corticosteroid therapy

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A 58-year-old female with a clinical background of arterial hypertension and cutaneous nickel allergy, was admitted to the coronary care unit (CCU) with a diagnosis of non-ST-elevation myocardial infarction (NSTEMI) probably triggered by a respiratory infection, for which she had started corticosteroid and levofloxacin antibiotic therapy 3 days before. Bedside echocardiography showed moderate left ventricular dysfunction due to posterolateral akinesia. Therefore, she underwent coronary angiography, which revealed an acute mid-circumflex (CX) artery occlusion, and severe stenosis in distal left anterior descending and proximal-mid right coronary arteries (RCA). Consequently percutaneous coronary intervention with bare metal stent deployment in the CX was performed under standard anticoagulant and antiplatelet therapy.

48 hours after the catheterization, she presented rapid clinical deterioration with severe hypotension and widespread ST elevation, followed by ventricular fibrillation cardiac arrest (CA). After 20 minutes of cardiopulmonary resuscitation (CPR), she presented return of spontaneous circulation. Emergent coronary angiogram demonstrated severe multivessel coronary artery spasm, with TIMI 0 flow in RCA, whose patency was readily restored after intracoronary nitroglycerin infusion.

Some hours later, a second episode of diffuse ST elevation followed by CA happened, with successful resuscitation after 35 minutes of CPR.

A diagnosis of Kounis Syndrome was made because of the suspicion of coronary events related to an anaphylactic reaction. Treatment for anaphylaxis and vasospasm was initiated with clinical and electrocardiographic improvement. Nevertheless, a third episode of diffuse ST elevation occurred some days later, in which high doses of methylprednisolone, diphenhydramine and nitroglycerin were administered, with progressive hemodynamic improvement and electrocardiographic normalization.

After reviewing her medical history, we found that before being admitted in the CCU, she had presented pruritic rash that improved after antihistamine and corticoid treatment. Therefore, an allergy to levofloxacin was suspected, with a not immediate-type allergic reaction probably due to the simultaneous corticosteroid treatment. Once the levofloxacin treatment was stopped, she remained hemodynamically stable with no new episodes of vasospasm. She will undergo a complete allergy workup once the corticoid treatment is over.

To the best of our knowledge, this is the first report describing a severe case of Kounis Syndrome, probably due to levofloxacin-induced anaphylaxis, in which coexist in the same patient two of the three types of Kounis Syndrome: 1 episode of the type II variant with an acute myocardial infarction and 3 episodes of the type I variant with diffuse coronary artery spasm, 2 of them followed by CA and in which it was not easy to identify the anaphylaxis cause because of the concomitant use of corticosteroid treatment.

Left coronary (A,B) and rigth coronary (C,D) before and after intracoronary nitroglycerin infusion
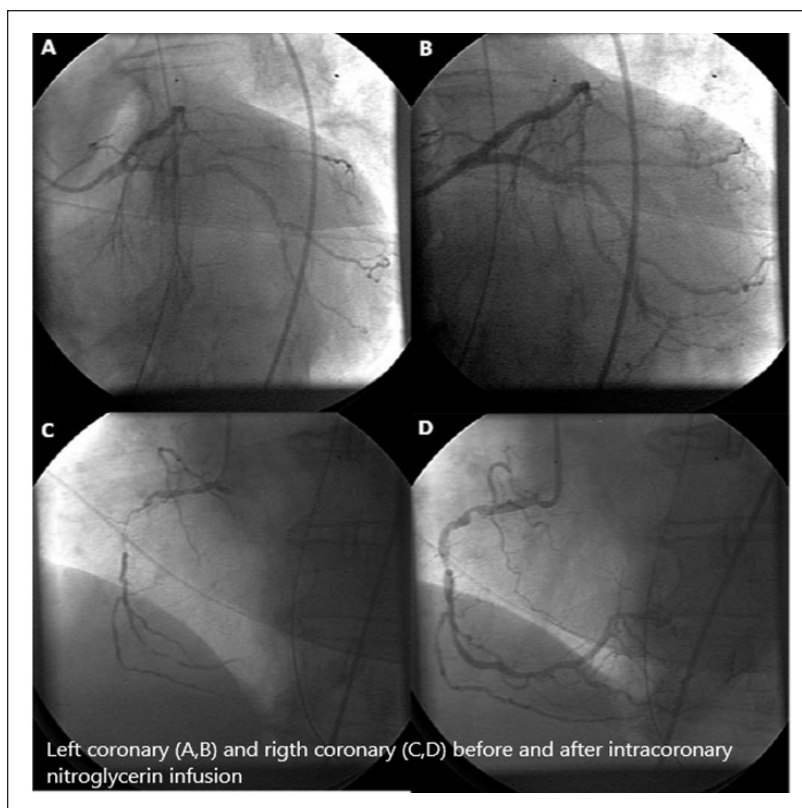
Second coronarography

P200

Spontaneous coronary artery dissection: an increasingly recognized cause of acute coronary syndrome

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A 55-year-old woman with history of Graves' disease was admitted in our Emergency Department with sudden onset of dyspnea and oppressive chest pain. At admission, she was hemodynamically stable without any alteration at clinical examination. A 12-lead electrocardiogram (ECG) showed a sinus bradycardia with T waves inversion in DIII and aVF leads. Serial laboratory tests revealed increasing myocardial necrosis biomarkers. Transthoracic echocardiogram (TTE) demonstrated no significant findings.

On suspicion of non-ST segment elevation myocardial infarction (NSTEMI), dual antiplatelet therapy was started and the patient was submitted to a coronary angiography, revealing low flow in right coronary artery and left anterior descending artery and a circumflex artery with intermediate stenosis (60%) of the first obtuse marginal (OM1) branch which divided itself in two small dimensions branches with diffuse disease. No percutaneous intervention was performed.

On the sixth day of hospital staying, the patient developed recurrence of chest pain. A 12-lead ECG showed a sinus rhythm with a 1 mm ST depression in inferior leads. Reevaluation TTE revealed newly posterior wall hypokinesia and akynesia of medium and basal segments of lateral wall. Cardiac troponin T level raised to twice. For this reason, the patient was submitted to new coronary angiography. At the beginning of the procedure, there was difficulty in catheter progress via right radial artery with a contrast retention imaging suggesting aortic cross dissection. A computed tomographic (CT) angiography was performed showing dissection limited to right subclavian artery. The coronary angiography was then completed, via left femoral artery, presenting a spontaneous coronary artery dissection (SCAD) of OM1 branch. Being a tortuous vessel with narrow caliber and TIMI 3 flow, no angioplasty was done. Two days after, control CT angiography demonstrated extension of right subclavian artery dissection with a new dissection imaging in superior mesenteric artery.

NSTEMI was treated with optimal medical therapy, making the patient asymptomatic. Vascular Surgery considered there wasn't any indication to dissection arteries intervention since no secondary ischemia was present. The patient was discharged with a follow-up in Cardiology and Vascular Surgery appointment, as well as, Internal Medicine appointment with the purpose of studying an eventual underlying systemic vascular fragility disease.

This clinical case illustrates a spontaneous coronary artery dissection (SCAD), highlighting the typical epidemiology (>90% of cases affecting women), clinical presentation (chest discomfort is the most common presenting symptom), predisposing (there is often an associated underlying predisposing arteriopathy) and diagnosis (coronary angiography is the first-line diagnostic imaging method) of this condition, which is gaining recognition as an important cause of myocardial infarction, especially in young women.
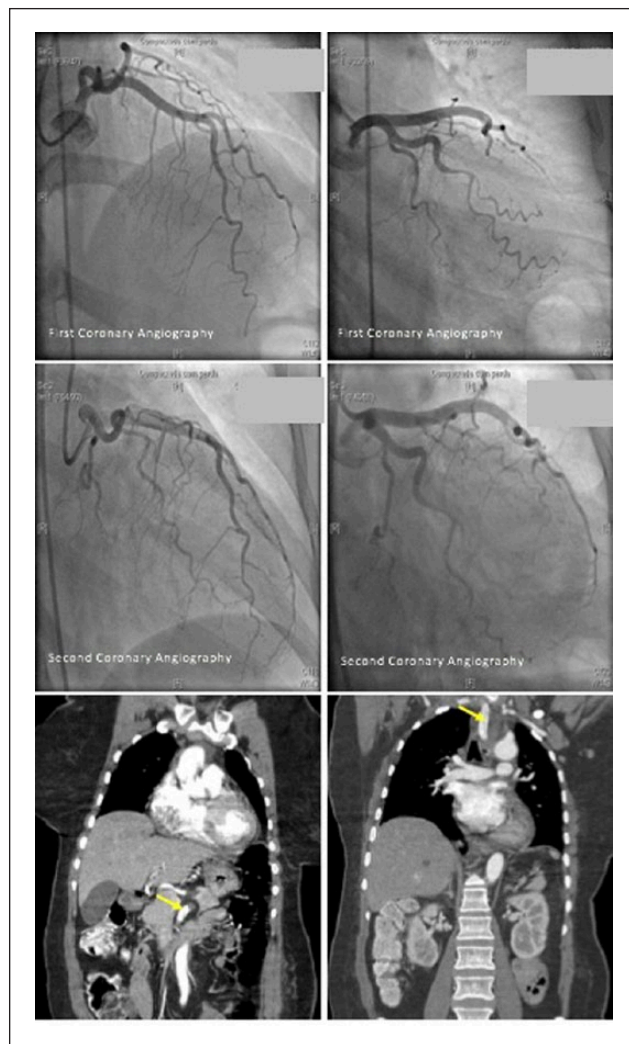
Spontaneous coronary artery dissection

P201

Acute myocardial infarction induced by chemotherapy for testicular embryonic carcinoma

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Background and aims: Testicular cancer is one of the most frequent solid tumors in young men, aged 15-35. Here we present the case of a 33-years-old smoker male patient, who suffered acute inferolateral myocardial infarction after the second cycle of combined bleomycin, etoposide, cisplatin (BEP) chemotherapy to treat testicular embryonic carcinoma.

Case report: After the first medical contact due to testicular swelling, sonography proved solid testicular tumor. The postoperative histochemistry showed non-seminomatous embryonic carcinoma. However, analyses excluded vascular invasion and extra-testicular propagation, the postoperative tumor markers were increased (alpha-fetoprotein and human chorionic gonadotropin). Thoraco-abdominal and pelvic CT scan diagnosed retroperitoneal metastases. Thus, the oncology team decided to administer combined chemotherapy (BEP). Right after the second cycle of BEP the patient developed chest pain and ECG showed ST-segment elevation in inferior and lateral leads. The coronarography proved bridging on the LAD and thrombotic occlusion of the CX artery. Primary PCI was performed via thrombus aspiration and bare metal stent implantation. In the postoperative period, the patient was hemodynamically stable; arrhythmia or cardiac decompensation did not occur. Echocardiography showed preserved left ventricular ejection fraction (55%), speckle tracking showed impaired wall motion on the mid- inferior wall. The laboratory tests showed elevated cardiac necroenzymes, elevated D-dimer and hypercholesterolemia. Platelet aggregation test was performed (Light Transmission Aggregometry; CARAT Diagnostics) to detect platelet function and effects of anti-aggregation therapy. These analyses showed ineffective dual antiplatelet therapy (clopidogrel and acetylsalicylate), thus clopidogrel therapy was changed to prasugrel. The patient was discharged in stable cardiac condition for further chemotherapy.

Conclusion: Combined chemotherapy (BEP) to treat testicular cancer is known to have vasculotoxic and pro-thrombotic side-effects. Here we presented the case of a young patient who suffered acute inferolateral myocardial infarction during BEP therapy. All patients, treated with BEP, should receive personalized risk stratification for cardiovascular diseases; and all modifiable risk factors must be treated with chemotherapy to decrease severe acute drug-induced vascular injury.

P202

Unusual cause of myocardial infarction in a young female

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A 32 year old female patient presented after 1 hour of severe chest pain associated with sweating after swimming in cold water. She has no history of diabetes mellitus, hypertension, smoking or family history of coronary artery disease.

Examination revealed: Heart rate: 110/min equal volume on both sides, Blood pressure: 100/60 mmHg, S4 over the apex and no pulmonary congestion. ECG: revealed ST-segment elevation in anterior leads. Serum troponin I was elevated. Bedside echo revealed normal ventricular function and contractility with apical hypokinesis and no evidence of aortic dissection or aneurysm. Coronary angiography (CA) was performed revealed dissection extending from the proximal third of left anterior descending coronary artery (LAD) till its end with TIMI III flow. The descion was either to do percutaneous coronary intervention for LAD, CABG or conservative treatment. But as pain decreased after sublingual and intracoronary nitroglycerin so decision was conservative treatment with close follow up and repeat CA after 6 months. Patient was symptom free for 6 months and CA after 6 months showed healing of dissection but new significant lesion at mid LAD. SPECT study showed no ischemia and patient was discharged.
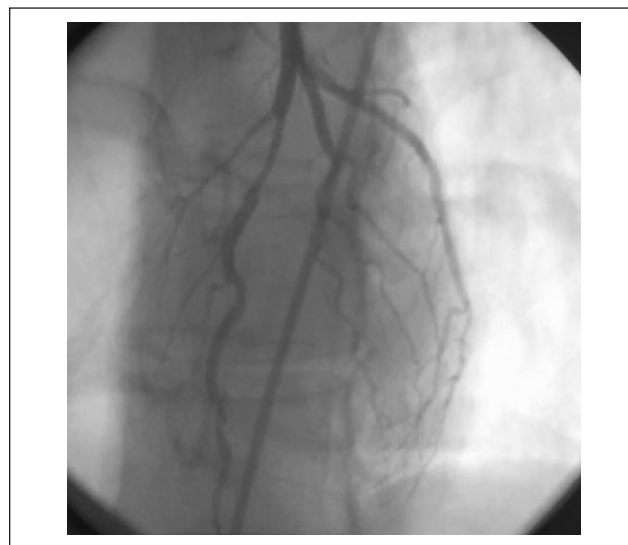
LAO cranial view showing LAD dissection

P203

Prehospital identification of a high-risk NSTEMI patient using prehospital point-of-care troponin

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The ESC guidelines for management of patients with Non-ST-elevation acute coronary syndrome (NSTE-ACS) advice

early risk estimation of all patients and an accelerated invasive strategy in those with the highest risk. Further, patients with a highly abnormal cardiac troponin may be subjected to an acute invasive strategy. However, most patients with NSTE-ACS are admitted to non-PCI-capable hospitals and subsequent immediate transfer is needed, delaying PCI treatment. We present a case with a high-risk NSTE-ACS, identified in the prehospital phase using prehospital point-of-care cardiac troponin T (POC-cTnT), and rerouted directly to the invasive heart centre.

The patient is 61 years old, living a highly active life. He has a history of ischemic heart disease with acute myocardial infarction in 2002 and 2005 and PCI treatment of the left anterior descending coronary artery. A cardiac pacemaker was implanted in 2007 due to 3. degree AV block. The left ventricular ejection fraction (LVEF) is normal. There is no other significant co-morbidity.

The patient presents with intermittent, self-limiting chest pain for the past 3 days. On the day of admission at 02.00 he experiences significant, prolonged chest pain radiating to the left arm. An alarm call is made at 06.53 and the ambulance arrives at 07.10. A prehospital ECG is recorded, transmitted to the invasive centre for interpretation, and found without new ischemic changes. A prehospital POC-cTnT test reveals a highly elevated level of 210 ng/L. The driving distance to the invasive heart centre is 116km and 28km to the local non-PCI-capable hospital. The patient was triaged directly to the invasive heart centre using helicopter air lifting, arriving at 08.25. A coronary angiography is performed at 10.00 showing a thrombotic occlusion of the left circumflex artery. PCI of the lesion is performed immediately. The highest measured in-hospital troponin T is 1.611 ng/L. An acute echocardiography made upon admission shows normal LVEF. The patient was returned to his local hospital at 16.00. Discharge was scheduled for the next day but was postponed one day after a brief period with idioventricular rhythm. The duration of total admission was 2 days and four hours.

Question: Safe rule-in and Rule-out of NSTE-ACS in the prehospital phase using the ECG alone is very difficult. How do we ensure that patients with high-risk NSTE-ACS is triaged directly to the heart centre in a decentralized referral hospital NSTE-ACS structure?

Conclusion: The presented case illustrates how prehospital POC-cTnT allows reliable identification of a patient with a high-risk NSTE-ACS. This enabled rerouting using air lifting directly to the invasive heart centre and timely invasive treatment as advised by the guidelines, despite a distance of 116 km. Prehospital POC-cTnT may ensure faster and timely treatment of high-risk patients and reduce the hospital length of stay.

Occlusion of the left circumflex artery

P204

A case of acute coronary syndrome caused by rotten tuna

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On Behalf of: University of Pavia, Department of cardiology

Kounis syndrome is defined as an acute coronary syndrome (ACS) triggered by an anaphylactic or anaphylactoid insult. We describe the case of a patient affected by a type II Kounis syndrome due to "scombroid syndrome" presenting with acute myocardial infarction caused by distal embolization of a thrombus.

A 53 years-old man was admitted to our emergency department for tongue swelling, headache, diarrhoea and two syncopal episodes after the consumption of "fresh!" tuna fish and clams. His personal history was unremarkable. He was apyretic, hypotensive with normal cardiopulmonary findings at physical examination. The ECG showed sinus rhythm at normal heart rate, 2 mm ST elevation in the inferior leads and ST depression in aVL and V2-V3. Antihistaminic drugs were administered intravenously in association with loading dose of aspirin orally and volume expansion. After few minutes symptoms and vital signs rapidly improved and the ST elevation returned to baseline. He was admitted to our cardiology department. Laboratory tests showed leucocytosis with neutrophilia, high levels of serum creatinine (2.25 mg/dl) and troponin increase (peak value 9 ng/ml). Transthoracic echocardiography showed preserved systolic function and no detectable wall motion abnormalities. In order to exclude myocarditis, a CMR was performed revealing a focal transmural ischemic lesion of mid-basal posterior wall of the left ventricle attributable, in first instance, to a distal embolization. Further investigation with coronary angiography showed an angiographic "minus" during contrast infusion in

the middle portion of the right coronary artery and a nonsignificant mid-distal lesion of Left Anterior Descending artery. As there were no clear images suggestive of distal embolization, OCT imaging was performed, showing the presence of a non-occlusive intraluminal thrombus in correspondence of the "minus" image in mid right coronary artery. As the thrombus was not-occlusive we decided to manage the case medically. The patient's clinical course was favourable with no recurrence of symptoms, rapid normalization of serum creatinine and gradual reduction of cardiac biomarkers. ECG evolution showed infero-lateral biphasic T waves. He was discharged six days after admission on dual antiplatelet therapy, statin and ace-inhibitor.

This case report underlines the importance of non-routinely used cardiovascular imaging. A timely CMR can be helpful to discriminate ACS due to distal embolization, a condition uneasily revealed by other imaging techniques (echocardiography and even coronary angiography, which showed no significant stenosis). The evidence of a small necrotic area induced to perform an OCT that discovered signs of a residual thrombus in RCA. In this clinical case, the synergy between CMR and OCT played a crucial role in the complete understanding of the physiopathology of the disease.

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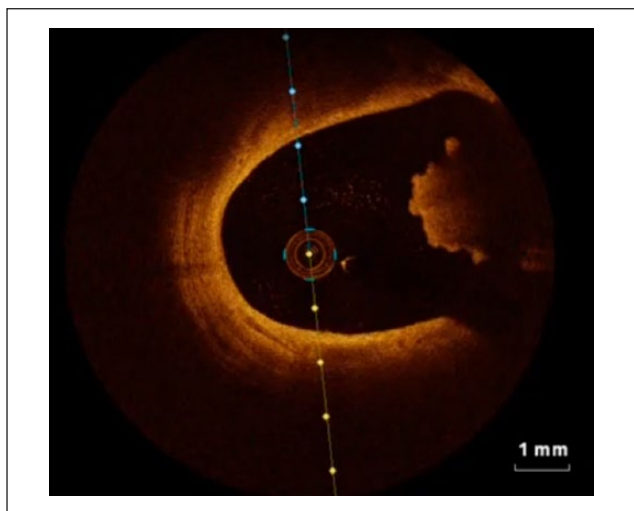
P205

Embolic STEMI - searching for the cause

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A 42-year-old female patient was admitted in our ED after a first episode of acute onset precordial chest pain. The EKG showed ST segment elevation in V2-V6, I and aVL leads. The only known risk factor was smoking. Her only medication was oral contraceptive pill. The coronography showed a complete, embolic occlusion of the proximal region of the LAD, treated with intracoronary abciximab and thrombus aspiration system. Since there were no visible atherosclerotic plaques, no stent was placed. At admission Troponin I was 25.6ng/ml and peaked at 99.6ng/ml. The TTE showed an EF of 40% due to hypokinesia of the anterior wall and apical segments of all the remaining left ventricle walls; it was also noted that the interatrial septum (IAS) had a decreased thickness with a more than usual bulging movement to the left atrium. To investigate the possible etiology of the thrombotic event we perfomerd: a) coronary CT angiography – normal coronary arteries, calcium score 0 (Agatston units); b) thrombophilia panel included lupus anticoagulant test, anticardiolipin antibody, beta-2 glycoprotein antibodies and complement activity test, all negative (activated protein C resistance assay was moderately positive in a first sample, and negative in a second evaluation); c) a TTE showing an EF of 46% due to akinesia of the mid and apical segments of the anterior IV septum, apical half of the anterior wall and apical third of the lateral and inferior walls, without any IV thrombus; there was also an aneurysm of the IAS with bilateral broad movements (18mm), especially with Valsalva maneuver. We performed contrast (bubble study) injections through a left arm vein, that was inconclusive. We then performed the injections through the femoral vein, showing an exuberant transposition of contrast to the left heart. In order to differentiate between PFO or fenestrated interatrial communication (IAC) a TEE was performed: in one of the IAS aneurysm borders we could show the passage of flow, suggestive of fenestrated IAC; however, with Valsalva maneuver we could also appreciate an impressive separation between septum-primum and secundum, with significant shunt to the left atrium, confirming the diagnosis of PFO; d) venous doppler that was negative. She is referenced to percutaneous closure of PFO with Amplatzer septal occluder. At 15 months of FUP there were no new venous or arterial embolic events.

Discussion: Paradoxical coronary artery embolism is a rare but under-diagnosed cause of AMI. PFO is an independent risk factor for cerebrovascular events, although the embolic events can also affect the coronary arteries. Besides that, the diagnosis of PFO with contrast echocardiography using a vein of one of the arms can lead to a false negative study, and in the presence of a high clinical suspicion the femoral vein can be used to make the correct diagnosis.

Conclusion: This case highlights the importance of searching for the presence of a PFO in this groups of patients.

P206

Life-saving fibrinolysis in the era of primary PCI - a case report

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We report the case of a 46-year old caucasian male, with history of smoking habits until 2 months before admission.

He was taken to the emergency department due to chest pain that had begun about 2 hours before. Immediately after arriving he suffered cardiac arrest in ventricular fibrillation. Advanced life support was started, and after 9 cycles the patient progressed to asystole.

Considering that the most likely diagnosis was acute coronary syndrome, and since the patient was not stable enough to be submitted to coronary angiography, it was decided to performed fibrinolysis with alteplase. About 10 minutes after fibrinolysis spontaneous circulation was reestablished.

At this time, the ECG showed sinus tachycardia, right bundle branck block and right axis deviation, and the transthoracic echocardiogram (TTE) revealed left ventricle with akinesia of the apex, all the apical segments, and the anterior septum, and severe hypokinesia of the mid segments of the anterior wall, the antero-lateral wall, and the inferior septum; the ejection fraction (EF) was 33%.

He was submitted to emergent coronary angiography that showed a thrombus in the proximal left anterior descending artery; this artery also had a 70% stenosis in the mid segment, and a 50% lesion in the distal segment (figure A); there were no further significant lesions. Percutaneous coronary intervention (PCI) of the proximal LAD with implantation of a drug-eluting stent was perfomed, with a good result (figure B).

The patient was admitted to intensive care unit entubated and under vasopressor support. He had a favorable evolution, and in the first 24 hours it was possible to extubate him and stop vasopressor support. Maximum high-sensitivity troponin T was > 10.000 ng/l and the ECG showed anterior Q waves with ST-segment elevation on the precordial leads. Head CT showed no lesions.

In the following days, he had an episode of acute pulmonary edema, and initiated diuretic and neurohormonal therapy. TTE revealed similar segmental wall abnormalities to the previous exam; there was significant spontaneous contrast in the apex, and the EF was 39%; contrast echocardiogram excluded apical thrombus. Upon discharge the patient was in NYHA functional class II.

After 2 months of follow-up, with neurohormonal therapy uptitration, the patient was in NYHA functional class I. He is scheduled to perform cardiac MRI to assess viability in the LAD territory.

In the current era of primary PCI as the gold standard for coronary revascularization, fibrinolysis is rarely used, except in centers where PCI in not available 24/7, and there is a long transfer time to PCI centers.

This case highlights that, in some circumstances, fibrinolysis may be used as a life-saving therapy, even in primary PCI centers. In this patient fibrinolysis allowed return of spontaneous circulation and performance of primary PCI. We can speculate that if fibrinolysis had not been performed, the patient would probably not be alive.
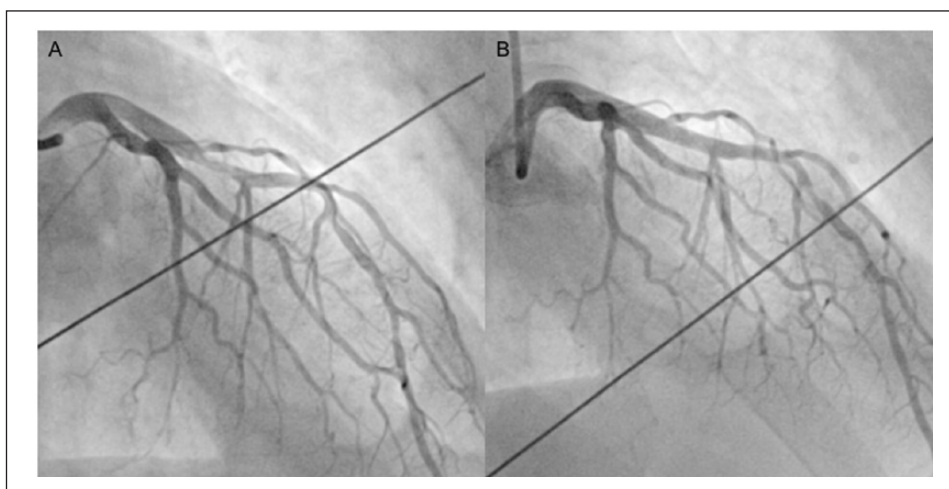
P207

Two case reports of Wellens syndrome

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Here, we report 2 cases with the typical electrocardiogram of Wellens' syndrome. The first case was an 55-year-old female presenting with intermittent, exertional chest pain and dyspnea, abnormal electrocardiogram with deeply inverted T waves in leads V1 to V4 (Fig A) during an asymptomatic period. The second case was an 85-year-old female. She was admitted to emergency with paroxysmal chest pain and dyspnea. The emergency electrocardiogram revealed asymmetrically inverted T waves in leads V1 to V3 I avL and the ST segments depressed in leads V1 to V5 (Fig B). Both of the patients were submitted to angiography with the finding of critical proximal left anterior descending artery occlusions (Fig C), which were resolved by percutaneous coronary intervention before marked myocardial infarction developed in both of the cases.

Wellens' syndrome is characterized by special T-wave change and evolution and is associated with severe stenosis of the proximal left anterior descending artery. It usually leads to extensive anterior myocardial infarction and sudden death. The diagnostic and prognostic value of the electrocardiogram for decision-making at first medical contact in the patient with wellens' syndrome provide evidences for catheterization before severe myocardial infarction developed.

The spectrum of Wellens' syndrome is very wide, therefore, in order to avoid catastrophic consequences, it is vital for physicians to recognize the electrocardiogram features of Wellens' syndrome.
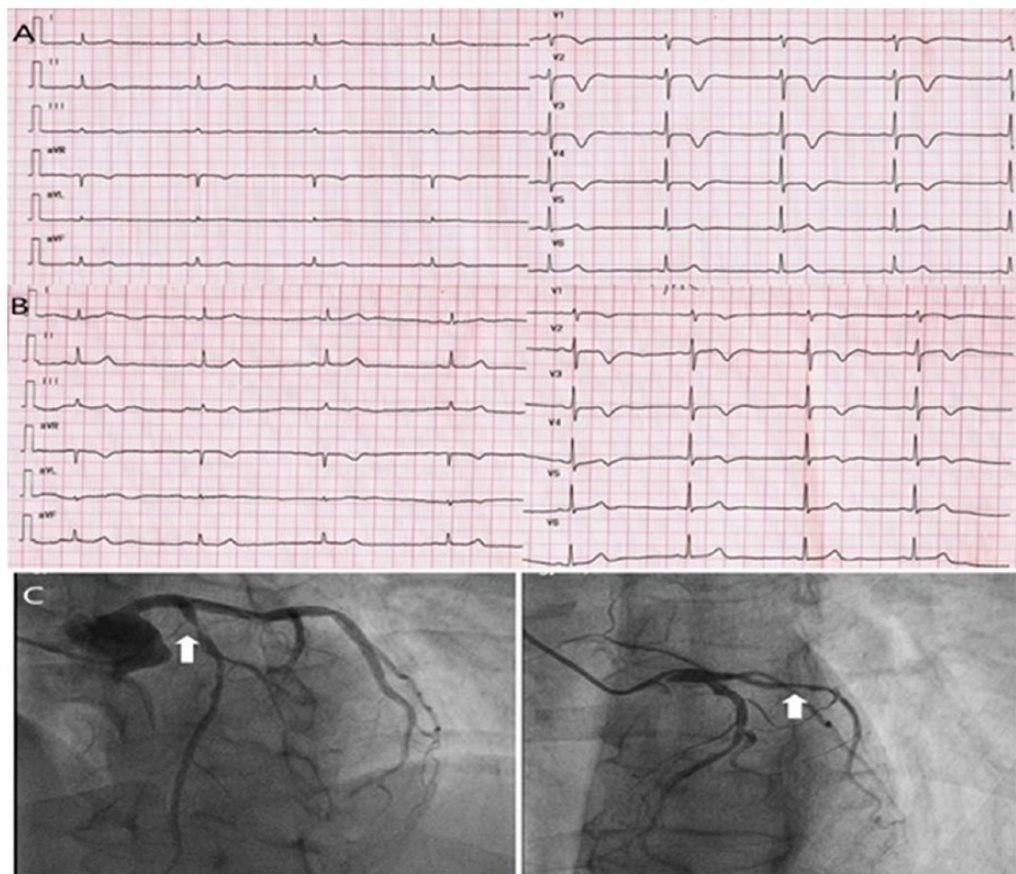
Electrocardiogram and coronary angiogra

P208

A challenging case of STEMI

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We present the case of a 59-year-old male with a history of multiple cardiovascular risk factors (previous smoker, hypertension and hyperlipidemia) and a previous acute

coronary syndrome (ACS) 17 years ago. At that time, the coronary angiogram revealed total occlusion of the left circumflex artery (LCX) and one drug-eluting stent was implanted. He was taking acetylsalicylic acid once daily and denied stopping medication.

He was admitted to the emergency department with persistent chest pain that had started two hours ago. He was hemodynamically stable, with bilateral crakles but no other relevant findings on physical examination. The electrocardiogram showed sinus rhythm, ST elevation with Q waves in DII, DIII and aVF and ST segment depression in leads V2–V5. Echocardiographic findings were akinesia of inferior wall, hypokinesia of posterior and lateral wall with moderate depression of left ventricle ejection fraction (40%). Maximal troponin of 2480 ng/L.

The diagnosis of acute supra-ST elevation myocardial infarction (STEMI) was made. He was referred for primary percutaneous coronary intervention (PCI) after loading dose of ticagrelor, acetylsalicylic acid and unfractionated heparin. The coronary angiogram revealed: chronic occlusion of right coronary artery; 70-80% stenosis of left main coronary artery (LMA) involving the ostium of left anterior descendent (LAD) and left cirfumflex (LCx) arteries; stent proliferative and diffuse restenosis in left circumflex artery at the level of the first marginal artery and a critical obstruction of the first diagonal artery.

The patient was proposed to coronary artery bypass surgery (CABG). Ticagrelor was stopped in that day.

After coronary angiogram, the patient had an episode of acute pulmonary edema and some episodes of non-sustained ventricular tachycardia. Despite the electric instability and heart failure decompensation, we managed those events with pharmacological therapy.

After 5 days, the patient was submitted to coronary artery bypass surgery with sequential internal mammary artery graft – the left internal mammary artery was anastomosed to the left anterior descending artery and to the first diagonal artery, and the right internal mammary artery was anastomosed to the first marginal artery. The procedure was uneventful and the patient was discharged less than a week after surgery, asymptomatic.

This case was specially challenging as it was a STEMI associated with multivessel disease with intrastent restenosis, LMA stenosis and a critical obstruction, which were not treatable with percutaneous intervention. According to the latest guidelines, the optimal timing for surgery is about 3-7 days, but it is not always an easy decision when a patient has this kind of multivessel coronary disease and clinical complications. The use of drug-eluting stents have only partially reduced intrastent restenosis, which still represents a pathophysiological and therapeutic challenge.
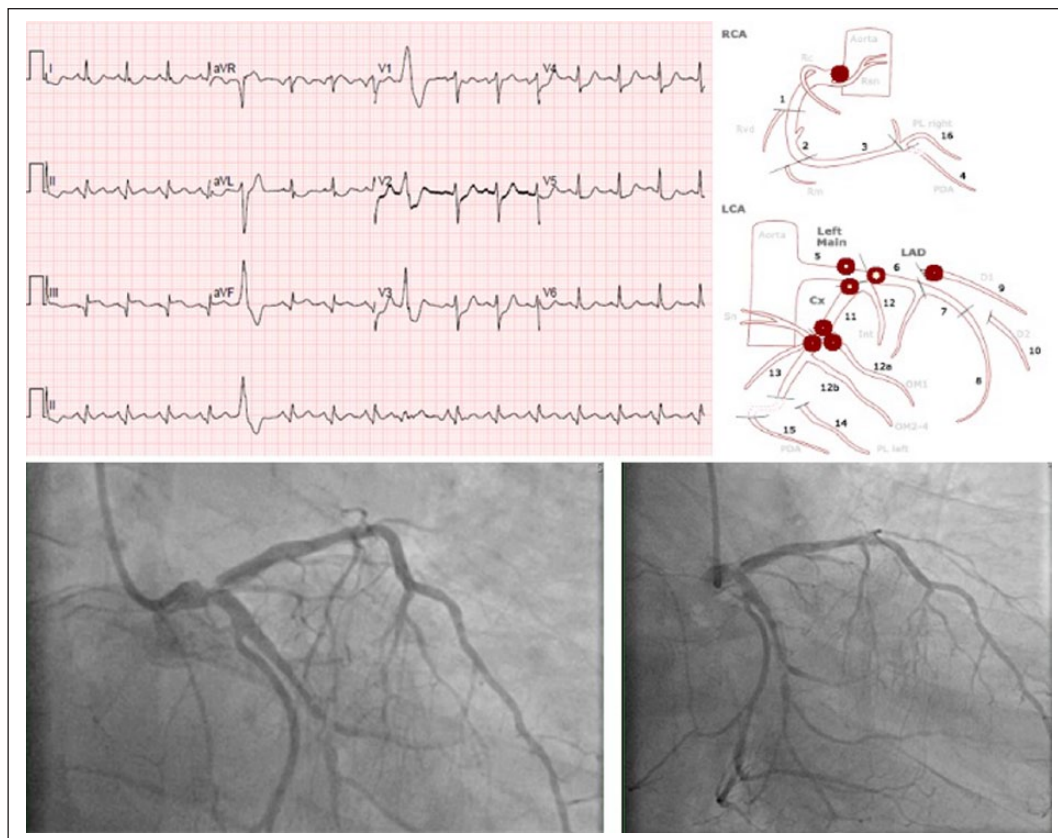
Electrocardiogram and coronary angiogram

P209

Myocardial infarction in a patient with hemophilia A

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Patient Y., a 47 years old male, was admitted to the hospital on September,12 2015 with acute chief complaints of pain behind the sternum exacerbated by minimal physical exertion and at rest. His symptoms appeared on the same morning. His past medical history is significant for hemophilia type A established in childhood. Since then the patient received replacement therapy with 4000 units of recombinant factor VIII every other day. He had a 7 years history of both stable angina and arterial hypertension managed with enalapril and bisoprolol.

Physical examination upon admission: body mass index 28 kg/m^2; blood pressure (BP) 117/76 mm Hg, pulse 69 per minute; respiratory rate 17 per minute; S1 and S2 rhythmic and no murmurs. ECG: ST segment depression in leads I, II, avL up to 1 mm, and in leads V3-V6 up to 2 mm. Troponin I 1.7 ng/ml (N less than 1 ng/ml) raising to 22.6 ng/ml in 6 hours. Echo: left ventricular ejection fraction 43%, hypokinesia in the anteroseptal-apical wall, posterior medial, anterior medial and medial lateral segments of the left ventricle.

Due to low GRACE risk score (less than 108 points), and history of hemophilia A, invasive diagnostic testing and treatment were not conducted. A day later, the patient was transferred to the cardiology ward for further management. As the patient remained asymptomatic, he was discharged from the hospital on September,24 and referred to an outpatient settings. He was counseled to take atorvastatin, bisoprolol, and lisinopril. Because of hemophilia type A, it was decided to refrain from dual antiplatelet therapy.

On November,15 at about 4 pm the patient started experiencing chest pain, shortness of breast, and a cough with no alleviating effects from nitroglycerin. Emergency medical service responded at 6 pm and found him to be hypotensive with a BP of 100/70 mm Hg. ECG recorded ST segment elevation up to 2 mm in the avR lead, and up to 3 mm ST segment depression in leads II, III, avF, V3-V6. After a morphine injection, the patient was rushed to the hospital. Upon admission at 6.46 pm, the patient was in cardiogenic shock with pale skin, shortness of breath, tachypnea of 38 per minute, confusion, rales above the lungs, tachycardia (120 per minute), diminished S1 and S2 heart sounds, and undetectable blood pressure. The patient was intubated and cardiac resuscitation initiated. After unsuccessful CPR, patient expired 40 minutes after presenting to the hospital. Autopsy revealed signs of myocardial infarction of the antero-lateral and inferior walls. Transverse section of left coronary artery trunk shows narrowing by more than 90% of the lumen due to atherosclerotic masses with signs of visible calcification.

Conclusion: The combination of myocardial infarction and hemophilia type A is quite rare. This combination of diseases is very difficult to treat and has a poor prognosis.

General Acute Coronary Syndromes

P210

Incidence of ECG signs of ischemia in patients with slow coronary flow syndrome

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Background: Only separate clinical cases provide pieces of evidence of unprovoked myocardial ischemia causing electrocardiographic (ECG) changes at rest in the patients with slow coronary flow phenomenon (SCFP).

Purpose: The goal of this study was defining the incidence of ischemic ECG changes observed during hospital admissions for refractory angina in a patient group with SCFP.

Material and methods: Of all patients that has undergone coronary arteriography in University Hospital, from june 2006 to march 2008 fifty five fulfilled the criteria for diagnosis SCFP. Other 97 with coronary stenoses<50%, NCAD and 96 patients with ACS after PCI formed control groups. An analysis of 12-channel ECG recordings (n=248, SCFP - n=55) and assessment of QT, QTc and QTd (n=96, SCFS - n=12) were made.

Results: Thirteen SCFP patients (23.6% vs 16% (n=16) NCAD patients, p=0.506) had definite ECG changes consistent with ischemia: negative T waves - deeper than 0.3 mV (n=8, 14.5%), ST depression > 1mm (n=1, 1.8%) and newly diagnosed intermittent left bundle branch block, LBB (n=4, 7.3%). There was characteristic extensive involvement: > 3 consecutive leads - 14.5% (n=8) patients. In 7.3% (n=4) patients, all leads from V1 to V6 showed deep negative T waves. The changes persisted for hours and reversed significantly in 7 (12.7%) patients during hospital admission.

The mean cTFC values of the group with the ST-T alterations differed insignificantly from the rest with SCFS (36.1±8.3 (n=13) vs 40±9.8 frames (n=39), p=0.238).

Myocardial infarction without ST elevation was diagnosed in only one patient with SCFP based on high troponin T.

A tendency toward shorter QTc was found in SCFP compared to patients after ACS (417.1 ± 30.7 vs 429.1 ± 68.9 ms, p=0.068). The heart rates at rest (69.5 ± 13.9 vs 76.9 ± 21.5 bpm, p=0.166), QTcmin (380.8 ± 13.4 vs 387.3 ± 36.8 ms, p=0.545), QTcmax (463.4 ± 37.8 vs 483.2 ± 59.3 msec, p=0.228) and QTcd (82.7 ± 29.7 msec, p=0.346) were similar in both groups.

Conclusion: The patients with SCFP demonstrate characteristic ischemic ECG changes during the course of the disease and has similar dispersion of repolarization as those with previous ACS.

P211

Stress ECG test as an indicator of prognosis in slow coronary flow syndrome

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Backgroud: The slow coronary flow phenomenon (SCFP) is a type of microvascular coronary disorder which most often has the presentation of unstable angina. The ischemia provoked by stress - its impact on clinical outcome and its association with microcirculatory coronary dysfunction in this phenomenon remain obscure.

Purpose: We aimed to define the prognostic significance of ischemia induced during exercise ECG test (EST) in patients with SCFP and to analyze its link with the disturbed coronary flow.

Material and methods: Of 152 consecutive patients with coronary stenoses<50% (NCAD) admitted to University Hospital from june 2006 to march 2008, eighty three (SCFP - n=29, 34.9%) underwent EST. Regsitration of worsening angina and/or ST depression of >2 mm in any two electrocardiographically associated precordial leads and/or >1 mm in leads from extremities were regrarded as a psoitive EST in this analysis of data. The perfusion of myocardium was assessed using the following indices of coronary flow: corrected TIMI frame count (cTFC, frames), propagation of contrast medium in coronary artery in systole (CPs, mm) and propagation velocity of contrast in systole (Vcps, mm/sec), defined during coronary angiography - in 83 (100%), 54 (65.1%) and 54 (65.1%) patients, respectively. Forty two (50.6%) patients (SCFP - 36.4%, n=20) were followed for 28.7 ± 29.2 months (maximal period – 89 months).

Results: A trend to a greater number of positive EST in the SCFP group was observed (79.3% (n=23) vs 20.7% (n=6), p=0.089). The patients with microvascular dysfunction, MCD (cTFC>27 frames) had similar incidence of inducible ischemia during EST compared to the rest with NCAD (53.6% (n=15) vs 67.3% (n=37), p=0.240). The used by patients anti-ischemic drug combinations did not modify the results of EST (p=0.722).

The SCFP group with provoked by stress ischemia had smaller coronary arterial diameters (Dvess) compared to the rest of SCFP patients (3.4 ± 0.6 mm (n=23) vs 4.4 ± 1.0 mm (n=6), p=0.011). The same was observed in MCD group with positive EST vs negative EST (Dvess - 3.5 ± 0.6 mm (n=37) vs 4.2 ± 1.0 mm (n=15), p=0.009) together with borderline significantly disturbed coronary flow (cTFC - 41 ± 11.8/frames (n=37) vs 34.8 ± 8.6/frames (n=15), p=0.072). The positive EST incidence show no relation to the frequency of hospital readmissions for refractory angina (100% (n=3) vs 56.3% (n=9), p=0.149 for SCFS patients; 78.3 (n=18) vs 61.5% (n=16), p=0.233 for all NCAD patients).

Conclusion: As a tendency, myocardial ischemia is more frequently induced during EST in SCFS patients compared to the rest with NCAD. EST proves to be unreliable prognostic test regarding NACD.

P212

Non-ST-segment elevation acute coronary syndrome in cocaine users

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Introduction: Cocaine use should be investigated in patients with acute coronary syndrome, especially in young people without other cardiovascular risk factors. The ischemic events associated with cocaine use, are due to several pathophysiological substrates such as coronary vasospasm, coronary dissection, accelerated atherosclerosis and increased myocardial oxygen consumption.

Purpose: To evaluate the influence of cocaine use in the development of acute coronary syndrome in our environment, analyzing clinical differences, management and complications in these patients.

Methods: Prospective observational study, including consecutively all patients admitted to the intensive cardiac care unit of our center from January 2012 to March 2017 with acute coronary syndrome without ST segment elevation, assessing the epidemiological differences, in the course of disease, complications and treatment, depending on whether or not they are cocaine users.

Results: We included a total of 791 patients, 15 cocaine users (group A, 1.89%) and 776 non-users (group B, 98.11%). The patients in group A were younger than those in

group B (mean age in group A of 46.67 years vs 67.35), with men being 73.3%. There were differences in cardiovascular risk factors: higher incidence of smoking (80% vs 29.1%) and enolic (46.2% vs 9.7%) in subjects in group A, higher percentage of dyslipidemia in subjects in group B (group A: 26.7%, group B: 58.3%). There were no notable differences in other epidemiological factors (diabetes, peripheral vascular disease and previous ischemic heart disease). A significant difference was observed in the GRACE score, being lower in group A (113.29 vs 154.74) as well as a lower clinical severity at admission in group A (Group A: 80% Killip I; group B: 68% Killip I, thereby requiring less vasoactive support and mechanical ventilation). There was a greater multivessel involvement in group B than in group A (triple vessel 56.8% vs 3.2%) as well as a lower percentage of deaths on admission (group A: no deaths on admission, group B: deaths on admission 2.7 %). No patient consuming cocaine develops atrial fibrillation or primary ventricular fibrillation during admission. The percutaneous intervention in the first 24 hours was superior in group B (group A: 23.1%, group B: 40%), with a greater involvement of the right coronary artery in patients in group A and in the anterior descending artery in the group B. There were no significant differences in pharmacological treatment, except for a lower use of beta-blockers in group A (73.3% vs 80.7%). Long-term outcome is better in cocaine-using patients.

Conclusions: The development of acute coronary syndrome was earlier in cocaine users, but the severity, complication rate and events were lower in cocaine users. The management was similar, avoiding the use of beta blockers in these patients and requiring less circulatory and ventilatory support.

P213

Clinical characteristics, management and treatment of patients with development of atrial fibrillation during a NSTE-ACS

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Background: The development of atrial fibrillation (AF) is a frequent complication in ACS. The clinical and prognostic implications and the treatment at discharge in this type of patients make it necessary to know the problem and to generate recommendations about it. The latest european guidelines provides already recommendations in this problem.

Purpose: To know the incidence of AF in patients with NSTE-ACS and without previous history of AF, the management in the acute phase, clinical implications, evolution and treatment at discharge in patients admitted to our cardiology intensive care unit.

Method: Observational prospective registry including patients with NSTE-ACS admitted to our unit between January 2012 and March 2017. We analyzed the incidence of AF, clinical profile, management performed and treatment in this subgroup of patients comparing with patients with NSTE-ACS and no AF development.

Results: A total of 687 patients were analyzed, 54 (7.86%) of them develops AF during admission in the unit. In this group, 72.2% of the patients were male, with a mean age of 73.04 ($\pm$ 8.5) years being older than those who did not develop AF (65.12 $\pm$ 12.46) years. The GRACE score was higuer at admission 185.8 ($\pm$ 40.06) Vs 148 ($\pm$ 42.37) as well as clinical severity. According to the KILLIP classification we have 44.4% Vs 74% in stage KILLIP I, 24.1% Vs 14.3% in stage II and 31.5% Vs 11.7% for group III-IV. The patiens with AF required greater vasoactive support, non-invasive ventilatory support 16.7% vs. 5.7%, and orotracheal intubation 13% vs. 2.1%. No significant differences were found in the strategy of invasive or early invasive reperfusion between both groups nor in the use of drug-eluting stents (53.3% vs 58.8%). During admission, the recurrence of AF was 24.1% with 3.7% of persistent AF at discharge. A total of 74.1% of patients required amiodarone in the acute phase, maintaining at the discharge in 61.1% of patients. The treatment at discharge in patients with AF was: ASA 87%, clopidogrel 90.7%, prasugrel 3.7%, ticagrelor 7.4%. They received anticoagulation with acenocoumarol 25.9%, 3.7% dabigatran, 11.1% apixaban, 1.9% Rivaroxaban. There were more acute phase deaths among those who developed AF (9.4% vs 2.1%) more cardiovascular events and increased cardiovascular mortality during follow-up (36.4% vs 7.7%).

Conclusions: The development of AF during an NSTE-ACS can be considered a predictor of severity. These patients generally have more complications and higher scores on morbidity and mortality scales. Usually present with ventricular dysfunction and in up to one third of cases develop in acute heart failure and cardiogenic schock, requiring in most cases prolonged support in critical units. Treatment involves complex antiaggregant and anti-coagulant therapies, most often based on the experience of physicians and stent-type. The newest recommendations of European guidelines seek to unify criteria on duration and type of treatment.

P214

Prevalence of iron deficiency in patients with coronary artery disease

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Objectives: Disorders of iron metabolism, either iron deficiency (ID) or overload, have been associated with increased cardiovascular morbidity and mortality. In heart failure patients ID is an established risk factor with recommendations for treatment. Furthermore, recent evidence suggest that ID is also related to increased mortality in patients with acute coronary syndrome (ACS). Therefore, the aim of this study is to investigate the prevalence of ID in patients undergoing coronary angiography for diagnosis of acute or stable coronary artery disease (CAD).

Methods: We retrospectively searched for patients with significant CAD undergoing coronary angiography and extracted data on iron status (iron, ferritin, transferrin, transferrin saturation) and blood count for the period between December 2016 and July 2017. ID was defined as suggested by recent guidelines by ferritin levels of <100 µg/L, or by ferritin levels between 100 and 299 µg/L, if the transferrin saturation was <20%.

Results: We identified 212 patients with sufficient records on iron status (29% females, 49.5% ACS). The prevalence of ID was unexpectedly high among all patients with CAD, namely 58.0% in patients with ACS and 60.0% with stable CAD, respectively. Twelve percent of the total patient cohort were anemic (defined as hemoglobin levels if < 12 g/dL). The prevalence of anemia in patients with ID and ACS was 21.3% and 10.9% in patients with stable CAD and ID (Table).

Conclusion: In contrast to recent data in patients with ACS that demonstrated an ID (based on the same definition) in about 30%, we detected ID in about 60% of CAD patients, acute and stable alike. Moreover, ACS patients with ID exhibited a twofold higher rate of anemia compared to stable CAD patients, which confirms the partial impact of anemia as trigger of an acute deterioration of CAD. Whether ID without clinical signs of anemia is an independent modifier of CAD and a predictor of clinical outcomes needs still to be investigated.
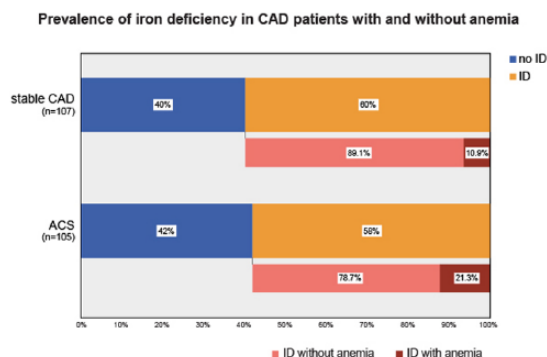
Prevalence of ID in CAD patients

P215

Myocardial infarction - is this absence of chest pain a red flag?

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On behalf of: ProACS

Introduction: Although chest pain is the most typical symptom of acute coronary syndromes (ACS), there are many cases in whose it is not the main symptom and this presentation is reported to be higher in elderly, women and diabetic patients (P).

Purpose: This study aims to characterize P with myocardial infarction (MI) presenting with symptoms other than chest pain (SOMI) and to compare them with other P presenting with more typical manifestations in terms of short-term prognosis.

Methods: A retrospective, descriptive and correlational study was performed with P enrolled in a national registry of ACS between 1st October 2010 and 19th January 2017. P with unstable angina or without information relative to main symptom were excluded. The remaining P were divided into 2 groups, according to the main symptom – with chest pain or SOMI, and baseline characteristics were accessed. It was performed an uni (UA) and multivariate statistical analysis (MA) of the factors associated with SOMI. It was also evaluated if SOMI was associated with higher in-hospital mortality, complications (mechanical complications, resuscitated cardiac arrest (RCA), major bleeding, transfusion, re-infarction, temporary pacemaker need (TPN), congestive heart failure (HF) and cardiogenic shock) or to the combined endpoint (CE) of in-hospital death, non-fatal re-infarction and stroke. Two sub-analysis (SA) were made, for P with ST elevation MI (STEMI) and P with Non ST elevation MI (NSTEMI). SPSS 19.0 was used.

Results: 14,819 P were included. 4.069 (27,5%) were female and the mean age was 66±14 years. 6.545 had STEMI and 7.717 had NSTEMI. 1.418 (9,6%) had SOMI. Between SOMI P, dyspnoea was the most frequent symptom (46,1%). In the MA, independent predictors (IP) of SOMI were female sex, age ≥65 years, diabetes, personal history of HF, stroke, peripheral artery disease (PAD), renal failure, chronic obstructive pulmonary disease (COPD) and dementia. There was a negative correlation with dyslipidaemia and stable angina. In the UA, SOMI was associated (p<0.05) with RCA, transfusion and TPN. SOMI was an IP of in-hospital complications as congestive HF, shock and major bleeding.

In the SA for STEMI, IP of SOMI were the same, except for diabetes, PAD and COPD. SOMI was an IP of HF, shock, stroke, death and CE.

In the SA for NSTEMI, IP of SOMI were female sex, age ≥65 years, personal history of HF, stroke, COPD and dementia, and it had a negative correlation with previous stable angina and MI. SOMI was also an IP of HF, but it showed a negative correlation with death and CE in MA.

Conclusions: SOMI was more frequent in female, elderly and P with several comorbidities. It is an IP of worse outcomes, especially in terms of HF, which was true for all groups (all patients and in STEMI and NSTEMI SA). Nevertheless, in NSTEMI P, the MA showed a negative correlation of SOMI with death and CE and this may reflect the difficulty of making a differential diagnosis of NSTEMI in P without chest pain.

P216

Undetermined ECG location myocardial infarction - what particularities?

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On behalf of: ProACS

Introduction: Myocardial infarction (MI) may be classified according to the electrocardiographic (ECG) features of the ST-T segment, but mainly when the QRS complex is narrow. In the presence of pacemaker rhythm or left bundle branch block, it is often called undetermined ECG location MI (UMI). Patients (P) with UMI may present greater heterogeneity in the baseline characteristics and type of atherosclerotic lesions than the ones of the other groups, and so the prognosis may be different.

Purpose: This study aims to compare UMI with the other types of MI for baseline characteristics and differences in short-term prognosis.

Methods: A retrospective, descriptive, and correlational study was performed with P enrolled in a national registry of acute coronary syndromes between 1st October 2010 and 25th January 2017. P with unstable angina were excluded. P were divided into 3 groups, according to the diagnosis – ST elevation MI (STEMI), non ST elevation MI (NSTEMI) or UMI, and baseline characteristics were accessed. It was performed an uni and multivariate statistical analysis of the factors associated with the occurrence of totally occlusive coronary lesions (OL) in patients with UMI. It was also evaluated if UMI was associated with higher in-hospital mortality (M), complications (mechanical complications, resuscitated cardiac arrest, major bleeding, transfusion, reinfarction, temporary pacemaker need, congestive heart failure (HF) and cardiogenic shock) or to the combined endpoint of in-hospital M, non-fatal re-infarction and ischemic and / or haemorrhagic stroke (CE). For this purpose, SPSS 19.0 was used.

Results: In this period, 14,749 P had MI. Of these, 3,275 (28.6%) were female and the mean age was 66 ± 13 years. 554 P (3.8%) had UMI, of which 21% had pacemaker rhythm and 79% had left bundle branch block.

In the univariate analysis, factors that associated with OL in P with UMI that performed coronary angiography (p < 0.05) were dyslipidaemia, previous MI or coronary angioplasty, renal failure, higher BNP and left ventricle ejection fraction <50%, and M was higher in those P. In the multivariate analysis, the only independent predictor of OL was male sex.

In the univariate analysis, UMI was associated (p < 0.05) to higher M, transfusion, stroke and CE, but also lower rates of non-fatal re-infarction. In the multivariate analysis, UMI was correlated with lower rates of HF and shock when compared to STEMI, but showed no differences when compared to NSTEMI.

Conclusion: In this heterogenic population of P with UMI, the only independent predictor of OL in coronary angiography were male sex. UMI correlated with lower rates of HF and shock when compared to STEMI. There was no differences in terms of outcomes when compared with NSTEMI.

P217

Zotarolimus eluting stent vs first generation eluting stent in left main coronary artery disease percutaneous coronary intervention: Clinical results at 10 year follow upo

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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 year follow-up.

Methods: We prospectively included 309 consecutive patients with LMCA disease treated with PCI and ZES (278 patients) or first generation DES (31 patients) between June 2006 and April 2016. 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 53.5 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, 70% male and 35-40% were diabetics. Protected LMCA was most frequently in first generation DES group (19.4% vs 6.9%, p=0.02).

The most frequently bifurcation technique employed in LMCA was "provisional stenting" in both groups with an angiographic success of 99.3% in ZES group and in 100% of first generation DES group (p=0.6).

During follow-up at 10 years, angiographic follow-up was higher in first generation DES group (58.1% vs 18.3%, p < 0.001). We observed significant differences in the occurrence of MACE (15.8% in ZES group vs 42,9% first generation DES group, p=0.001) and TLR (4.5% in ZES group vs 21.4% in first generation DES group p=0.004) between two groups. Multivariate analysis showed that ZES use was a protective factor against TLR (OR, 0.2; 95% CI, 0.05-0.6; p=0.008).

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.

P218

Renal safety in diabetic acute coronary syndrome patients treated with (vildagliptin)
Research Grant and drugs supply by NOVARTIS

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Background: One-third of diabetic patients exhibit impaired kidney function and low Glomerular Filtration Rate (GFR). Furthermore, diabetics hospitalized for acute coronary syndrome (ACS) are likely to undergo cardiac catheterization and put themselves at high risk of developing renal failure.

Objectives: Assessing the renal safety of (Vildagliptin) as a glucose-lowering treatment in type 2 diabetes mellitus (T2DM) patients undergoing cardiac catheterization during ACS hospitalization and up to a year after discharge.

Methods: 100 T2DM adult patients were enrolled upon admission to the ICCU with an ACS diagnosis. Creatinine values were measured and GFR was calculated (MDRD Equation) on admission (before undergoing PCI), on discharge, 30 days, 90 days and a year after discharge.

Results: No significant worsening had been found for Galvus treated subjects at the time of admission compared to the time of discharge, 30 days and 1 year after discharge in both creatinine level and GFR. In the control group, a significant worsening had been found in GFR with a marginally significant increase in creatinine level at the time of admission compared to the time of discharge. A significant worsening had been found in GFR 30 days after admission. No significant difference had been found in creatinine level in both groups, 90 days after admission.

Conclusions: Administration of Vildagliptin to T2DM patients hospitalized for ACS, in conjunction with the standard Insulin-only treatment, did not impair kidney function; even when undergoing PCI. The results support the positive trend to take place even a year after hospitalization. Further studies are required to verify the promising results.

P219

Use of dexmedetomidine in a cardiac intensive care unit

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Background/Introduction: Delirium, pain, and agitation are common in hospitalized patients and increase mortality and subsequent cognitive impairment. Dexmedetomidine is a selective sedative alpha-2 agonist used in these conditions. Its effects have not been studied in patients with acute cardiac diseases.

Purpose: Our main objective was to describe the pattern of use, indications, and safety of dexmedetomidine in acute cardiac patients.

Methods: Prospective consecutive registry in a tertiary hospital in patients admitted to an intensive cardiac care unit that received dexmedetomidine.

Results: A total of 100 patients were included, during a 12 months period. Median age was 74.9 years (interquartile range 63.6 to 82.0 years), and 64 were male. The reasons for admission were decompensated heart failure (including cardiogenic shock) (27 patients), cardiac arrest and ventricular arrhythmias (25), acute coronary syndrome (15), atrioventricular block (12), transaortic valve replacement (8), and others (4 pneumonia, 3 tamponade, 3 pulmonary embolism, and 3 stress cardiomyopathy). The drug was administered for delirium in 40 patients and high delirium risk in 60. Dexmedetomidine indications are detailed in the picture. Invasive procedures and diagnostic tests performed are resumed in the table. A total of thirty-seven patients with dexmedetomidine underwent weaning and extubation.

Only 2 patients required reintubation. The mean infusion dosage was 0.5±0.2 mcg/kg/min. The median treatment duration was 24.0 hours (interquartile range 12.1 hours to 50 hours). Adverse effects were observed in 12 patients: 5 bradycardias, 3 hypotension 3 both and 1 mouth dryness, requiring drug discontinuation in 8. All adverse effects resolved after stopping treatment.

Conclusion: Our registry of dexmedetomidine use in an intensive cardiac care unit suggests the efficacy and safety of this drug in patients with acute cardiac disease.

Table 1. Invasive procedures and diagnostic tests.

Coronary angiography	52
Orotracheal intubation	1
Non-invasive mechanical ventilation	22
Pacemaker implantation	23
Renal replacement therapy	8
Central venous catheterization or arterial line placement	76
Pericardiocentesis	3
Paracentesis	1

Since 100 patients were included in the registry, results are presented as number of patients, which matches with the percentage.
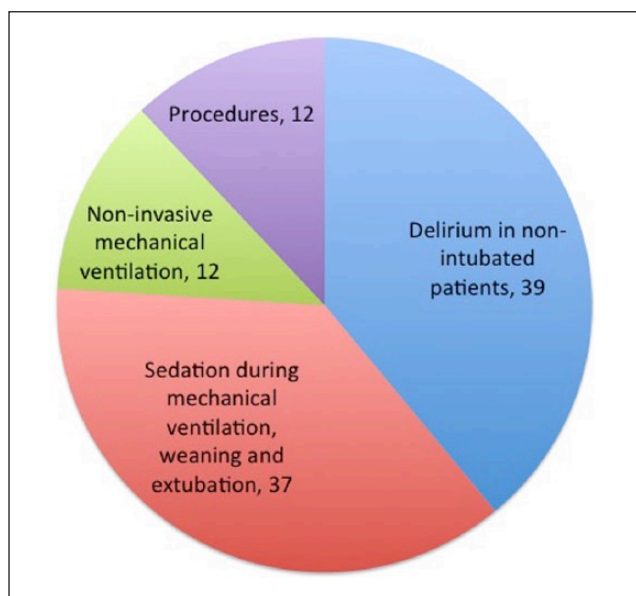
Indications of dexmedetomidine.

P220

Non-invasive assessment of severe ischemic heart disease in an emerging country through mathematical analysis of spectral ECG comparing to coronary angiography

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On Behalf of: Japan Myanmar Medical Help Group(JMMHG)

Background: In the emerging countries (South East Asia including Myanmar), the death rate by communicable diseases is still higher compared to the developed countries; however, the ratio of death caused by lifestyle diseases is gradually increasing in these countries. Among lifestyle diseases, coronary artery disease (CAD) is one of the highest causes of death and its prevalence is growing faster. On the other side, the number of Cath Lab and doctors with skills are limited in such countries especially in Myanmar.

The prompt diagnosis of severe CAD patient is important in order to start appropriate (PCI/Optimal Medical Therapy) treatments.

Purpose: The Mathematical Analysis of Spectral ECG (MCG) is to extract spectral information which is not visible on standard ECG and analyze it by matching to the database with more than 40,000 patients' spectral data.

This study is to evaluate the feasibility of MCG for the assessment of severe CAD in patients by comparing MCG with CAG.

Methods: Total 20 patients (Average age59 ±7.1, Male: 17, Female: 3) with MCG (≥ 4 score) scheduled to do CAG were selected in Myanmar. Coronary Stenosis by CAG of $\geq 75\%$ (75%-100% of stenosis) in a single or multiple vessels is defined as severe CAD necessary to start an appropriate treatment. MCG score ≥ 6, 5, 4 were used as cut-off respectively to indicate presence of coronary stenosis by CAG ($\geq 75\%$).

Results: MCG scores in patients with or without severe CAD are significantly different. (with CAD: 6.5, without CAD:4.9, $p < 0.001$) (Figure 1). Best cut off value is MCG score ≥ 6, and is identified sensitivity 80.0% and specificity 90.0%, PPV 88.9%, NPV81.8%, and accuracy 85.0% ($p < 0.01$)(Table 1).

Conclusions: MCG showed high sensitivity and specificity, and high score of MCG ≥ 6 likely indicates the presence of severe CAD by CAG ($\geq 75\%$). It suggests that MCG could be used for prompt detection of severe CAD in order to start appropriate (PCI/Optimal Medical Therapy) treatments in the emerging country such as Myanmar where less medical facilities and skills are available.

Table 1. Distribution of Presence or Absence of severe CAD by severity score (cut-off =6).

	CAD(+)	CAD(-)
MCG(+)	8	1
MCG(-)	2	9

MCG severity score vs Presence or Absence of Coronary stenosis CAG (≥ 75%)
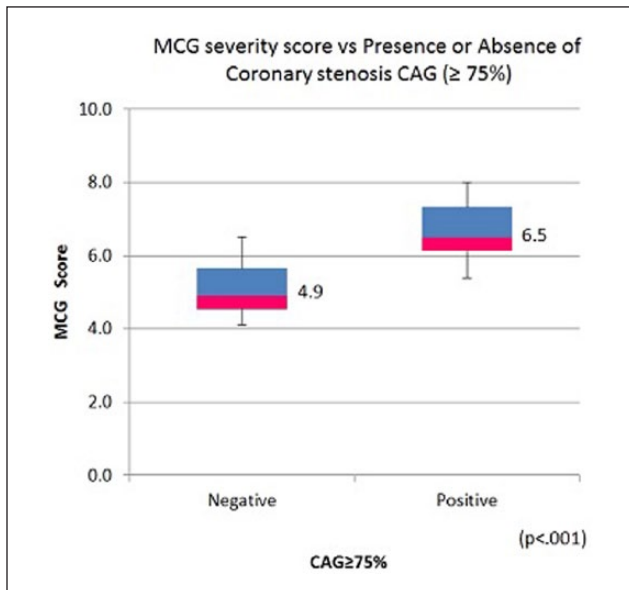
Figure 1

Prognosis

P223

Incidence and clinical impact of right bundle branch block in patients with non ST-segment elevation myocardial infarction

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Introduction: Right bundle branch block (RBBB) has been associated with a poor prognosis in patients with acute myocardial infarction (AMI), namely in patients with ST-segment elevation MI (STEMI). The prognostic significance of RBBB in patients with non ST-segment elevation MI (NSTEMI) has been inconsistent throughout different studies.

Purpose: Evaluate the incidence and clinical impact of RBBB in patients with NSTEMI.

Methods: Retrospective, descriptive and correlation study with all patients admitted to a Cardiology department with a NSTEMI between the 1st of October 2010 and 31st August 2015. Patients were divided in two groups according to the presence, or absence, of RBBB. The 1-year follow-up was made through phone call by a Cardiologist. SPSS was used for statistical analysis.

Results: A total of 1320 patients were included, 102 (7.7%) of which had RBBB. Patients with RBBB were older (74.1 ± 10.1 vs 66.04 ± 13.2 years, $p < 0.001$) and less frequently smokers (10.9% vs 28.3%, $p < 0.001$). There were no differences regarding sex, hypertension, diabetes, dyslipidaemia and body mass index. A past medical history of chest pain, AMI and valvular heart disease (VHD) were more frequent among patients with RBBB.

During hospitalization, RBBB was associated with lower left ventricular ejection fraction ($56.1\% \pm 13.6$ %vs $59.0\% \pm 14.5\%$, $p = 0,04$), lower rates of coronary catheterization (55.9% vs 68.9%, $p = 0.007$) and a tendency for less percutaneous coronary intervention (32.4% vs 41.5%, $p = 0.07$). These patients had more frequently high grade or third degree heart block (4.9% vs 1.0%, $p = 0.001$) and need for temporary transvenous cardiac pacing (3.9% vs 0.6%, $p = 0.007$) and permanent pacemaker implantation (2.9% vs 0.3%, $p = 0.012$). There were no differences regarding the culprit coronary artery, the presence of 3-vessel disease, heart failure, stroke, cardiac arrest, haemorrhage or atrial fibrillation during hospitalization.

In-hospital mortality was similar between the groups (2.9% vs 2.4%, $p = 0.72$). There were no differences regarding guideline-based medications at discharge, except for more frequent use of aldosterone (16.7% vs 9.1%, $p = 0.016$) and nitrates (55.2% vs 41.3%, $p = 0.008$).

On 1-year follow-up, there was a non-statistically significant tendency for higher mortality (14.9% vs 9.6%, $p = 0.1$) and higher re-hospitalization rate (30.5% vs 22.7%, $p = 0.08$).

Conclusion: Almost eight percent of patients with NSTEMI have RBBB. Patients with RBBB are older, more often have a past history of AMI or VHD, are less often submitted to an invasive strategy during hospitalization and the need for temporary transvenous and permanent pacemaker implantation. In our study, RBBB is not significantly associated with in-hospital mortality and 1-year prognosis in patients with NSTEMI. This finding is in contrast with the prognostic significance of RBBB in STEMI patients reported in the literature.

P224

Acute coronary syndrome with multivessel disease: Do women have worse outcome than men after revascularization?

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Introduction: Many studies showed worse outcomes for women hospitalized for acute coronary syndrome

(ACS) compared with men. These findings were partially explained by differences in clinical and characteristics and pathophysiological mechanisms.

Purpose: We sought to compare 1-year outcomes between women and men among a population of patients with multivessel disease (MVD) or unprotected left main (ULM) involvement and presenting with ACS.

Methods: We prospectively followed a cohort of admitted patients with ACS and MVD or LM involvement between January 2015 and January 2016 for up to 1 year. The primary endpoint was major adverse cardiac or cerebrovascular events (MACCE), a composite of death, non-procedural myocardial infarction, repeat coronary revascularisation, and stroke.

Results: Among 240 patients with MVD and / or ULM involvement, 45 (18.8 %) were women. Compared with men, women had older average age (66.5 years vs 60.8 years; P=0,001), had more frequently hypertension (73.3% vs 42.6%; P $<10^{-3}$) and diabetes (63.3% vs 45.6%; P=0.001). Women most often presented with Non ST elevation myocardial infraction (NSTEMI) at admission (62.2 % vs 39%; P $<10^{-3}$) and had less frequently ST elevation myocardial infraction (STEMI) (28.9 % vs 57.4%; P $<10^{-3}$). Angiographic characteristics were comparable between women and men. The median SYNTAX score was 19 [8-47] for women and 20 [8-56] for men; P= 0.5. The incidence of the composite endpoint was higher in the women group within the 12-months follow-up period (37.8% vs 21.5%; P=0.009)

Conclusion: Among patients with complex coronary artery disease presenting with ACS, women presented an increased risk of adverse clinical outcomes.

Poster Session 2 - Non ST Elevation ACS Saturday, 03 March 2018 - 14:00 - 17:30

P225

The elderly population with acute coronary syndrome, insights from a prospective cohort study

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Introduction: Elderly patients with acute coronary syndromes (ACS) are an increasing population, which pose clinical challenges regarding diagnosis and treatment approaches; however they are frequently underrepresented in clinical trials. The aim of this study is to characterize the elderly population (age ≥ 80 years) hospitalized due to ACS.

Methods: We evaluated 939 participants within a prospective cohort study of consecutive patients admitted to two tertiary hospitals, with a discharge diagnosis of acute coronary syndrome. Data were obtained through face-to-face interviews and medical records review for baseline; and by phone interview at 6-month follow-up.

Results: The elderly group comprised 13.0% (n=122) of all ACS patients. In comparison with younger than 80 years old, older patients were more likely to be women and to present with non-ST segment elevation ACS (NSTEACS). The prevalence of arterial hypertension was higher and current smoking status was less prevalent. They had more comorbidities namely chronic kidney disease (6% vs 17.2%, p < 0.001), heart failure (5.6% vs 21.2%, p < 0.001) and dementia (0.5% vs 3.3%, p < 0.002). The median time from symptom onset to first medical contact was higher in the ≥80years group (105 vs 213 minutes, p < 0.001). Regarding treatment, patients ≥80 years old were more likely to have a conservative approach (2.7% vs 15.6%, p < 0.001), with a higher difference among NSTEACS patients. In the group treated invasively, the median time delay from hospital admission until coronary catheterization was higher in very old patients, both among ST elevation myocardial infarction (104 vs 244 minutes, p < 0.001), and among NSTEACS patients (1711 vs 1993 minutes, p=0.039). Patients ≥80 years had a longer hospital length of stay (6 vs 8 days, p < 0.001), were more frequently in Killip 2 or higher classes and developed more frequently renal impairment during hospitalization. Regarding outcomes, the very old group had higher in-hospital mortality (incidence adjusted for sex and final diagnosis) (1.1% vs 4.0%, p=0.017); higher 6-month mortality (2.9% vs 10.8%, p < 0.001) and a higher composite endpoint of death, re-infarction and stroke at 6 months (6.9% vs 16.7%, p < 0.001).

Conclusion: ACS is a dynamic disease, therefore being important to continuously characterize this population. This work highlights the different clinical profile, higher seeking and treatment delay times and worse outcomes in the elderly group. Future studies are important to identify determinants of seeking and treatment delay times in the elderly population.

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Introduction: Vascular disease prevalence progressively rises with age and along with global population aging it poses medical and social problems that need to be solved. Among patients with acute coronary syndrome (ACS) 30-40% are patients older than 75y. They usually have bad prognosis and poor outcome.

Aim: To evaluate quality of medical care in ACS patients older that 75y as well as its correspondence with clinical practice guidelines.

Methods: Data was exported from Russian federal ACS registry in 01.01.2016 - 31.12.2016 period. We analyzed 33 893 ACS patients with group of 8 773 representing patients older than 75y (64,5% - women). Obtained data was compared with the group of ACS patients younger than 75y (n=25 120, 30% - women).

Results: Among patients with ACS with ST-segment elevation (ACS STE) there were 21,6% older adults (>75y), among patients without ST-segment elevation (ACS nSTE) - 28,5%. These patients had significantly higher comorbidity rate in comparison with younger patients: older patients had in anamnesis myocardial infarction (32% vs 23,2%, p < 0,001), stroke (10,8% vs 5,8%, p < 0,001), chronic kidney disease (9,4% vs 5,9%, p < 0,001), diabetes mellitus (26% vs 20,6%, p < 0,001), heart failure (53,4% vs 40%, p < 0,001), chronic obstructive pulmonary disease (8,4% vs 7,2%, p < 0,001).

Statistical analysis has shown that ACS older adults are at significantly greater mortality risk according to GRACE score (Table 1). But still patients in older group receive reperfusion therapy twice less often than younger patients: only 31,1% of ACS STE patients older than 75 went through PCI in comparison with younger ones – 68,9% (p < 0,001). The situation is even worse for ACS nSTE patients: 10,4% vs 23,2% in younger patients (p < 0,001).

Conclusion: ACS older adults have high comorbidity rate and are of great in-hospital and 6-month mortality risk. But in comparison with younger ones these patients are less likely to receive reperfusion therapy. This worsens the prognosis and is one of the major causes of high mortality rate in ACS patients older than 75y.

P227

Comparison of in-hospital outcome in acute coronary syndrome patients with and without left and right bundle branch block

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Background: Acute coronary syndrome (ACS) patients (P) with left (LBBB) and right bundle branch block (RBBB) have a poor prognosis.

Purpose: The aim is to evaluate in-hospital outcome of ACS P presented with LBBB and RBBB, and to compare with ST elevation myocardial infarction (STEMI) and non-STEMI (NSTEMI) /unstable angina (UA) P.

Methods: Prospective analysis of patients admitted with ACS at a tertiary centre, from 2005 to 2017. Patients were divided according to the electrocardiogram at admission: LBBB, RBBB, STEMI and NSTEMI/UA (without LBBB or RBBB). Clinical, echocardiographic and angiographic characteristics were analysed and in-hospital outcome compared between study groups.

Results: 5361 ACS P were enrolled, mean age 63.7±13.2 years, 70.5% males.

Among overall population, 199 P (3.7%) presented LBBB, 242 P (4.5%) RBBB, 3151 P (58.8%) STEMI and 1769 P (33.0%) NSTEMI/UA.

P with LBBB and RBBB were older (LBBB 72.1±10.3 vs RBBB 70.3±11.3 vs STEMI 62.1±13.5 vs NSTEMI/UA 64.9±12.3 years; p < 0.001), had more diabetes (LBBB 39.7%; RBBB 34.7%; STEMI 22.8%; NSTEMI/UA 27.0%; p < 0.001) and chronic kidney disease (LBBB 7.5%; RBBB 5.4%; STEMI 1.9%; NSTEMI/UA 3.1%; p < 0.001).

41.4% of LBBB P and 25.9% of RBBB P presented Killip class > I, contrasting with 14% in both STEMI and NSTEMI/UA groups (p < 0.001).

Regarding left ventricular ejection fraction (LVEF), LBBB P presented the worst value with 32.9% presented LVEF <35%, comparing with 11.2% in RBBB P and about 6.7% in STEMI and NSTEMI/UA P (p < 0.001).

Cardiogenic shock was more prevalent in patients with STEMI and BBB (LBBB 6.0%; RBBB 8.7%; STEMI 6.5%;

Table 1. GRACE score points for patients with ACS.

	In hospital mortality risk (mean±St.Er)		P	6-month mortality risk (mean±St.Er)		P
	>75y	≤75y		>75y	≤75y	
ACS STE	186,2±1,9	142,6±0,9	<0,001	147,0±1,3	98,7±0,8	<0,001
ACS nSTE	167,4±2,0	118,2±1,2	<0,001	159,2±1,3	111,3±1,0	<0,001

>75y - patients with ACS older than 75y,=75y - patients with ACS younger than 75y

NSTEMI/UA 2.6%; p < 0.001). Intra-aortic balloon pump was used in 2.5% of LBBB P followed by STEMI P (2.2%), RBBB P (1.7%) and NSTEMI/UA P (0.9%) (p=0.008).

LBBB (6.0%), RBBB (6.6%) and STEMI (5.4%) groups presented more ventricular arrhythmias comparing with NSTEMI/UA (1.4%) (p < 0.001).

Mechanical ventilation was also more needed in patients with LBBB (8.0%) and RBBB (9.5%), comparing with STEMI (6.3%) and NSTEMI (3.3%) (p < 0.001).

The incidence of acute kidney injury was higher in LBBB P (LBBB 8.4%; RBBB 4.5%; STEMI 3.7%; NSTEMI/UA 2.7%; p=0.001).

There was not significant difference in prevalence of multi-vessel disease between groups (about 50%).

In-hospital mortality was higher in RBBB P (7.4%) and LBBB P (5.5%) (vs 4.3% in STEMI and 2.3% in NSTEMI/UA; p < 0.001).

Conclusion: LBBB and RBBB were associated with worst in-hospital outcome including left ventricular dysfunction, heart failure, respiratory insufficiency and renal dysfunction. Furthermore, in-hospital mortality associated to LBBB and RBBB was even higher than in STEMI.

P228

Diabetes mellitus as risk factor for complex coronary artery disease as reflected by SYNTAX and Gensini score

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Background: Severity of coronary artery disease (CAD) is related to cardiovascular outcome. The aim is to show the influence of diabetes mellitus with the long-term follow-up depending on SYNTAX (Synergy Between Percutaneous Coronary Intervention With Taxus and Cardiac Surgery) and Gensini score for prognosis.

Purpose: Diabetes mellitus is a major cardioavascular risk factor increasing fast in prevalence and incidence in the last years. Thus it is present in many patients with acute coronary syndrome or stable angina. Outcomes are often reported to be worse in patients with diabetes mellitus. Thus more data regarding epidemiology and complexity of CAD in patients with diabetes mellits is needed.

Methods: We determined complexity and extent of CAD by the SYNTAX and Gensini score in the AtheroGene cohort (N=1974, with 22.6% women). The endpoint was non-fatal myocardial infarction (N=132) and cardiovascular death (N=159) over a median follow-up of 5.4 years up to 8 years maximum (follow-up rate 99.4%).

Results: The SYNTAX score was applied using the common distribution: low (≤22, N=1404), medium (23-32, N=314), high score (>32, N=256). Gensini score was split into thirds. Cox regression analysis showed a hazard ratio (HR) of 1.51 (95% confidence interval 1.17-1.95; p=0.0018) for the log transformed SYNTAX score in the fully adjusted model and a HR of 1.41 (95% CI:1.17-1.86, p=0.0020) for the log transformed Gensini score. Patients with diabetes mellitus had more severe forms of coronary artery disease and a worse outcome in this study regarding the endpoint. Of the 333 patients with diabetes, the endpoint was reported in 93 (27.9%) patients in contrast to 1338 with only 198 (14.8%) events (p < 0.0001).

Conclusion: Diabetes mellitus is a serious risk factor for more complex CAD as reflected by the SYNTAX and Gensini score. The treatment of diabetes mellitus has to be improved to reduce the risk of cardiovascular events.

P229

Clinical characteristics, hospital management and mid-term prognosis of patients discharged from Cardiology with the diagnosis of chest pain of unknown origin

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Purpose: to describe the clinical characteristics, management and prognosis of patients discharged from Cardiology with the diagnosis of chest pain of unknown origin.

Methods: we included 448 consecutive patients (68±50 years of age; 58% male) discharged from Cardiology with the diagnosis of chest pain of unknown origin in a tertiary hospital. Clinical characteristics and complemetary studies performed were collected during hospitalization. All patients were followed for 1 year by reviewing electronic clinical histories and by telephone calls. Adverse events collected were death, non-fatal myocardial infarction, stroke and unstable angina that required hospital admission.

Results: our population presented a high prevalence of cardiovascular risk factors (75% hypertension, 32% diabetes mellitus and 78% dyslipidemia) and cardiovascular disease (33% ischemic heart disease, 4% peripheral vasculopathy and 7% stroke/TIA). 42% of patients had abnormal EKG, 21% showed high-sensitivity cardiac troponin levels above 99th percentile of the upper reference limit and 19% had regional wall motion abnormalities of the left ventricle. 72% of the patients underwent cardiac stress testing (94% with imaging), whereas coronariography, CT imaging of the coronary arteries and magnetic resonance were performed in 20%, 3% y 1%, respectively. After 1 year follow-up, 21

(5%) patients suffered adverse events (5 deaths, 11 non-fatal MI, 5 unstable angina and 1 stroke). These patients were older and had more comorbidities (heart failure, atrial fibrillation, major bleeding and renal insufficiency). High–sensitivity troponin T (hs-TnT) levels >14 pg/mL was the only independent predictor of combined events (HR: 6,6, CI95% 2,7-15,8, p < 0,001). Hs-TnT levels showed an area under the ROC curve of 0.7, and the cutoff point >14 pg/mL showed a sensitivity, specificity, positive and negative predictive values of 81%, 62%, 15% and 98%, respectively.

Conclusions: patients discharged with diagnosis of chest pain of unknown origin represent a high risk population with significative rates of major adverse cardiovascular events at 1 year follow-up. In this context, hs-TnT levels can be useful for risk stratification.
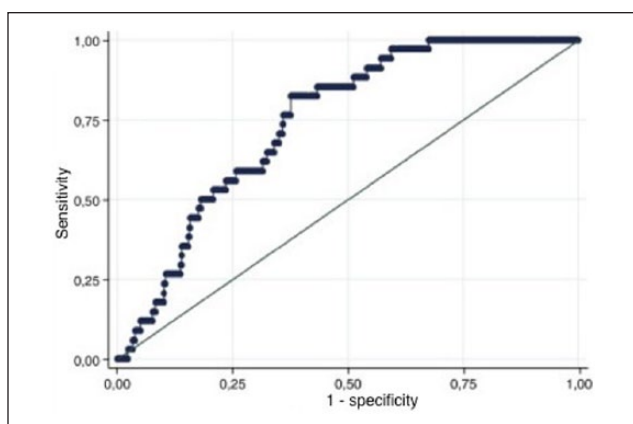
Area under the ROC curve. Hs-Troponin T

P230

The prognostic impact of age in women with an acute coronary syndrome

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Introduction: Acute Coronary Syndromes (ACS) have a significant impact on mortality and morbidity among female patients. The incidence of ACS in women rises significantly after menopause, which usually occurs around the age of 55. This study aims to access the prognostic impact of age in women diagnosed with an ACS.

Methods: Retrospective, descriptive and correlational study with all female patients admitted with an ACS in a Cardiology department between the 1st of October 2010 and 31st of August 2015. The patients were divided in two groups: age ≤ 55 years and age > 55 years. The baseline characteristics and hospital data were analyzed for each group. The 1-year follow-up was made through phone call by a Cardiologist. Statistical analysis was performed using SPSS.

Results: 852 women (W) were included, of which 132 (15,5%) had ≤ 55 years. An age ≤ 55 years was associated with ST-segment elevation ACS (50% vs 38%, p = .01), smoking (p < .01) and family history of coronary artery disease (CAD) (p < .01). Women > 55 years had more frequently ACS of unknown location (p < .01), hypertension (p < .01), diabetes (p < .01), and a past medical history of angor (p < .01), heart failure (HF) (p < .01) and stroke (p < .01).

During hospitalization, an age ≤ 55 years was associated with shorter delay between symptoms and hospital admission (p < .01), coronary catheterization (89% vs 65%, p < .001) and coronary angioplasty (PCI) (58% vs 44%, p < .01), as well as normal coronary arteries (19% vs 11%, p = .02), left anterior descending artery PCI (p < .01) and dual anti-platelet therapy (DAPT) at discharge (75,8% vs 61,7%, p = .002). An age > 55 was associated with higher rates of HF (p < .01) and atrial fibrillation (AF) (p < .01) during hospitalization, and left ventricular ejection fraction (FEVE) (56±13 vs 59±13, p = .04). There were no differences regarding stroke, hemorrhage and in-hospital mortality rate (HM).

At 1-year follow-up, mortality (0 vs 12.8%, p < .001) and re-hospitalization rate (RH) (13,5% vs 24,2%, p = .02) were associated with an older age. On multivariate analysis, there were no independent predictors of mortality or RH in women ≤ 55 years. In women > 55 years, absence of coronary catheterization (OR 11, p = .04), AF (OR 5.3, p = .01) and lower LVEF (p < .001) were all independent predictors of HM. PCI (OR 0.45, IC 95% 0.24-0.81, p = .01) and lower LVEF (p = .04) were independent predictors of the combined endpoint of death or RH at 1-year.

Conclusion: Young women have fewer comorbidities. In these patients, family history of CAD and smoking are important risk factors, and the preference for an invasive strategy and DAPT had a significant impact in 1-year prognosis. In women > 55 years, no coronary catheterization or PCI were independent predictors of HM or a combined endpoint of death or RH at 1-year, respectively. Therefore, an invasive strategy should be considered more often as a therapeutic option in older women.

P231

Prognostic impact and predictors of right ventricular dysfunction in patients with inferior myocardial infarction

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Introduction: The adverse prognostic impact of left ventricular (LV) dysfunction in the myocardial infarction (MI) patients (pts) is well stablished. Nevertheless, there is uncertainty regarding the risk of major complications and mortality in pts with MI complicated by right ventricular (RV) involvement.

Purpose: To determine the prognostic value and predictors of RV dysfunction in pts with inferior MI.

Methods: We retrospectively select all inferior MI pts admitted in our centre between 01/2015 and 12/2016 and divided them in 2 groups: A – pts with RV involvement; B – pts without RV involvement. Inferior MI was defined by electrocardiographic (ECG) and/or echocardiographic criteria. In-hospital outcomes included discharge survival rate. After-discharge outcome was a composite of mortality rate, hospital admission (HA) due to cardiovascular cause and heart failure development (NYHA class ≥II).

Results: We selected 88 pts, 73 (83%) male, with a mean age of 63.99 ± 13.4 years. In group A (n = 24), pts were significantly older (p = 0.01). There was no statistically significant difference between groups in terms of gender (p = 0.76) or risk factors. RV involvement was associated with lower systolic (116 vs 135 mmHg, p = 0.01) and diastolic (67 vs 80 mmHg, p = 0.01) blood pressures. Relatively to ECG findings, group A had a significantly higher number of pts with complete atrioventricular block (AVB, p = 0.05) and non-sustained ventricular tachycardia (p = 0.02). At admission echocardiogram showed, as expected, a significantly lowest TAPSE in RV involvement pts (12 vs 20 mm, p < 0.01). In this group, there was also a significantly greater number of segments with compromised contractility (7 vs 5 segments, p = 0.05). There was no statistically difference in the coronarography findings or maximal cardiac troponin T level (p = 0.96). During hospitalization, RV involvement was significantly associated with a highest number of pts with Killip-Kimball (KK) class 4 evolution (p < 0.01) and a lowest number with class 1 (p < 0.01). At discharge echocardiogram, RV dysfunction was associated with severe LV dysfunction (p = 0.01). Discharge survival rate was significantly lower in pts with RV involvement (80 vs 96.8 %, p = 0.01), whereas, composite after-discharge outcome was significantly larger (31.3 vs 9.8 % p = 0.04).

Conclusions: Pts with MI who also have RV myocardial involvement appear to have a worse prognosis, both during hospital stay and after-discharge. Complete AVB at admission and a KK 4 in-hospital evolution seem to be associated with RV dysfunction. However, it remains unclear whether the adverse prognosis in pts with RV myocardial involvement is simply a reflection of more extensive LV infarction (as reflected by a greater number of compromised contractile segments at admission and severe LV dysfunction at discharge) whether it may be due to the presence of RV myocardial involvement itself (significantly lowest TAPSE).

P232

Predictors of femoral access use for coronary angiography in patients admitted with acute coronary syndrome: data from a nationwide multicentric registry

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On Behalf of: Portuguese National Registry of Acute Coronary Syndromes

Introduction: The use of radial access (RA) for coronary angiography (CA) is now widespread and recommended over femoral access, in Europe, since 2015. However, there are still cases in which femoral artery (FA) is used, either by clinical necessity or by operator's choice.

Purpose: To evaluate the potential factors influencing the use of FA for CA in patients after Acute Coronary Syndrome (ACS).

Methods: A retrospective analysis of data from consecutive ACS patients enrolled in a multicenter national registry from January 2013 to December 2015 was conducted, identifying 6074 who underwent CA. They were divided into two groups regarding the arterial access used (RA vs. FA) and evaluated according to their clinical and laboratorial variables at admission. A logistic regression analysis was performed, looking for independent predictors of FA use.

Results: Overall, the mean age was 65±13 years, 1510 patients (24.9%) were female and 2603 (42.9%) were admitted with ST elevation myocardial infarction (STEMI). RA was used in 5088 patients (83.8%) and FA in 986 (16.2%). The logistic regression analysis, after excluding patients with missing data (N=4312), showed association between FA use and the following variables: female genre (odds ratio [OR]: 1.67; 95% confidente interval [CI]: 1.36-2.05; p < 0.001); age ≥ 75 years (OR: 1.02; 95%CI: 1.01-1.03; p < 0.001); emergency medical system management (OR: 1.51; 95%CI: 1.21-1.88; p < 0.001); STEMI vs. ACS without ST elevation (OR: 1.49; 95%CI: 1.22-1.85; p < 0.001); cardiac arrest at presentation (OR: 6.72; 95%CI: 1.91-23.59; p < 0.001); non sinus rythm at admission (OR: 1.56; 95%CI: 1.12-2.17; p=0.008); abnormal QRS at admission (OR: 2.08; 95%CI: 1.51-2.78; p < 0.001); Killip-Kimbal > 1 (OR: 1.55; 95%CI: 1.19-2.01; p=0.001); serum creatinine ≥ 2mg/dl at admission (OR: 1.24; 95%CI: 1.13-1.35; p < 0.001); previous history of percutaneous coronary intervention (OR: 1.31; 95%CI: 1.01-1.69; p=0.041) and coronary artery bypass graft surgery (OR: 8.38; 95%CI: 6.11-11.51; p < 0.001).

Conclusion: In the present series, femoral vascular access was used in only 16.2% of ACS patients who underwent coronary angiography. Although downgraded in 2015, femoral access continues to be used, as first choice or rescue option, for coronary angiography in a given subgroup of patients with acute coronary syndrome. These patients tended to be old women, with history of previous coronary revascularization, presenting with STEMI and showing more severe clinical features at admission.

P233

Increased frailty due to myocardial infarction is an independent predictor of long-term survival in patients with acute myocardial infarction

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Objective: Biological age, commonly assessed by frailty scores (FS), is predictive for long-term survival, independent of the chronological age. We previously could show that a FS based on variables that are daily assessed by nurses was independently associated with all-cause mortality after short- and long-term follow up. In this preliminary study, we wanted to investigate patients with increased frailty due to acute myocardial infarction (AMI) in more detail.

Methods: We performed a retrospective analysis (inclusion of: Type-1 AMI, ≥65 years, years 2012-2014; exclusion: cardiogenic shock) and collected the patient's FS at admission and the at discharge. The FS incorporates the variables mobility, eat/drink, hygiene, toileting. Depending on the grading within each category (0 points = not, 1 point = partly, 2 points = fully self-sufficient, respectively), patients were stratified into 3 different groups: severe (0-3 points), moderate (4-6 points) and not frail (7-8 points), respectively. All patients with decreased score at discharge were referred to be "frail by myocardial infarction" (FbyMI). Primary endpoint was all-cause mortality on 31st December 2015.

Results: We identified 311 patients (mean age 76±7.8 years, 44% females) with data for both time points. Of those, 64 patients (20.6%) had a reduced FS at discharge. Those patients were more likely to receive conservative management (p=0.004) and were more likely to have atrial fibrillation at admission (p < 0.001). We did not observe statistical differences for other variables at baseline, including gender, type of MI (NSTEMI vs. STEMI), classical cardiovascular risk factors or a history of AMI or revascularization therapy (p for all not significant, respectively). In multivariable cox-regression, FbyMI was an independent predictor of all-cause mortality during a follow-up period of 2.3 years (HR 2.21, 95%CI 1.34-3.64; p=0.002). This association was independent of the chronological age and the FS at admission.

Conclusion: Higher rates of atrial fibrillation and conservative treatment (no reperfusion strategies) are associated with increased frailty at discharge due to STEMI. Although frailty is usually seen as a "female" risk factor due to the higher age and comorbidities of women presenting with AMI, becoming frail after AMI seems to affect men and women equally. Whether an increased rate of invasive interventions has a positive impact on clinical outcome and reduces rates of frailty at discharge deserves future investigations.
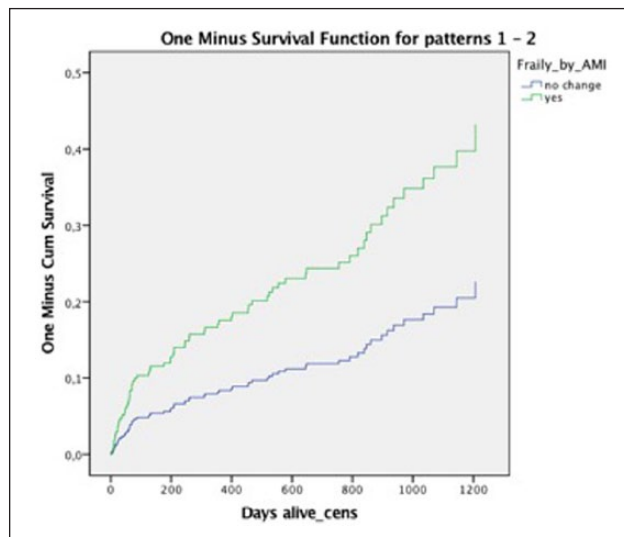
Adjusted mortality rates

P234

Acute coronary syndromes presenting without chest pain on admission, a peculiar and high-risk group: in-hospital prognosis and after 1-year follow-up

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Introduction: Although traditionally related to chest pain, some patients presenting with acute coronary syndrome (ACS) do not mention pain on admission, often focusing their complaints on atypical manifestations. Despite the scientific advances made in this field of study, this particular group of patients remain a challenge to different generations of physicians throughout the globe, due to its complex nature, diagnosis, management and prognosis.

Purpose: We aim to study the intrinsic features of this population and assess its prognosis.

Methods: Prospective registry of 1531 consecutive patients with a mean age of 65.22±13.45 years-old admitted with ACS, between October 2009 and September 2015, divided into 2 groups: A) ACS without chest pain on admission (n=255; 61.2% in the male category); ACS with chest pain on admission (n= 1276; 70.7% in the male category). A comparison was made between these groups regarding

a primary composite endpoint - PCE (consisting of reinfarction, stroke and cardiovascular death) and secondary objectives (reinfarction, stroke and cardiovascular death alone) at in-hospital level and after 1-year of follow-up.

Results: Regarding group A, 40.4% presented as STEMI and 59.6% as NSTEMI or Unstable Angina. Patients from group A were older (age>75 years: A=49%, B=24.9%, p < 0.01), mainly female (A=38.8%, B=29.3%, p < 0.01), more diabetic (A=40.4%, B=27.3%, p < 0.01) and had worst renal clearance (GFR<60ml/min/m^2: A=45.2%, B=25%, p < 0.001). Patients presenting without chest pain were also prone to experience a primary composite outcome, either at an in-hospital level (A=16.5%, B=5.9%, p < 0.001) or at 1-year follow-up (A=31%, B=12%, p < 0.01). We observed a noticeable association with certain in-hospital complications in group A, such as developing heart failure (A=18.4%, B=6.8%, p < 0.01), cardiogenic shock (A=16.5%, B=5.3%, p < 0.01), cardiac arrest (A= 3.9%, 0.6%, p < 0.01), the need for invasive mechanical ventilation (A=11.8%, B=3.1%, p < 0.01) and overall mortality (A=12.7%, B=4.5%, p < 0.01). No significant differences between the 2 groups were found at 1-year follow-up, regarding: readmission for ischemic cardiomyopathy (p=0.565), developing NYHA class>1 (p=0.339) or re-catheterization (p=0.213). Patients presenting without chest pain were likely to be admitted later in our cardiology unit, experienced longer door-to-balloon times and longer total ischemic time.

Conclusion: In our population, ACS presenting without chest pain on admission was associated with an increased rate of adverse events and worst prognosis, either at in-hospital level as at 1-year follow-up, due to the peculiar nature and complex approach inherent to the diagnosis and management of this population.

P235

History of acute myocardial infarction in patients with acute coronary syndrome: characterization of population and impact on prognosis

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Introduction: Patients (P) with history of acute myocardial infarction (AMI) continue to be underrepresented in the large studies of acute coronary syndromes (ACS).

Objective: To characterize P with previous ACS and AMI and to evaluate its impact on the therapeutic approach, complications and in-hospital mortality.

Methods: We studied 722 P hospitalized in a Cardiac Intensive Care Unit with the diagnosis of ACS. We considered 2 groups: D with previous AMI and D without previous AMI. The patient's age, gender, personal history, clinical and electrocardiographic presentation of ACS, in-hospital therapy, left ventricular ejection fraction (FE), coronary angiography and angioplasty were recorded. The following in-hospital complications were defined: heart failure, cardiogenic shock, re-infarction, mechanical complications, stroke and major haemorrhage. In-hospital mortality was compared between both groups.

Results: The D with previous history of AMI were 26.8% (194 D) of the study population. These P had a higher prevalence of hypertension (92.8% vs 71.2%, p < 0.001), diabetes (47.9% vs 30.4%, p < 0.001), dyslipidemia (73.6% vs. 49 , P < 0.001), prior angioplasty (62.1% vs. 0.0%, p < 0.001), heart failure (14.0% vs. 4.7%, p < 0.001), arterial disease (13.5% vs 3.6%, p < 0.001), chronic renal failure (18.7% vs 9.6%, p = 0.009) and previous bleeding (5.3% vs 1.3 %, P = 0.002). P with previous AMI presented more frequently with NSTEMI (62.4% vs 40.7%, p < 0.001) and Unstable Angina (10.3% vs 5.3%, p = 0.02) and less with STEMI (22.2% vs 47.3%, p < 0.001). At the time of admission, patients with prior AMI received less unfractionated heparin therapy (20.6% vs 30.7%, p = 0.007) and more therapy with angiotensin-2 antagonists (6.2% vs. 2.3%, p = 0.001), nitrates (62.9% vs 49.2%, p = 0.001), ivabradine (5.2% vs 1.7%, p = 0.01) and diuretics (34.5% vs 22 , 3%, p = 0.009). The coronary angiography rate was similar between the groups, however the P with previous AMI were submitted more frequently to femoral approach coronary angiography (36.9% vs 15.7%, p < 0.0001) and less angioplasties (58.5% vs 69 , 5%, p = 0.006). FE was slightly lower in P with previous AMI (45.7 ± 9.3% vs 48.3 ± 10.4%, p = 0.04); however, there were no differences in the presence of any of the complications considered as well as in in-hospital mortality.

Conclusions: P with previous AMI presented a higher prevalence of comorbidities and a higher prevalence of NSTEMI and unstable angina. The presence of previous AMI was not per se a predictor of complications or in-hospital mortality.

P236

Can we still identify new predictors of in-hospital mortality in patients treated for acute coronary syndrome?

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Background: The risk of in-hospital mortality(IHM) after an acute coronary syndrome(ACS) is determined by understanding the predictors of mortality. The association between some risk factors and mortality in subjects with ACS remains uncertain.

Purpose: To identify new predictors of in-hospital mortality in patients treated for acute coronary syndrome.

Methods: patients with ACS were subjected to analyze for variables such as: age, gender, risk factors, type (STEMI, NSTEMI, USA) and treatment of MI (PCI vs non-intervention), LV systolic function, body weight and high, calculated body mass index (BMI), waist circumference, lipids, stress glycaemia and glycosylated hemoglobin. Comparative analyze was performed between patients with in-hospital mortality versus survivors. Statistical analyze: descriptive and comparative analyze, uni and multivariate regression analyze, Cox regression analyze, correlations.

Results: 453 patients treated for ACS, at mean age 62,7±11,0 y., 301 (66,4%) males and 152 (33,6%) females (p=0,000), were subjected to comparative analyze as a function of event: in-hospital mortality (IHM). In-hospital mortality rate was 7,7% (35/453 pts.). Statistically significant univariate predictors of IHM were as follows: female gender [13,2% vs 5,0%, OR 2,889 (CI 1,4343-5,820), p=0,003]; age (beta -,145, p 0,002); STEMI [Wald 2,034, p=0,046, Exp (B) 4,356]; PCI not performed [Wald 11.302, p=0,001, Exp(B) 5,040]; LVEF (%) [beta -.167, p=0,006]; body weight (beta -.157, p=0,007, correlation r=-.154, p=0,012); body high (beta -.143, p=0,014, correlation r=.154, p=0,014); Cholesterol (beta -.130, p=0,023), stress glycaemia [beta .192, p=0,000]. Significant negative correlations were also found for waist circumference r=-.114, p=0.039; and borderline sig for BMI r=-.087, p=0,068.

But taking gender as selection variable, we identified that systolic dysfunction is significant predictor only in males [beta -.167, p=0,026], as are body weight [beta -.202, p=0,005]; BMI [beta -.153, p=0,008]; LDL-C [beta .427, p=0,000]; stress glycaemia [beta .137, p=0,031]; hsTroponin [beta .174, p=0,008].

In multivariate analyze independent predictors for IHM were found to be higher stress glycaemia (p=0,012) and not performing PCI (p=0,039), while higher BMI was negative predictor (beta - 0,028, p=0,028).

Conclusion: It can be concluded that beside well known traditional predictors of IHM, some new clinical predictors such as BMI, and possibly waist circumference and biochemical variables such as hsTroponin, stress glycaemia and LDL-C can serve as indicators for IHM, but their clinical significance may vary among patients of both genders.

P237

Renal function and its relationship to mid-term prognosis in patients presenting a ST-segment elevation myocardial infarction (STEMI) who underwent primary angioplasty

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Background: Impaired renal function is a factor associated with adverse clinical outcomes in patients with STEMI.

Purpose: The aim of our study was to analyze the prevalence of chronic kidney disease (CKD) and its relationship to mid-term prognosis in these patients.

Methods: From february 2015 to September 2016, 335 consecutive patients were included, having the diagnosis of STEMI and who underwent primary angioplasty. There were divided into two groups according to estimated glomerular filtration rate (eGFR) at presentation (according to MDRD study equation). Group 1: eGFR < 60ml/min/m²; group 2: eGFR ≥ 60ml/min/m². Baseline characteristic of patients and mortality were analyzed at follow-up.

Results: From all the patients, 257 (76.7%) had an eGFR ≥60ml/min/m² and 78 (23.3%) had an eGFR <60ml/min/m². With regard to baseline characteristics, there were differences (table 1) in age, hypertension, diabetes, smoking habit, prior myocardial infarction, prior percutaneous coronary intervention (PCI), and history of stroke. No differences were found from the time since symptoms onset to the introduction the guidewire in the coronary artery between the two groups; 207 minutes (IQR 25/75 135-395 min) versus 235 minutes (IQR 25/75 145-342 min) respectively (p 0,070). With respect to location of myocardial infarction (anterior wall) there were not differences in both groups (45.9% VS 46.2%, p=1). During a median follow-up of 152 days (IQR 25/75 83-273.5) 37 patients were deceased. The mortality was higher in group 1 (27.3% VS 6.3%) log Rank test p<0.001. After analysis using the Multivariable Cox regression model, it was confirmed that eGFR <60ml/min/m² was an independent risk factor associated with mortality.

Conclusions: STEMI patients who have an eGFR <60ml/min/m2 have different baseline characteristics from patients with eGFR ≥60ml/min/m² and mortality was higher in this group; therefore, impaired renal function was an independent risk factor associated to mid-term mortality.

Table 1. Baseline Characteristics.

	Group 1	Group 2	p
Masculine Sex	69.2%	73,9%	0.4
Age	74.6 (11.2)	64.02 (13.3)	<0.001
Hypertension	74,4%	43,6%	<0.001
Diabetes	32,1%	15,2%	<0,001
Smoking Habit	16.7%	45.5%	<0.001
Prior MI	14.1%	5.4%	0.014
Prior PCI	14.1%	4.3%	0.004

P238

Myocardial infarction management in old and very old patients: results of single centre registry

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Background: Treatment of old and very old patients is a difficult task due to high comorbidity and increased incidence of adverse events. They usually are excluded from large randomized trials, what eliminate its results from usual care in this patients population.

Purpose: The aim of the study is to evaluate the in-hospital course of acute myocardial infarction (AMI) in old and very old patients in depending of treatment strategy (invasive of conservative).

Methods: Our study is retrospective and single-centered. 940 cases of AMI in old and very old patients, presented to Regional Vascular Center Clinical Hospital #1 n.a. N.A. Pirogov since 01/Jan/2015 until 31/Aug/2017 were analysed.

Results: The investigated patients were divided on to 3 groups by the age criterion: the 1st–70-79 years old (452 pers.), the 2nd-80-89 years old (398 pers.), and the 3d–90 years old and older (90 pers.). PCIs were perfomed in 328 patients (72.6%) of the 1st group, 225 patients (56.5%) in the 2nd group, and 41 patients (45.6%) in the 3d group. The percentage of PCI-treated octogenarian and older patients was significantly lower (p<0.01). Conservative strategy of treatment were choose in 124, 173 and 49 patients respectively. In-hospital mortality in STEMI-patients was lowered after PCI in all of patients irrespective of age, but nonagenarians had higher postoperative mortality, than younger patients (post-PCI mortality in the 1st group was 9.6%, in the 2nd–9.9%, in the 3d–20%, although the statistical significance was not observed). There was not a lot of conservatively treated STEMI-patients (34, 40 and 12 respectively), but the in-hospital mortality in 70-79-old aged patients was 14.7%, and there were 4-fold increasing of it in octogenarian and older patients (42.3%, p<0,01). There were marked reduction of in-hospital mortality in septuagenarian patients, but it was statistically nonsignificant (6,4% in the PCI-treatment group vs. 11.1% in conservative treatment group, p>0,05). In-hospital mortality was similar among the 70-89-old aged patients (11.1% and 10,2% respectively), and 2-fold increased in nonagenarians (24,3%). The postoperative mortality in NSTEMI-patients is markedly rise up together with the patient's age (1st group-6.4%, 2nd-12,3%, 3d-23,8%). It is notable, that in-hospital mortality in NSTEMI-patients of 80-years old and greater was not significantly differ from the one in conservatively treated persons (12,3% vs. 10,5% for the 2nd group (p>0,05) and 23,8% vs. 24,3% for the 3d group (p>0,05)).

Conclusion: The Invasive treatment strategy associates with better survival in old and very old patients, despite of increasing of adverse events risks according with patient's aging. Wherein the PCI in STEMI treatment associates with lower in-hospital mortality in any age, the choosing of invasive strategy for the octogenarian and older (especially for nonagenarian) patients requires careful preliminary estimation of benefit/risk ratio.

P239

Characterization of the population with acute coronary syndrome (ACS) and ischemic vascular accident of less than 65 years given in a tertiary hospital

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Background: The WHO 2013-2020 Worldwide Plan of Action wants to reduce mortality in the population of less than 65% by 25%, with the atherothrombotic ischemic events being the most prevalent cause.

Objective: To characterize the risk profile of this population and identify efficient prevention measures.

Methodology: A sample of 239 patients under the age of 65 (77% men) consecutively treated at a tertiary Hospital for a cardiovascular event (41% coronary; 59% cerebrovascular) was identified during the year 2015.

Results: The REGICOR score was 7 ± 0.5 in the population of> 46 to vs. 2 ± 0.5 in the <45; $p < 0.01$. Women had a REGICOR lower than men (4 ± 1 vs. 7 ± 0.5; $p = 0.05$). Men showed a higher percentage of coronary events compared to women (44.6 ± 3.6 vs. $26 \pm 6\%$; $p < 0.05$), of which 71% were ACS with ST elevation in both sexes. A 14% (n = 35) was ≤ 45 years, with a lower prevalence of type 2 diabetes (3 vs. 22%; $p < 0.05$); less previous events (3 vs. 21%; $p < 0.05$) and lower LDL (129 ± 4 vs 153 ± 12; $p = 0.05$). The incidence of cardiopathy in this population group was higher in men (55 ± 11 vs. $16 \pm 10\%$ in women; $p < 0.05$), most (92%) for ACS with ST elevation. Overall, women experienced a higher incidence of ischemic stroke, especially at <45 to (84% vs. 45%, $p < 0.05$).

Conclusions: In younger patients, cerebral events predominate over coronary events, especially due to female sex. We need to identify these subgroups of patients and implement more efficient prevention measures.

P240

Does complete revascularization in elderly with multi-vessel disease improve clinical outcomes in the setting of acute coronary syndrome?

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Introduction: Several recent studies have shown improvement of clinical outcomes with complete revascularization in acute coronary syndrome (ACS). The latest guidelines of European society of cardiology recommended to treat non infract related artery before discharge.

Objective: We sought to evaluate the effectiveness of complete revascularization in a population of elderly patients in the setting of ACS.

Method: We prospectively followed a cohort of admitted patients with ACS, all with age ≥ 75 years and multivessel disease between January 2015 and June 2016 for up to 1 year. The primary endpoint was major adverse cardiac or cerebrovascular events (MACCE), a composite of death, non-procedural myocardial infarction, repeat coronary revascularisation, and stroke.

Result: One hundred four patients (104) were enrolled in our cohort, 26 (25 %) were women. Mean age was 79

± 4 years, with a maximum of 93 years. More than the half of our patients had hypertension 56.7% and diabetes 57.7%. Fifty one percent of our patients were smoker. Mean ejection systolic fraction was 58 %$\pm$ 9. The median SYNTAX score was 19 [2-44]. The Third of our patients had three-vessel disease. Complete revascularization was achieved in 60.6% of cases. In the Cox regression analysis, the incidence of the composite endpoint was significantly higher in the incomplete revascularization group within the 12-months follow-up period (24.7% vs 11.1%; P=0.001).

Conclusion: Our study showed that complete revascularization in elderly patients with ACS and multivessel disease improve clinical outcomes. More randomized trials are needed to conclude about the efficiency of this strategy in elderly patients.

P241

Predictors of intra-hospital and 1-year follow-up mortality in patients with acute coronary syndrome

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Introduction: It is known that there are several factors that influence mortality in Acute Coronary Syndrome (ACS). However, the individual role of each of these variables is not fully understood. This study aims to determine which factors have a prognostic impact in a population of patients admitted for ACS and during 1-year follow-up (FU).

Methods: A retrospective, descriptive and correlational study was conducted with every patient admitted in our Cardiology Department between October 2010 and August 2015. We evaluated the basal characteristics and evolution during hospital stay, and a 1-year follow-up through phone contact by a cardiologist. Using the SPSS 20,0 software, we performed an uni and multivariate statistical analysis of the factors that are associated with intra-hospital (IH) and 1-year mortality.

Results: During this period, a total of 3319 patients were admitted, 2465 (74,3%) of them males, with an average age of $65,9 \pm 13$ years. Diagnosis on admission was ST-Segment Elevation Myocardial Infarction (STEMI) in 1478 patients (44,5%), Non-ST-Segment Elevation Myocardial Infarction (NSTEMI) in 1607 (48,4%) patients, Unstable Angina (UA) in 116 (3,5%), and Acute Myocardial Infarction (AMI) with undetermined location in 118 (3,6%).

Factors associated with IN mortality were advanced age, female sex, non-smoking (NS), both previous or current, arterial hypertension (AH), diabetes mellitus (DM), previous history of valvular disease (VD), heart failure (HF), stroke, peripheral artery disease (PAD), renal failure (RF),

chronic obstructive pulmonary disease (COPD), cancer, dementia (Dem), not performing coronarography (nCAT) and angioplasty (nACTP), absence of chest pain (nCP) and Killip class higher than 1 (KK>1).

On the multivariate analysis, we identified as independent predictors (IP) of IH mortality advanced age, reduced left ventricle ejection fraction (LVEF), and a longer time between the first electrocardiogram and hospital admission.

Mortality during FU was associated with NS, AH, DM, nCAT, nACTP, nCP, KK>1, absence of family history of coronary disease, and previous history of: chest pain, AMI, ACTP, cardiac revascularization surgery, pacemaker, implantable cardioverter defibrillator (ICD), VD, HF, Stroke, PAD, RF, cancer, COPD, Dem, and hemorrhage.

The IP identified during FU were advanced age, previous history of AMI, PAD, nCAT, lower hemoglobin level and reduced LVEF.

Conclusion: In this population of patients with ACS, we identified as IP of IH mortality advanced age, reduced LVEF),, and a longer time between the first electrocardiogram and hospital admission. During 1-year FU, IP of mortality were advanced age, nCAT, lower hemoglobin level, reduced FEVE, and previous history of AMI and PAD.

P242

ICU admission after surviving cardiac arrest: causes and final outcome

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Introduction: Patients that require mechanical ventilation after surviving a cardiac arrest are admitted in the ICU with an unfavorable outcome

Purpose: An epidemiological analysis of patients that require ICU admission after surviving a cardiac arrest,identification of its causes,mortality and disability at discharge.

Methods: We retrospectively identified the patients that were admitted in our ICU after surviving a cardiac arrest. All patients were included and demographic data (sex, age), location of cardiac arrest, probable cause,co–morbidities, days of admission and mechanical ventilation, survival and neurological outcome were recorded. Patients that survived a cardiac arrest and had an apparent cardiac cause for their cardiac arrest were not included in this study as they were admitted in the CCU of our hospital.

Results: 39 patient were identified (31 male,8 female) with a median age of 66 years (15-91). 22/39 took place in hospital(5 in the A&E department) and the rest out of hospital. In 33/39

patients a cause for the cardiac arrest was ultimately identified. Causes included: acute coronary syndrome(3 patients), arrhythmia(2) ,acute respiratory failure(7), aspiration(3), surgery(6), trauma(2), septic shock(4), anaphylaxis(2), neurological cause(3), acute renal failure(1).

Significant variance in the duration of both ICU admission and mechanical ventilation was observed (1-170 days, 0-170 days respectively).

41% (16/39) of the patients survived and were discharged from the hospital with no difference in survival between the in/out of hospital arrest groups. 3/5 patients that had a cardiac arrest in the A&E survived.

5 of the patients that survived were discharged with a tracheostomy, 2 among them remained in coma requiring mechanical ventilation and feeding through a gastrostomy tube. The rest of the survivals had only mild hypoxic encephalopathy, were able to breath on their own and receive nutrition orally.

When looking at the outcome with respect to the cause of cardiac arrest the results were: all 5 patients with a cardiac cause survived. Patients with anaphylaxis or acute respiratory failure had a good outcome as most of them survived and were discharged from the hospital, while ,on the other hand, both patients with aspiration passed away. Patients with a neurological cause had an unfavorable outcome with 2/3 passing away and the only survival remained in a comatose state requiring mechanical ventilation.

Conclusions: Survival for our patients was 41%. Almost 13% of our patients that were initially presumed not to have a cardiac cause for their cardiac arrest an arrhythmia or a coronary cause was ultimately discovered. 3/5 patients that developed cardiac arrest in the A&E department survived. As expected, the outcome of a patient after surviving cardiac arrest was related to its cause and its reversibility. Larger series of patients will allow safer conclusions.

P243

Predictors of cardiovascular events during hospitalization after non cardiac surgery

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Introduction: Preoperative assessment before noncardiac surgery is common in the clinical practice. Patients (pts) who undergo noncardiac surgery may be at risk for cardiac morbidity and mortality, not only intraoperatively but also during their recovery period.

Purpose: To analyse predictors of cardiovascular (CV) events during hospitalization after non cardiac surgery performance.

Methods: Retrospective study that included pts that performed a transthoracic or dobutamine echocardiography before noncardiac surgery during a 5 year-period (2012-2016). Were exclude pts that were not hospitalized after surgery. Were analysed pt medical history, echocardiographic parameters, medication and CV events occurrence during hospital stay. Univariate analysis was performed.

Results: Were included 123 pts: 69 (56%) were male, mean age of 69±13 years. 90 (73%) pts had arterial hypertension, 37 (30%) had diabetes or dyslipidaemia, 22 (18%) pts had history of coronary artery disease and 16% of atrial fibrillation (AF). 28 (33%) pts were evaluated by a cardiologist before surgery.

Transthoracic echocardiography was performed in 112 pts (90%) and dobutamine echocardiography in 12 pts. 108 (88%) pts had a preserve left ventricle ejection fraction (LVEF), with mean LVEF of 59±10%. Only 19 pts (15%) had left ventricle segmental wall motion abnormalities. 10 pts (9%) had right ventricle systolic dysfunction. 10 pts (9%) had at least a moderate valvular heart disease, mainly aortic stenosis.

In 100 (81%) pts, an elective surgery was performed, in 4 (3%) pts was performed an urgent surgery and in 19 (15%) the surgery was performed during hospital stay. 19 (15%) pts were submitted to a high-risk surgery, 79 (64%) pts to an intermediate-risk surgery and 25 (20%) pts to a low-risk surgery. The main surgeries were performed by general surgery, followed by vascular surgery.

The mean time of hospital stay was 11±10 days. During hospital stay, 10 (8%) pts had complications: 4 pts died, 1 due to CV disease, 5 pts had an episode of AF with rapid ventricular rate, 2 pts had new onset of AF, 2 had an ischemic stroke and 1 had an episode of ventricular fibrillation.

Pts with medical history of AF (30% vs 4%;p=0.001) and those submitted to a high-risk surgery (26% vs 5%;p=0.008) had significantly more CV events. Pts with medical history of valvular heart surgery (33% vs 7%;p=0.075) or arterial hypertension (11% vs 0%;p=0.06) tended to have more CV events during hospital stay.

Conclusion: In our study, 8% of pts that performed a transthoracic or dobutamine echocardiography before noncardiac surgery had cardiovascular events during hospital stay, with pts with medical history of atrial fibrillation and those submitted to a high-risk surgery having significantly more cardiovascular events. Pts with medical history of valvular heart surgery or arterial hypertension tended to have more cardiovascular events during hospital stay.

Biomarkers

P244

Functional activity of thrombocytes in non-ST-elevation acute coronary syndrome in patients with frailty

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Purpose: to elicit the features of the clinical course in non-ST-elevation acute coronary syndrome (NSTE-ACS) and to evaluate the functional activity of platelets in patients of older age groups with frailty.

Materials and methods: 66 patients with NSTE-ACS were involved into the study. Patients received standard therapy, including dual antiplatelet therapy. The focus group consisted of 16 patients with NSTE-ACS younger than 60 years old. To identify the frailty, the patients were geriatricaly assessed by the M. Hoover questionnaire and the frailty index was calculated. On admission the number of GPIIb-IIIa receptors (according to the MFI-average fluorescence intensity) and the expression of P-selectin on the platelet surface were determined before and after activation of 10 μm ADP by flow cytometry using fluorescently tagged monoclonal antibodies CD61-FITC and CD62P-PE.

Results: frailty was detected in patients with NSTE-ACS in 23% of cases, pre–frailty - in 48%. Patients with NSTE-ACS did not differ in terms of sex. Patients with the presence of frailty were significantly older than the patients with pre-frailty and without it (respectively, 79.56 ± 6.44 years, 67.46 ± 7.83 and 57.44 ± 7.3, p < 0.05). In patients with frailty, rhythm disorders were more common than in patients without frailty (33.3%, 1%, respectively). Comorbidities were also more common in patients with frailty and pre-frailty. Development of complications during admission prevailed in patients with frailty (60%), than in patients with pre-frailty and without frailty (6.25%, 1% respectively). The most frequent complications in patients with frailty were renal failure (33.3%) and bleeding (13.3%). In patients with NSTE-ACS over 60 years, the number of platelet receptors GPIIb-IIIa before both ADP activation was significantly higher than in patients under 60 years old (7.19 (5.90, 8.70) MFI vs 5.91 (4.53; 6.29) MFI, p = 0.006) and after activation (11.7 (8.21, 13.6) MFI vs 6.33 (5.06, 6.92) MFI, p = 0.0001). Similar changes were also observed while evaluating P-selectin expression on the surface of platelets: the indices in elderly patients exceeded those ones in younger patients (0.69 (0.30, 1.05)% vs 0.35 (0.09, 0.42), p = 0.008), as well as after induction (7.50 (2.92, 15.92)% vs 0.96 (0.59, 1.64)%, p = 0.0001). There was a more significant increase in the number of GPIIb-IIIa receptors after ADP exposure in patients with frailty (11.7 (6.78, 15.0) than without it (6.57 (6.05, 6.99), p = 0.02) and similarly P-selectin (4.03 (1.09, 16.99) and 1.51 (0.76, 2.23), respectively, p = 0.03).

Conclusions: In patients with NSTE-ACS of older age groups with frailty, the functional activity of platelets and

their activation in response to the inductor was significantly higher than in patients without frailty and younger, which is associated with an unfavorable course of MI and leads to graver prognosis, a greater risk of recurrent myocardial infarction, including the fatal ones.

P245

Associations between genetic markers of fibrogenesis and myocardial infarction in patients with coronary artery disease

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Purpose: To determine associations between polymorphic variants of genes involved in fibrogenesis in patients with myocardial infarction.

Material and Methods: 404 consecutive patients with chronic coronary artery disease admitted to the cardiac department for elective coronary artery bypass grafting were included in the study. The Genotyping Assay Design software was used to select 58 SNPs and develop two multiplex panel, namely 27SNP ("27-plex") and 31SNP ("31-plex"). After assessing their potentials for the Russian population of Tomsk [Goncharova, 2015], 48 single nucleotide polymorphism (SNP) were selected for the further analysis. The control group was represented by the population sample of Siberia (285 people).

Results: The mean age of patients in the total group was 60.1 (55; 65) years. Out of 404 patients, there were 324 males (80.2%) and 80 females (19.8%). The most common cardiovascular risk factors were as follows: arterial hypertension (n=361, 89.4%), smoking (n=256, 63.4%) and type 2 diabetes (n=78, 19.3%). Signs of congestive heart failure were found in 377 patients (93.3%). All patients with coronary artery disease were assigned to two subgroups according to the presence or absence of postinfarction cardiosclerosis: Subgroup 1 – patients with PICS [n=188, 159 males and 29 females, the mean age - 59 (54; 64) years]; Subgroup 2 – patients without PICS [n=216, 157 males, 59 females, the mean age - 61 (56; 67) years].

The comparative subgroup analysis of the gene frequencies found the distribution differences in SNPs of the toll-like receptor 4 gene - TLR4 (rs4986790), the insulin-like growth factor binding protein type 7 gene - IGFBP7 (rs11133482), the low density liproprotein receptor - LDLR (rs2738446) and the OAS1 gene (rs1131454). Patients with a positive history of myocardial infarction were more commonly the carriers of the G allele and the genotypes with the G allele

(GG and AG) of the TLR4 gene (rs4986790); the GG genotype of the IGFBP7 gene (rs11133482); the G allele and the GG and CG genotypes of the LDLR gene (rs2738446) and the GG genotype and the OAS1 gene (rs1131454).

Conclusion: The risk of myocardial infarction and PICS is 2 times higher in patients with coronary artery disease with the GG and GA genotypes of the TLR4 gene (rs4986790), 2.4 times higher - with the GG genotypes of the IGFBP7 gene (rs11133482); 1.9 times higher – with the GG and CG genotypes of the LDLR gene (rs2738446); 2 times higher – with the AA and GA genotypes of the OAS1 gene (rs1131454). The AA genotype of the TLR4 gene (rs4986790); the AA and AG genotypes of the IGFBP7 gene (rs11133482); the CC genotype of the LDLR gene (rs2738446); and the GG genotype of the OAS1 gene (rs1131454) appeared to be protective against MI and PICS in CAD patients

P246

Activity of immunocompetent cells in patients with acute coronary syndromes

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Myocardial infarction (MI) is associated with an immune response. Sensitization of lymphocytes towards myocardial antigen and formation of antibodies against tropomyosin and actin was shown. MI induces infiltration of immune cells even in the remote non-infarcted myocardium post MI.

Autoimmune mechanism plays important role on ventricular remodeling after AMI. Therefore investigation of the activity of immunocompetent cells in patients with AMI remains to be a challenging subject. Macrophage – Lymphocyte interaction plays essential role both in cell-mediated and antibody-mediated immune reactions.

The aim of our work was to study activity of immunocompetent cells in patients with AMI, unstable angina and past MI according to macrophage-lymphocyte rosette (MLRos) formation in vein blood leukocyte culture worked out by us. Our previous studies showed that amount of MLRos in vitro correlates with immune reactivity of organism. It is increased in cases of allergy and autoimmune diseases revealing immune sensitization and is decreased in cases of acute viral hepatitis and sepsis reflecting a low immune reactivity of organism (Shvelidze T., Saralidze T., Saralidze N. 1992, 2005). We studied 15 patients with ST-elevation MI who did not undergo reperfusion therapy because of different reasons twice in dynamic, after 24 hours and after 10 days of AMI onset, 15 patients with unstable angina (UA) and 10 with past STEMI.

MLRos in vitro was increased in patients with STEMI. In acute stage, after 24 hours it was 46,3±1,4% and after 10-12 days it reached 59,1±3,9% (as in immune-sensitized patients), while in heathy donors it is 37,4±2,2%. In cases of UA amount of MLros was in normal range 33,2±11,2%. It was also increased in patients with past AMI (after 1-3 years from AMI) - 58,0±6,5%.

Increase of MLRos after STEMI, especially after 10-12 days underlines increased activity of monocytes and lymphocytes, and therefore immune reactivity of organism which is caused by contact of cardiac antigens with immunocompetent cells and immune sensitization, that remains after 1-3 years of AMI. On contrary normal range of MLRos in patients with UA points that immune sensitization to cardiac antigens doesn't occur.

Results of our study underlines increase of immune reactivity of organism after AMI, remaining high for years unlike to UA, when activity of immunocompetent cells are in normal range. As far as pathological autoimmune response leads to ventricular remodeling and heart failure, regulation of the immune function is considered to be a new target for the prevention of heart failure after myocardial infarction. Therefore it's reasonable to use method of MLRos formation in vitro for estimation of immune reactivity of organism in patients with IM in dynamic to improve long-term outcomes.

Fig. 1. Macrophage contacting with lymphocytes. 5-day-peripheral blood leukocyte culture of a patient with STEMI after 12 days. May-Grünwald-Giemsa stain. X 1000.
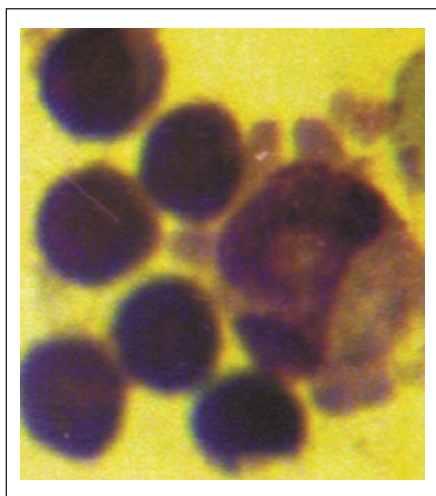
Macrophage-lymphocyte rosette

P247

Higher baseline haemoglobin may explain the smoker's paradox in STEMI patients

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Background: Although cigarette smoking is an established risk factor for coronary artery disease, in several studies smokers showed a better prognosis in the setting of ST-elevation myocardial infarction (STEMI), a phenomenon known as "smoker's paradox". As smokers often present higher levels of serum haemoglobin, the paradox could be explained in part by an increased reserve to bleeding events, a well known predictor of mortality in the setting of a STEMI.

Purpose: The aim of this study was to explore the presence of the smoker's paradox in consecutive STEMI patients treated by primary PCI (pPCI) and to address whether haemoglobin levels at admission in smokers could explain the link to clinical outcome.

Methods: We analysed data of all prospectively enrolled consecutive STEMI patients undergoing pPCI in two Italian tertiary Hospitals in 2005-2017 (n=4363). Differences between smokers and the other patients were evaluated by Chi-square tests for categorical variables and by Student t-test for comparison of means of continuous variables. Univariate mortality analyses were performed by Kaplan-Meier curves with log-rank test, multivariable analysis by Cox regression models.

Results: Overall, smokers were 53.7% of our population. These patients, compared to non-smokers, were younger (59 ± 11 vs 70 ±12 years old, p<0.001), more likely male (83.5% vs 67%, p<0.001) and presented a lower incidence of type II diabetes (16.3% vs 22.8%, p<0.001). There were no differences in left-ventricular ejection fraction (47 ± 10 vs 47± 11, p=0.915) and CK-peak values (2005 ± 2000 vs 2009 ± 2026 UI/l, p=0.965). Smokers presented higher levels of haemoglobin at admission (14.4 ± 1.6 vs 13.6 ± 1.8, p < 0.001). All cause 30-day mortality was 2.1 % in smokers vs 9.3 % in non-smokers (p<0.001; see Figure). The impact of smoking on prognosis was maintained after adjusting for confounders and covariates (including as covariates left ventricular ejection fraction, CK peak, anterior AMI, age, basal creatinine and diabetes), with a protective hazard ratio of 0.52 [5%-95%CI 0.28-0.93, p=0.028]. When haemoglobin at admission was included in the model (HR 0.77 [5%-95% CI 0.68-0.88, p<0.001]), the protective effect of smoking was attenuated, resulting in a HR of 0.57 [5%-95% CI 0.31-1.02, p=0.058].

Concusions: Our data confirmed the presence of a smoker's paradox in STEMI patients. Smokers presented significantly higher haemoglobin levels at admission, and the protective role of smoking was attenuated when haemoglobin was included in the multivariable model. Thus, in the setting of

a STEMI, higher levels of haemoglobin in smokers appear to play a role in the smoker's paradox, possibly attenuating the effects of bleeding complications and incident anaemia.
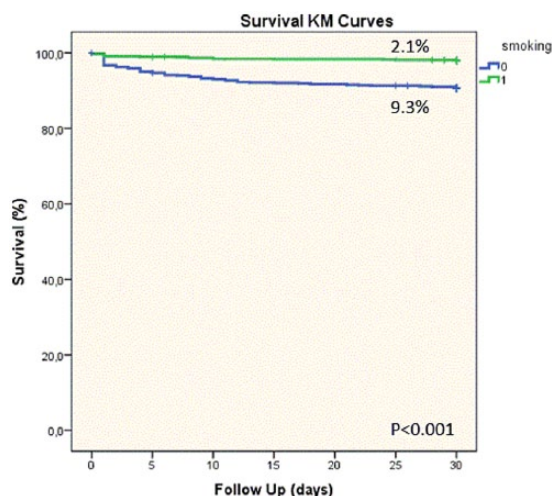
Kaplan Meier Curves

P248

Leucocyte indices in predicting adverse events in patients with myocardial infarction undergoing primary coronary intervention

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Aim: To analyze predictive value of the neutrophil-to-lymphocyte ratio and the lymphocyte-to-monocyte ratio in predicting adverse events in patients with myocardial infarction undergoing primary coronary intervention (PCI).

Materials and methods: 133 patents with ST-elevation myocardial infarction and non-ST-elevation myocardial infarction were enrolled into the study. Age of the participants was 45-74 years, 107 patients were men (80.4%), 26 patients – women (19.6%). Coronary angiography had been performed and coronary stent had been implanted in the infract-related artery. Blood samples obtained in the emergency room upon admission and whole blood count with leucocytic formula, neutrophil-to-lymphocyte ratio and the lymphocyte-to-monocyte ratio were analyzed. Patients were grouped according to tertiles of the indexes (<1.78, 1.78-2.83, >2.83 for neutrophil-to-lymphocyte ratio and <2.9, 2.9-4.7, >4.7 for lymphocyte-to-monocyte ratio). Follow-up was 24 months.

Results: As the lymphocyte-to-monocyte ratio decreased, in-hospital nonfatal myocardial infarction and cardiovascular mortality increased ($p < 0.05$, $p < 0.05$, respectively). And long-term stroke, target vessel revascularization, nonfatal myocardial infarction also increased with decreasing lymphocyte-to-monocyte ratio ($p < 0.01$, $p < 0.01$, $p < 0.05$,

respectively). As the neutrophil-to-lymphocyte ratio increased, in-hospital nonfatal myocardial infarction and cardiovascular mortality increased ($p < 0.01$, $p < 0.01$, respectively). And long-term stroke, target vessel revascularization, nonfatal myocardial infarction also increased with increasing lymphocyte-to-monocyte ratio ($p < 0.01$, $p < 0.01$, $p < 0.01$, respectively). The receiver operating characteristic (ROC) curve of for predicting adverse events showed the neutrophil-to-lymphocyte ratio sensitivity of 62.6% and specificity of 68.8 % and lymphocyte-to-monocyte ratio sensitivity of 77% and specificity of 79%. In a stepwise multivariate Cox-regression analysis after adjusting for variables neutrophil-to-lymphocyte ratio and lymphocyte-to-monocyte ratio was an independent predictor of in-hospital and long-term adverse events (odds ratio OR 1.392 (1.269–1.415) $p < 0.01$, OR 1.439 (1.325–1.547) $p < 0.01$, respectively for lymphocyte-to-monocyte ratio; OR 1.492 (1.322-1.578), $p < 0.01$, OR 1.845 (1.713 – 1.994), $p < 0.01$ for neutrophil-to-lymphocyte ratio.

Conclusions: The neutrophil-to-lymphocyte ratio and the lymphocyte-to-monocyte ratio are independent predictors of in-hospital and long-term adverse events in patients with ST-elevation myocardial infarction and non-ST-elevation myocardial infarction after primary PCI.

P249

Deficiency of vitamin d and prognosis in elderly people with acute coronary syndrome

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Introduction: Vitamin D deficiency (25-OH-VITD) has been related to ischemic heart disease and cardiovascular events. Currently, normal plasma levels of elderly patients with acute coronary syndrome (ACS) are not established.

Purpose: Our objective is to evaluate the prevalence of the 25-OH-VITD deficiency and its prognostic implication.

Methodology: Multicenter prospective registry of patients > 70 years admitted with ACS between 2014 and 2016. Plasma samples were obtained in the first 48 hours of hospital admission and 25-OH-VITD was determined. Values of 25-OH-VITD£ 15ng/ml were established as "deficiency" (D) and £ 8 ng/ml as "severe deficiency" (SD). The primary endpoint was the composite of death/reinfarction/stroke during the hospital stay and the composite of death/reinfarction/stroke/readmission during one year of follow-up.

Results: A total of 360 patients (147 women, age 81 ± 6, range 70-103 years) were included. The median of 25-OH-VITD serum was 13.0 [9.3-19.6] ng / ml, presenting 59.4% of patients (D), and 18.3% (SD). The intensity of the 25-OH-VITD deficit was associated with a significantly higher rate

of in-hospital events (severe deficit 13.8%, deficit 8.1%, non-deficit 4.8%, p = 0.03), and at 12 months of follow-up (51.4%, 50% and 30.4% respectively, p = 0.03), mainly due to a significantly higher in-hospital and annual mortality. After adjustment for different confounding variables (age, creatinine levels, diabetes mellitus and hypertension), the 25-OH-VITD deficiency remained a predictor of in-hospital and annual events (HR 3,10 CI 1,12-8,42; p = 0.03, HR 2.68 CI 1.26-5.72, p = 0.01, respectively).

Conclusions: Vitamin D deficiency is a frequent finding in the elderly people admitted with ACS. Hypovitaminosis D is associated with an increased risk of adverse cardiovascular events.

P250

LDL profile: differences in the prognosis of acute coronary syndromes

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On behalf of: ProACS

Introduction: The strict control of LDL after an acute coronary syndrome (ACS) associates with a better prognosis. However, some studies suggest that individuals without vascular disease who have very low levels of LDL may be at greater risk of death.

Purpose: This study aims to compare patients (P) hospitalized for ACS who presented lower LDL values with those with higher levels in terms of in-hospital mortality (M) and complications (C).

Methods: The authors performed a study with all P enrolled in a national registry of ACS between October 1, 2010 and October 19, 2017, who presented information on C and M, as well as the lipid profile at admission. P were divided into 2 groups: in group 1 (G1) if they had LDL ≤100mg/dL on admission and in group 2 (G2) those with LDL>100mg/dL, and a univariate (UA) and multivariate statistical analysis (MA) was performed with respect to baseline characteristics, M and C as well as the combined endpoint of M, non-fatal re-infarction and stroke (MACCE). SPSS 19.0 was used.

Results: 11,364 P were included, 4497 (39.6%) were in G1 and 6967 (60.6%) in G2. The factors that associated with the occurrence of LDL≤100mg/dL (p<0.05) were history of hypertension, percutaneous coronary intervention (PCI), myocardial revascularization surgery, valvular disease, heart failure (HF), peripheral arterial disease, renal failure, COPD and dementia; other than ST segment elevation MI, absence of chest pain, higher heart rate, lower left ventricle ejection fraction, higher creatinine, lower hemoglobin, higher blood glucose at admission, lower platelet count, higher BNP, lower HDL and triglycerides; a lower frequency of administration of acetylsalicylic acid, ticagrelor, glycoprotein inhibitors, heparin, beta-blockers, iACE or ARA, a higher frequency of administration of clopidogrel, vitamin K and calcium antagonists, diuretics, amiodarone, digoxin, insulin, oral antidiabetics and inotropics, less frequent use and greater delay in reperfusion (REP) therapy (when indicated), greater use of Swan-Ganz catheter, temporary pacemaker (PM) and invasive and non-invasive mechanical ventilation; non-performance of coronary angiography (CA) and no PCI. G1 was associated with a higher frequency of C, namely HF, shock, atrioventricular block, atrial fibrillation, mechanical C, stroke, major bleeding, blood transfusion and MACCE. In-hospital mortality was also higher in G1, as was the length of hospital stay. In the MA, independent predictors of LDL≤100mg/dL were female gender, age≥65 years, BMI≥25Kg/m2, history of diabetes, dyslipidemia, non smoking, angina pectoris, PM or ICD, stroke, neoplasia and hemorrhage; and presentation in Killip-Kimbal class>1 and with systolic blood pressure <140mmHg.

Conclusions: P presenting with ACS with LDL≤100 mg/dL on admission are older, more often female, and more frequently have comorbidities that predispose them to a higher rate of C and M.

P251

Serum cystatin c as a predictor of in-hospital adverse cardiac events in patients with acute st-segment elevation myocardial infarction

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Background: Finding a biomarker which predicts in-hospital adverse outcome in patients with acute ST-segment elevation myocardial infarction (STEMI), particularly progression to death and acute heart failure, has been always the subject of research.

Objective: the aim of this study is to evaluate the usefulness of Cystatin C to predict in-hospital major adverse cardiac events (MACE) in patients with STEMI who received reperfusion therapy and did not undergo percutaneous coronary interventions (PCI).

Methods: 90 consecutive patients with STEMI who received reperfusion therapy within 12 hours from onset of chest pain, were enrolled. We excluded patients with abnormal serum creatinine, heart failure on admission, History of major surgery or trauma, Suspected systemic inflammatory disease. Serum cystatin C was determined on admission.

Results: Mean age was 57±8.1 years with 81 males (90%). Cystatin C level was (0.5-3.8, mean 1.2 mg/L), Cystatin C was higher in patients who experienced recurrent in-hospital angina (1.8±0.3 mg/L vs 1.1±0.6, p<0.001), significant arrhythmia (2.2±0.8 mg/L vs 1.1±0.5, p<0.001), new onset heart failure (2.1±0.9 mg/L vs 1.0±0.5, p<0.001), cardiac mortality (3.4±0.6 mg/L vs 1.1±0.5, p<0.001),

Conclusion: Serum cystatin C is a useful prognostic marker for MACE in patients with acute STEMI and normal renal function.

P252

Usefulness of intrahospitalary low-density lipoprotein cholesterol levels to predict the probability of achieving LDL cholesterol target after hospital discharge for acute coronary syndrome in patient

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Aim: To study the connection between intrahospitalary low-density lipoprotein (IHLDL) cholesterol levels and the probability of achieving an LDL colesterol level of less than 70 mg per deciliter (mg/dL) during the first year after hospital discharge for acute coronary syndrome (ACS) in patients with intensive statin therapy.

Methods: Retrospective multicenter registry that includes 1292 consecutive patients discharged for ACS with intensive statin therapy. The primary end point was reaching LDL cholesterol levels of less than 70 mg/dL in the first blood test available after hospital discharge. Exclusion criteria considered for this study included: blood samples were obtained during the first month and after the first year from ACS and also patients without available LDL cholesterol levels. In our register intensive statin therapy was considered atorvastatin (at a dose of 40 mg, 60mg and 80mg) or rosuvastatin (at a dose of 20 mg and 40mg).

Results: The final study population included 1292 patients (66 ± 13 years; 73% male). IHLDL cholesterol levels and after discharge LDL cholesterol levels were 98 ± 37 mg/dL y 71 ± 29 mg/dL, respectively (absolute decrease: -28 ± 38 mg/dL and relative decrease: 21%; both p-value < 0.001). During the complete 1 year follow-up, 716 patients (55%) had LDL cholesterol levels <70mg/dL. In these patients IHLDL cholesterol levels were significantly lower (88 ± 32 mg/dL versus 110 ± 38 mg/dL; p value < 0.001). Usefulness of IHLDL cholesterol levels to predict LDL cholesterol

levels <70mg/dL after hospital discharge was modest (area under the curve ROC= 0,67). Patients who had IHLDL cholesterol higher levels achieved the primary end point to a lower extent (Figure 1). The IHLDL cholesterol levels >100 mg/dL, >130 mg/dL and >160 mg/dL presented positive predictive values (70%, 76% y 81%, respectively) for non achievement the primary end point.

Conclusions: In conclusion, higher IHLDL cholesterol levels are associated with a lower probability of achieving the primary end point during the first year of follow-up. Higher IHLDL cholesterol levels can be useful to identify early high-risk patients in whom additional hygienic-dietary recommendations and lipid-modifying therapies could be helpful.

P253

Haemostatic gene polymorphisms in acute coronary syndrome with nonobstructive coronary atherosclerosis

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The aim of the study was to investigate the prevalence of 8 haemostatic gene polymorphisms associated with thrombophilia in patients with acute coronary syndrome (ACS) with nonobstructive coronary atherosclerosis (NOCA).

Material and methods: Investigation is nonrandomized, open, controlled: NCT02655718. We present the results of patients admitted to the emergency department of cardiology due to ACS in 2015-2016. Inclusion criteria comprised NOCA (normal coronary arteries/plaques <50%), confirmed by invasive coronary angiography, aged over 18 years at the time of randomization. Individuals who had previously undergone coronary artery revascularization were excluded from the study.

For 29 patients were analyzed 8 haemostatic gene polymorphisms: F2 (20210 G> A), F5 (1691 G> A), F7 (10976G> A), F13 163 G> T), F1 (-455G> A), GP Ia-IIa (807C> T), GP IIb-IIIa (1565 T> C), PAI-I (-675 5G> 4G).The genotypes were determined by polymerase chain reaction methods.

Results: Among 913 patients who were hospitalized with ACS, 44 (4.8%) had NOCA. Including 19 men (66%) and 25 (57%) women, the average age of patients was 54 ± 11 years.

Among 29 patients in 28 (96.6%) individuals with NOCA had at least one homozygous or heterozygous for unfavorable alleles genotype of haemostatic system.

The homozygous genotype for adverse allelic variants was registered in 13 (44.8%) patients by polymorphic variants

of the following genes: FXIII, GP Ia-IIa, GP IIb-IIIa, PAI-1, including 2 unfavorable homozygous genotype for variants of GP IIb-IIIa and PAI-1 genes.

One patient (3.4%) had unfavorable heterozygous genotypes according to 5 studied variants predisposing to the development of thrombophilia; seven (24.1%) have heterozygous genotypes of 4 SNP, ten (34.5%) have heterozygous genotypes of 3 SNP, seven (24.1%) have 2 SNPs, two (6.9%) - 2 SNP each; Only two (6.9%) individuals did not have adverse alleles in the heterozygous state.

The frequency of registration of homozygous genotypes for alleles predisposing to thromboses for all the studied polymorphic variants in the survey sample is within the limits shown for the european population, and the frequency of heterozygotes registration for variants of the FV, FVII, FXIII, FI gene, it exceeds estimates of heterozygotes prevalence in european population.

Conclusion: The proportion of patients with NOCA among patients with ACS in 2015-2016 was 4.8%.

The prevalence of adverse allelic variants of clotting factor genes associated with risk of thrombophilia in patients with ACS and NOCA was 96.6%

P254

High-sensitivity cardiac troponin T is an important predictor of mortality and morbidity in patients without acute coronary syndrome

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Background: The prognostic significance of elevated levels of high-sensitivity cardiac troponin T (hs-cTnT) in patients admitted for emergency treatment in critical clinical conditions in the absence of a confirmed final diagnosis of acute coronary symdrome (ACS) remains little known.

Purpose: to test the hypothesis that hs-cTnT evaluation in the emergency room (ER) is useful as a predictor of in-hospital mortality and morbidity in patients (pts) without ACS.

Methods: We assessed n=7807 assays of high-sensitivity cardiac troponin T (hs-cTnT) performed consecutively in unselected pts aged >18 years (n= 3566) admitted in the ER from January to December 2016. For high value of hs-cTnT elevation, we understood the marker above the concentration limit of 99 percentile values obtained in a control group with an uncertainty of no more than a coefficient of variation of 10 %. It has been so defined a decision threshold equal to 14 ng/l. All values above this cutoff were defined as positive while normal values were defined as negative. The analysis was then conducted by grouping individual cases under consideration (n=3566) excluding those discharged at home or with a confirmed final diagnosis of ACS.The sample thus selected (n=906

cases) has been divided into two groups: group A with values of hs-cTnT positive and group B with negative values. A morbidity was defined as the principal diagnosis and /or secondary that has affected the death in this case. The association of elevated levels of hs-cTnT (positive cases) and prevalence of hospital mortality was statistically evaluated using chi-square test.

Results: The overall mortality rate was 12.0% (109/906 pts.). In group A (712 pts., F 352, M 360) mortality was 14.5% (103/712, including F 59, M 44) with mean age 83.6, median 87 yrs (range 36-100 yrs). In group B (194 pts., F 115,M 79) mortality was 3.1% (6/194, M 3, F 3) with mean age 77.8, median 81 yrs (range 56-92 yrs). The morbidity was mainly induced by pneumonia with respiratory failure (31/103 pts., 30.1%, in gr.A; 2/6 pts, 33.3% ,in gr.B), congestive heart failure (19/103, 18.4%, in gr.A; 1/6, 16.7% in gr.B), ischemic or hemorrhagic stroke (17/103, 16.5%, in gr.A ; 1/6, 16.7% in gr.B), sepsis (13/103, 12.6%, in gr. A; no cases in gr.B), advanced malignancy (7/103, 6.8% in the gr.A; 1/6, 16.7% in gr.B), sustained heart arrhythmias (6/103, 5.8% in gr.A; 1/6 in gr.B, 16.7%). Statistical analysis: positivity of hs-cTnT (Gr.A) correlated significantly with increased mortality compared to gr.B with normal hs-cTnT values ($p < 0.0001$).

Conclusions: The ER assessment of hs-cTnT performed in patients whit critical clinical conditions, in the absence of a confirmed final diagnosis of ACS, is useful to stratify the risk of in-hospital mortality and morbidity. The influence of this biomarker on long-term outcome in surviving pts is worthy of further study in the future.

Organisation of Acute Coronary Syndromes care and MINOCA

P255

Readmission after cardiac rehabilitation program in a tertiary hospital

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Background: The purpose of this research is to describe the clinical characteristics of people admitted to a cardiac rehabilitation program (CRP) after an acute coronary syndrome (ACS) and analyze what risk factors are related with an increased risk of readmission.

Methods: Descriptive study of patients admitted between January 2012 and May 2015 in the CRP of a tertiary hospital, to determine epidemiological characteristics and prevalence of cardiovascular risk factors. Also, analytical study of risk factors for readmission in this group of patients. Personal history of each patient

were consulted and compared the risk of readmission according to: LVEF<50%, incomplete revascularization, arterial hypertension(AHT), dyslipidemia(DLP), diabetes mellitus(DM), atrial fibrillation, sex, age and to have completed cardiac rehabilitation program.

Results: During the study period, 517 patients were admitted to the CRP, 80.3% were men (mean age 57.81±8.18) and 19.7% women (mean age 56.76±9.06). The most frequent diagnosis were STEMI (52.4%) and unstable angina (24.2%). When we analyze the different risk factors in this group of patients, the results show us that that AHT(p=0.003, OR 2.3, CI95% 1.3-2.9), DLP(p=0.001,

OR 2.78, CI95% 1.5-5), DM (p=0.02, OR 1.84, CI95% 1.0-3.1), and incomplete revascularization (p=0.045, OR 1.71, CI95% 1.0-2.9) were related to an increased risk of readmission.

Conclusion: As we showed in our study, 3 of the 4 risk factors associated with readmission were modifiable risk factors (AHT, DLP and DM) and this results reinforce the need for control these with the optimization of drug therapies and promoting healthy habits. Readmission was also more frequent in patients who did not complete the CRP and in patients with LVEF<50% but the difference was not statistically significant.

Table 1.

	Readmission	No readmission	p-value
n	68	449	
Mean age	56.66±8.72	57.02±8.94	0.755
Female/Male	23.5%/76.5%	19.2%/80.8%	0.398
LVEF <50%	26.5%	18%	0.100
Incomplete revascularization	28.2%	26.5%	0.045
Hypertension	70.6%	51%	0.003
Dyslipidemia	77.9%	55.9%	0.001
DM	42.6%	28.7%	0.020
Incomplete CRP	16.2%	10.5%	0.164

P256

Exploring the impact of early rule out pathways on patient experience of chest pain

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Background: Suspected acute coronary syndrome is the most common reason for emergency presentation to hospital. Strategies to identify low-risk patients suitable for immediate discharge would have major benefits to health care providers. As part of a prospective clinical trial (High-STEACS, NCT 03005158), we are evaluating the impact of introducing a high-sensitivity cardiac troponin I assay and early rule out pathway on patient care.

Purpose: Understanding the patient experience of chest pain assessment using qualitative methods will give valuable insight into the practical application of an early rule out pathway.

Methods: In-depth, face to face, semi-structured interviews with men and women provide an interpretive analysis of the lived experience of chest pain assessment in the Emergency Department before (23 participants) and

after (29 participants) implementation of the early rule out pathway. Purposive sampling ensured representation across age and gender categories. Interviews were conducted approximately one week post discharge, transcribed verbatim and analysed using thematic analysis.

Results: The overriding theme arising from interviews before and after implementation of the pathway was 'discord', describing the difference between the objective interpretation of a troponin concentration by a clinician and the value placed on a more personal approach to chest pain assessment by the patient. 'Discord' could be reduced by effective communication comprising of pre-test information and active listening of the patients' illness story enabling the patient to develop trust and confidence in the assessing clinician. The theme of 'system frustration' in relation to the need for hospital admission was present in the pre-implementation interviews, but was absent in the post-implementation pathway interviews, suggesting patients had a more favourable view of the early rule out pathway.

Conclusion: We did not see any major differences in patient experience of chest pain before and after implementation of an early rule out pathway. Interestingly, the longer stay required for serial troponin testing with the previous pathway emerged as a source of frustration for patients, particularly in relation to repeating symptom history to multiple practitioners. Both sets of interviews revealed that, despite the rule out of myocardial infarction, many

patients leave hospital without a satisfactory conclusion to their illness experience. It is important that in following biomarker driven care pathways, clinicians actively consider and acknowledge the patients' symptom story, and do not focus purely on the rule out of myocardial infarction.

P257

Clinical predictors of success of biofeedback in the rehabilitation of patients with acute myocardial infarction

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In current work, it were evaluated clinical predictors for the success of biofeedback (BF) sessions during cardiorespiratory training (CT) by cardiac rhythm for the development of cardiorespiratory synchronization (CRS) in addition to standard therapy in patients with myocardial infarction (MI) in early periods.

The study included 50 patients with uncomplicated MI on 6-10 days of disease. 21 patients developed stable CRS during training in the hospital. All patients underwent general clinical examination: control of blood pressure, heart rate, ECG, echocardiography, assessment of heart rate variability (HRV).

Using of discriminant analysis of initial clinical parameters, heart rate variability parameters and cardiorespiratory training, a mathematical model was constructed that allows predict the success of CT in patients in early period of MI with a probability of 96.7%.

$f = -8.85 + 0.21X1 + 3.87X2 - 4.96X3 - 1.72X4 + 3.5X5 - 1.57X6 - 1.58X7 - 0.69X8 +$

$+ 1.63X9 + 0.008X10 - 0.069X11 + 0.089X12 + 2.71X13 - 2.61X14 + 5.65X15$

where X1 is the left ventricular ejection by echocardiography, X2 is the number of MI, X3 is the presence of previous history of coronary artery disease, X4 is diabetes, X5 is smoking, X6 is thrombolysis, X7 is coronary artery stenting, X8 is SDNN by HRV, X9 – CV by HRV, X10 – TP by HRV, X11 - HR in the first active test, X12 - diastolic blood pressure in the first inactive test, X13 - change in the HRV in the first active test as compared to the first inactive test, X14 - change in systolic blood pressure in the last inactive test compared to with the first inactive test, X15 - change in diastolic blood pressure in the last inactive test compared to with the first inactive test. The threshold value is $f = -0.21$. If the patient's IM value is greater than the threshold value, the patient will belong to the CRS successful group. If the patient's IM value is less than the threshold value, the patient will belong to the CRS unsuccessful group.

Conclusion: the developed mathematical model allows predict the effectiveness of cardiorespiratory training in patients in early period of uncomplicated MI.

P258

An audit of early invasive coronary angiography in patients with NSTE-ACS in a district general hospital with onsite PCI facility

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Introduction: Current NICE (UK) guidelines recommend that patients admitted to UK hospitals with NSTE-ACS with intermediate or high risk of future adverse cardiovascular events within 6 months of index event should undergo a coronary angiogram (with follow-on PCI) within 72 hours of admission or within 24 hours if clinically unstable.

Purpose: To assess the effect of an early invasive coronary angiography strategy according to NICE NSTE-ACS guideline in a district general hospital with onsite PCI facility.

Method: Patients admitted with NSTE-ACS over a 6 months' period between 1st December 2014 and 31st May 2015 were identified from local MINAP data and time taken from admission to receiving angiography were calculated.

Results: 176 patients were identified with discharge diagnosis of NSTE-ACS. The mean age was 71.2 years and 64 (36%) were female. 118 (67% of 176) patients underwent coronary intervention of which 57 (48%) patients had an early coronary intervention (within 72 hours) as opposed to 61 (52%) patients who received delayed angiography (>72 hours). Patients did not receive coronary angiogram based on six-month risk stratification for NSTE-ACS. There was no significant difference between the two groups for hypertension, diabetes, chronic kidney disease and smoking. Patients younger than 70 years were more likely to receive an early angiography compared to older patients (63.1% vs 36.8% respectively).

The patients who underwent delayed coronary angiogram had higher recurrence of angina (41% vs 16%), re-admission with ACS (23% vs 9%) and mortality within 12 months (14.8% vs 5.6%) compared to patients who underwent early coronary angiogram.

Conclusion: In real-world clinical practice, early invasive coronary angiography is not offered within recommended time-scale in majority of patients with NSTE-ACS. The delayed coronary intervention is associated with poor prognosis and appears to be linked with patients age and lack of a standard risk stratification assessment. Improving compliance with NSTE-ACS guideline-driven care could help to improve cardiovascular outcomes.
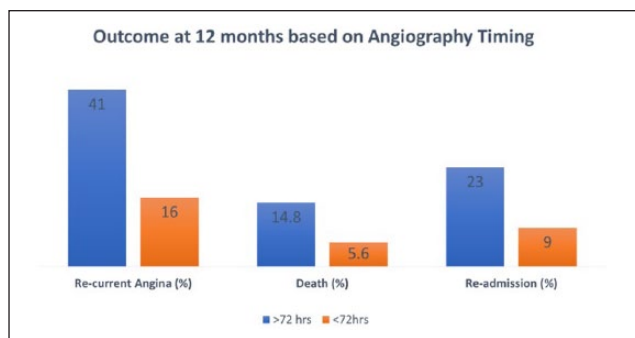
Outcome based on Angiography Timing

P259

Cardiologist on call: an study of the consultations requested

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Introduccion: An important part of daily work are the consultations requested from other specialties. We documented why and from who those consultations where made.

Methods: A retrospective descriptive study of consultations made in 2016, dividing those from the emergency department (ER) from the rest of the hospital wards.

Results: In 2016, 3938 consultations were made. 2739 (69,5%%) were from the ER and 1199 (30,5%) from the rest of the hospital wards.

Of those from the ER, 1785 patients (65%) were admitted: 83,5% in the Cardiology Ward, 1,4% in the Cardiac Intensive Care Unit and 14.6% in other medical wards. 6 patients died in the ER. The most frequent pathologies were Angina/chest pain (38,7%, heart failure (25,5%), syncope (7,1%), STEMI (6,5%) and AV block/bradycardia (6,6%). The rest (15,6%) was distributed between cardiac device complications, pericardial diseases, transplanted patients and other arrhythmias.

Interconsultation from other departments was very distributed, highlighting Internal medicine, Neumology and Neurology (12.3%, 12.6% y 12,8%). The pathology consulted was heart failure (14.1%), angina/chest pain (12%), electrocardiographic alterations (12,0%) and atrial fibrillation/flutter (26,5).

Conclusions: Interconsultation from other specialties mean a heavy workload and time. Heart failure and chest pain were the most frequent pathologies from the ER, and also an important part of those from the rest of the hospital, where atrial fibrillation and ECG alterations also highlighted. Improvement of transversal education between medical departments and the creations of specific protocols for pathologies such as atrial fibrillation might reduce the consultations performed.

P260

Coronary care unit resources and pattern of care in a tertiary cardiac center in Italy

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Background: As outlined by the Acute Cardiovascular Care Association the traditional coronary care units (CCUs) have evolved to become an intensive cardiovascular care units (ICCUs) and this shift requires a different healthcare organizational model.

Purpose: to better define the key elements of this transformation we created a snapshot of the current epidemiology and pattern of care of patients admitted in the CICU of a tertiary center in Italy.

Methods: 1165 hospital discharge records, related to the 2016 activity, were retrospectively reviewed. Continuous variables were presented as mean $+/-$ standard deviation and categorical variables as absolute number and percentage value. Chi-square test was performed for categorical variables while a T-test was used for comparison of continuous variables among groups. All statistical analysis were performed using the SPSS 21.0 and a $p < 0.05$ was taken as significant.

Results: the mean overall age was $70 +/- 14.1$ years. The female sex rate was 36.1%. The coronary angioplasty was the most performed procedure (51%) and the global in-hospital mortality was 7.1%. According to the discharge diagnosis we formed two groups: Acute Coronary Syndrome (ACS) and non-ACS. We compared demographic data, main in-hospital procedures, complications rates, length of stay, costs and in-hospital mortality between the two groups (TABLE 1).

Conclusion: ACS continues to be the vast majority of cases in CICU; however, patients with non-ACS, are largely represented and show higher in-hospital mortality and longer hospitalization. The correct standard of care and appropriate resource utilization for this population is still to be defined.

Table 1.

	ACS (n=644)	Non-ACS (n=521)	p-value
Age (mean ± SD)	68,2 ± 12,5	72,1 ± 15,7	0,000
Gender, female %	29,3	44,3	0,000
Coronary angiography %	6,7	23,9	0,000
Percutaneous coronary interventions %	87,9	6,1	0,000
Structural interventions %	0,8	14,6	0,000
Temporary pacing and/or pericardiocentesis %	1,2	5,7	0,000
Respiratory and/or renal and/or mechanical cardiac support %	6,2	5,9	0,82
In-hospital length of stay (days; mean ± SD)	6,2 ± 8,1	7,9 ± 9	0,000
Total complications rate %	22,2	27,8	0,027
Costs (€ mean ± SD)	8751 ± 5897	7964 ± 7010	0,04
In-hospital mortality rate %	5	9,8	0,001

P261

Current situation in the cardiac intensive care unit. what are we handle?

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Introduction and Background: Current CICU are in continuos evolution compared with 15 years ago. The demand for cardiovascular critical care is increasing with the aging of the population and the prevalence of complex cardiac patients commonly complicated by multisystem organ failure.

Methods: The unit has 12 beds and is located in Tenerife (Spain), an ultra peripheral regions of the EU. We describe main diagnosis and some quality indicators such as lenght of stay and mortality.

Results: In the period analysed there were 3001 admission in the CICU, which represents 990 admission a year. We have observed an emergency-room pressure indicator of 87%. Mean lengh of stay was 3.65 days and total mortality was 3.7%. Mean age was 65 ±13.7. 14.6% of the patients had atrial fibrillation on admission. Severe aortic stenosis was present in 6% of the patients and 15% of them had LVEF below 35% on admission. Different diagnosis on admission during this period are shown in the Figure 1.

Conclusion: With aging of population and the improve of cardiac critical care knowledge and skills, we have observed more patients with ADHF and NSTEMI. Mortality rate remains low despite an increase in high mortality risk disease on admission, like life-treathering arrythmyas, cardiogenic shock or out-of-hospital cardiac arrest

Diagnostics
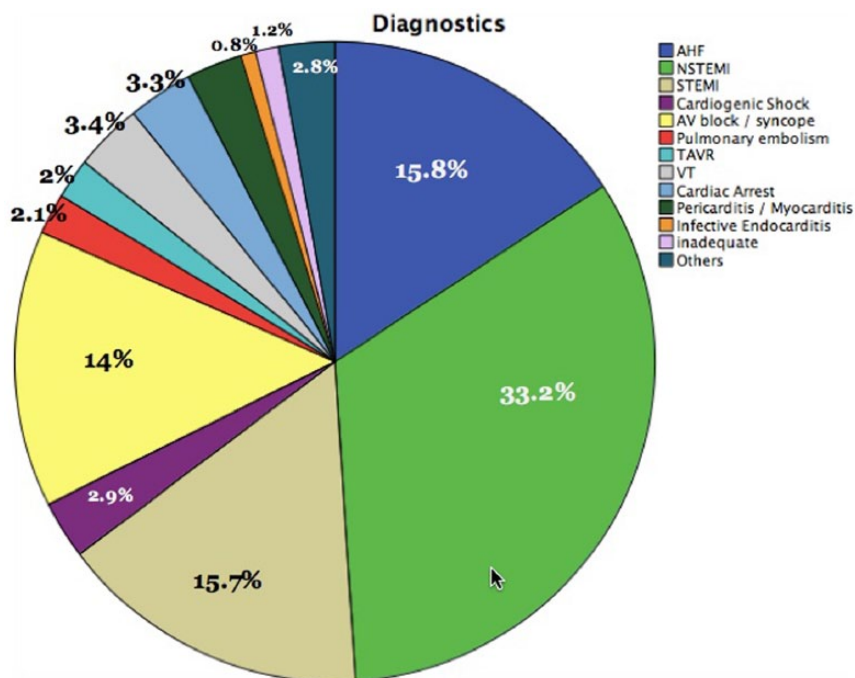
P262

Patients with myocardial infarction without nonobstructive coronary arteries (MINOCA), differences between different etiologies

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Introduction: The term MINOCA or acute coronary syndrome (ACS) without coronary culprit lesions includes a group of diseases with different treatment and prognosis. The initial clinical presentation is like ACS and the management should be according to ESC guidelines. However, when the coronary angiography is performed and don't show culprit lesions, a differential diagnosis is required using different tests among which the cardiac magnetic resonance is probably the most important.

Objectives: The main purpose was to analyze the characteristics of the patients with MINOCA and to analyzed the differences between definitive etiologies.

Methods: We prospectively included 52 consecutive patients (70.6 ± 10.7 years, 86.5% female) between May 2012 and August 2017. We evaluated the clinical characteristics, the presentation in the electro and echocardiogram, the coronary angiography and the hospital management. The definite diagnosis was performed according Mayo Clinic criteria for Takotsubo syndrome (TS), Lake Louise criteria for myocarditis and the presence of subendocardial late gadolinium enhancement in cardiac resonance for NSTEMI. We performed clinical follow-up with a median of 18 months.

Results: The 78.8% of patients had high blood pressure and 17.3% diabetes. The mean of LVEF was 40.5±12.4% and 11,5% showed cardiogenic shock at presentation. The 7.7% of patients had non-significant coronary lesions. The definitive diagnosis was TS in 79.5% of patients, acute myocarditis in 6.8% and NSTEMI in 13.6%.

There were not differences between three groups in demographic characteristics, LVEF, ECG findings or days at hospital. TS patients showed most obstruction of outflow left ventricle tract and mitral regurgitation but non-significantly. NSTEMI patients had more troponin-I peak than myocarditis and TS (18.6 ± 14.8 vs 6.8 ±6.3 vs 3.9 ±4.3 ng/ml, p=0.06). Non-significant coronary lesions were finding in the 43.3% of NSTEMI patients, 2.9% of ST patients and 0% of myocarditis patients (p=0.02). At follow up, there was not differences in mortality or cardiovascular major events between groups.

Conclusions: Patients with MINOCA and definitive diagnosis of NSTEMI had a higher peak of troponin and more frequently non-significant coronary lesions than the other etiologies of MINOCA.

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Discharge diagnosis of MINOCA patients in an intensive cardiac care unit

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Introduction: Patients presenting as myocardial infarction non-obstructed coronary arteries (MINOCA) are an heterogeneous group without definite profile, and physicians have not paid enough attention to provide an accurate diagnosis, often leading to useless or dangerous treatments.

Purpose: The aim is to know the distribution of diagnosis in our MINOCA patients, searching if there are significant differences related to previous literature about the matter.

Methods: In this study were included all consecutive patients admitted in the Intensive Cardiac Care Unit (ICCU) of our institution presenting as MINOCA. Only infarction due to procedural complication were excluded. We classified them on the basis of the final diagnosis at Hospital discharge, and we have compared the distribution with a recent systematic review.

Results: 159 patients were admitted in the ICCU of our institution from February 2011 to July 2017.and were initially labeled as the working diagnosis of MINOCA due to normal or near-normal coronary angiography. This accounted 7,9% of all MI patients. At discharge most patients were diagnosed as MI (59 patients, 37,1% as Non-ST Elevation MI (NSTEMI) and 16 patients, 10,1%, as ST Elevation MI STEMI. This was followed the diagnosis of Takotsubo syndrome (30 patients who accounted 18,9%), myocarditis or myopericarditis (23 patients, 14,5% of all MINOCA). In 17 patients (10,7%) the MI was assigned to an acute cardiac failure, and 5,7% to malignant arrhythmias such ventricular tachycardia. Only 4 patients were diagnosed as coronary artery spasm, and 2 patients as coronary spontaneous dissection. Surprisingly none was diagnosed as coronary embolia. In recent systematic review (Circulation 2015;131:861-870) similar rates were found (MINOCA was 6% of all MI), with comparable numbers of Takotsubo and Myocarditis, whereas MI diagnosis was significantly lower (only 24%) and were found more coronary spams.

Conclusions: Even after a normal or near-normal coronary angiography, most real life patients in our study were diagnosed as MI while in previous registries the number was much lower. Thus we should study MINOCA patients more accurately with more useful tests (spasm provocation tests, cardiac, magnetic resonance, search for thrombophilia disorders) in order to heal our patients correctly.
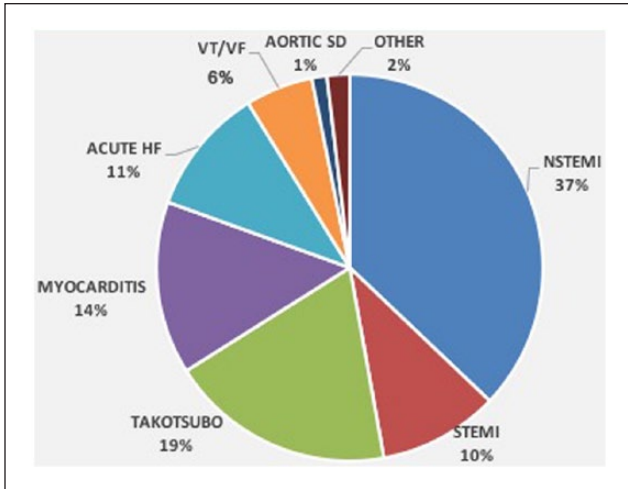
Distribution of discharge diagnosis

P264

Review and experience on MINOCA in a reference intensive cardiac care unit

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Introduction: Over last decades cardiologists have succeeded on the management of atherosclerotic ischemic cardiopathy and we have learned a lot about its diagnosis and treatment. Nevertheless Myocardial infarction with non-obstructive coronary arteries (MINOCA) is an heterogeneous and complex matter very little studied on the behalf of a relative good prognosis.

Purpose: We sought to increase the knowledge on the MINOCA poblation characteristics in order to identify if they have an unique profile.

Methods: We analyzed the baseline characteristics of the MI patients admitted in the Intensive Cardiac Care Unit (ICCU) of our institution who underwent coronary angiography and compared the groups with and without culprit coronary stenosis.

Results: 1962 patients were admitted from February 2011 to July 2017 diagnosed as MI following criteria Universal Definition and were performed invasive coronary angiography. In 159 of them (7,9%) there was no evidence of culprit coronary stenosis thus we labelled them as the working diagnosis of MINOCA. In this group there was overrepresentation of women (45,9%, while they counted only 24,1% of comparative group). MINOCA patients were significantly less smokers (23,9% vs 37,7%), hyperlipemic (42,1% vs 50,7%) or diabetics (22% vs 32,9%) whereas had similar mean age (64,5 years vs 66,3) and prevalence of hypertension. Notably, we found previous diagnosis of atrial fibrillation (AF) in as much as 15,1% of MINOCA patients, more than double than those with obstructive disease, being a strong risk factor of having normal or near-normal coronary arteries with an odds ratio of 2,14.

Conclusion: MINOCA is not as infrequent as was classically thought, as we found it in almost 8% of our patients, similar to recent reviews about the topic. There is not a definite profile for this group, as little differences were found when compared to classic infarct patients, with exception of relative more presence of women and high incidence of previous AF. Physicians who are in charge of acute cardiac patients must search accurately a final diagnosis in order to provide the best tailored treatment. For example, our AF patients could have had a infarct due to coronary embolism, poorly diagnosed etiology with specific treatment as is anticoagulation instead of oral anti-platelet therapy.
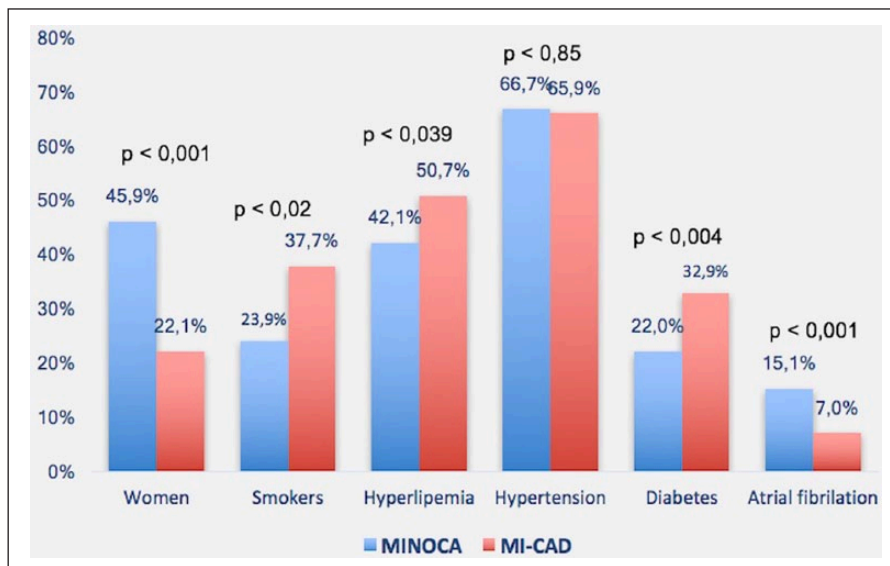
Comparative graphic of groups

P265

Folate metabolism gene polymorphisms in patients with acute coronary syndrome with nonobstructive coronary atherosclerosis

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The aim of the study was to investigate the frequency of unfavorable allelic variants of the genes associated with risk of thrombophilia of folate metabolism gene in patients with ACS in NOCA.

Material and methods: Investigation is nonrandomized, open, controlled: NCT02655718. Inclusion criteria comprised NOCA (normal coronary arteries/plaques <50%), confirmed by invasive coronary angiography, aged over 18 years at the time of randomization. Individuals who had previously undergone coronary artery revascularization were excluded from the study. For included patients were analyzed 4 genes of folate metabolism: MTHFR (677 C>T), (1298 A>C), (MTR 2756 A>G), MTRR (66A>G). The genotypes were determined by polymerase chain reaction methods.

Results: 913 patients were hospitalized with ACS in 2015-2016, 44 (4.8%) had NOCA confirmed by invasive coronary angiography. 42(95%) patients were Russian, 1(3%)- Armenian, 1(3%)- Korean. Proportion of man were 19(66%), 25 (57%) - women. Average age was 54 ± 11. 43 (96.6%) individuals with NOCA had at least one homozygous or heterozygous unfavorable genotype of the folate metabolism gene. Unfavorable heterozygous variants of genotypes of folate metabolism genes were detected in 37 (84%) patients, including combination of 3 SNPs in 7 (16%) individuals; 2 SNP - in 16 (36%), 1 SNP - in 14 (32%). In 7 (16%) patients, heterozygous genotypes of genes of folate metabolism enzymes, predisposing to the development of thrombophilia, were not determined. At least one unfavorable homozygous genotype of folate metabolism genes was registered in 26 (59%) of the examined patients, including. 3(7%) individuals identified a combination of 2 SNP. The frequency of registration of unfavorable homozygous genotypes of MTHFR (1298 A> C), MTR (2756 A> G), MTRR (66A> G) and heterozygotes for MTHFR (677 C> T) in study group more than in European population, the frequency of the homozygote for the allele A of the MTRR gene (66A> G) – lower.

Conclusion: The proportion of patients with NOCA among patients with ACS in 2015-2016 was 4.8%. The prevalence of adverse allelic variants of folate metabolism genes associated with risk of thrombophilia in patients with ACS and NOCA was 96.6%.

Table 1. Frequencies of genotypes.

№	Gene	SNP	Genotype	Frequencies of genotype in study group		Frequencies of genotype in European population*	
				N	%	Average value	Min-max
1.	MTHFR	677 C>T, rs1801133	C/C	18	0,409	0,406	0,406-0,505
			C/T	21	0,477	0,459	0,394-0,473
			T/T	5	0,114	0,135	0,088-0,135
2.	MTHFR	1298 A> C, rs1801131	A/A	23	0,523	0,475	0,473-0,573
			A/C	16	0,364	0,423	0,355-0,473
			C/C	5	0,114	0,101	0,030-101
3.	MTR	2756 A>G, rs1805087	A/A	32	0,727	0,674	0,674-0,800
			A/G	9	0,205	0,306	0,171-0,306
			G/G	3	0,068	0,020	0,016-0,035
4.	MTRR	66A>G, rs1801394	A/A	7	0,159	0,256	0,225-0,510
			A/G	21	0,477	0,441	0,375-0,553
			G/G	16	0,364	0,302	0,082-0,302

P266

Acute coronary syndrome in patients without obstructive coronary artery disease… who are they and what is their significance today?

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Introduction: An important number of patients with acute coronary syndrome (ACS) doesn't present with obstructive coronary artery disease (CAD). The characteristics and prognosis of these patients remain poorly defined.

Purpose: To determine the clinical, laboratory and angiographic characteristics of patients with ACS without obstructive CAD, the proposed pharmacological treatment upon discharge as well as their prognosis.

Methods: We evaluated consecutive patients hospitalized in a Coronary Care Unit with a diagnosis of ACS between 2012 and 2015. We excluded patients with CAD causing an obstruction superior to 50%. Population was characterized according to demographic and clinical characteristics as well as the proposed pharmacological treatment upon discharge. The major adverse events considered were the presence of heart failure (HF) during hospital stay (Killip Class ≥2 and/or BNP ≥500 pg/mL and/or left ventricular ejection fraction (LVEF) <50%) or after hospital discharge (NYHA class ≥2 and/or LVEF <50%) and death.

Results: We studied 58 patients (62% of them were males), with a mean age of 73 ± 11 years. Of these, 78% had a previous diagnosis of hypertension, 33% of diabetes and 33% were submitted to percutaneous coronary intervention (PCI) in the past. Concerning angiographic characteristics, 45% presented coronary lesions >30 and ≤50%, 22% coronary lesions ≤30%, 16% slow coronary blood flow, 12% marked calcification, 9% had no coronary lesions but had antecedents of previous PCI, 7% ectatic blood vessels, 7% vasospasm, 5% milking and 5% had no coronary lesions. Concerning the antithrombotic therapy proposed upon discharge, 34% received one antiplatelet agent, 33% two antiplatelet agents, 12% anticoagulation therapy only, 9% one antiplatelet agent plus anticoagulation, 3% two antiplatelet agents plus anticoagulation and 5% were discharged without any antithrombotic therapy. The incidence of death was 16%, death during hospital stay 3%, HF after hospital discharge 10% and HF during hospital stay 21%. The presence of hypertension, diabetes and previous antecedents of PCI were associated with the incidence of HF during hospital stay (27 vs 0%, p value 0,037; 37 vs 13%, p value 0,034; 37 vs 13%, p value 0,034, respectively). The presence of diabetes was also associated with the incidence of death (37 vs 5%, p value 0,02). None of the isolated angiographic characteristics and neither the antithrombotic therapy proposed upon discharge correlated significantly with the prognosis of these patients.

Conclusion: In this population of patients with ACS, the incidence of death and HF presents higher levels when compared with actual data for all patients with ACS. This deserves a thorough study/investigation and a more intense follow up of these patients to determine the most adequate treatment to these situations.

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Impact of presence of nonsignificant coronary artery disease vs. completely normal angiogram on outcome in patients with Tako-Tsubo syndrome

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Background: With respect to the Mayo Clinic diagnostic criteria, Tako-Tsubo patients have coronary arteries either completely normal or with non-significant luminal narrowing of less than 50% in all epicardial coronary arteries, confirmed by coronarography (CAG).

Aim: The aim of this study was to investigate potential differences in in-hospital and one-year mortality in Tako-Tsubo patients with completely normal coronary arteries and such with nonsignificant stenoses (luminal narrowing ≤ 50%) in CAG.

Patients and Methods: Data from 99 consecutive Tako-Tsubo patients, who were admitted between 2006 and 2015 into the Wilhelminenhospital, in Vienna were analyzed. Study population was divided into two groups of patients, such presenting with completely normal or with one or more coronary artery stenoses ≤ 50%. Differences in variables such as patient's characteristics, levographic findings, in-hospital mortality and one-year mortality were investigated. Multivariate regression analysis was performed in order to correct for significant confounders in univariate analysis.

Results: No differences in patient characteristics such as age, incidence of hypertension, hyperlipidemia, psychiatric diseases, trigger of the Tako-Tsubo event or ejection fraction were found (Table). Midventricular dysfunction measured by means of acute levography, although rare, was only present more often in Tako-tsubo patients with normal CAG. Patients presenting with nonsignificant stenosis had more frequently diabetes mellitus, history of previous myocardial infarction, or percutaneous coronary intervention, respectively. Interestingly, in-hospital mortality (3,4% vs 1,7%) and one-year mortality (8,4% vs. 4,2%) tended to be higher in the group with normal coronary arteries by unadjusted (in-hospital mortality: HR=0,689; CI= 0,126-3,759, p= 0,667; one-year mortality: HR=0,769; CI= 0,258-2,296, p= 0,638, respectively) or by multivariate analysis adjusted for confounders (in-hospital mortality: HR=0,735; CI= 0,128-4,233, p= 0,731; one year mortality: HR=0,883; CI= 0,288-2,710, p= 0,828, respectively).

Conclusion: CAG proven existence of visible wall irregularities vs. completely normal looking coronary arteries in patients presenting with Tako-Tsubo syndrome was associated with a higher cardiovascular risk profile, but had no influence on in-hospital or one-year mortality. Although, it is hypothesized that Tako-Tsubo patients with normal looking coronary arteries in CAG have better clinical outcome the results of this study contradict this statement. In case of Tako-Tsubo syndrome, the investigation of normal looking arteries by imaging methods like OCT or IVUS might deliver further information about vessel pathologies.

P268

Evaluation of patients with initial suspicion of takotsubo cardiomyopathy: a five-year prospective study

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Introduction: Takotsubo cardiomyopathy (TC) is a clinical entity characterized by transient regional systolic ventricular dysfunction without significant obstructive coronary artery disease. Because of the clinical presentation, and its association with electrocardiogram abnormalities and elevation of cardiac biomarkers, differential diagnosis with acute myocardial infarction (MI) must be done, even more if we attend to their different treatments and prognosis.

Objectives: The main purpose was to analyze the characteristics of the patients with initial suspicion of CT and to analyzed the differences between definitive diagnosis of CT according to Clinic Mayo criteria with the rest of patients who finally had another diagnosis.

Methods: We prospectively included 52 consecutive patients (70.6 ± 10.7 years, 86.5% female) between May 2012 and August 2017. We evaluated the clinical characteristics, the presentation in the electro and echocardiogram, the coronary angiography and the hospital management. We performed clinical follow-up with a median of 18 months.

Results: The 78.8% of patients had high blood pressure, 51.0% dyslipidemia and 17,3% diabetes mellitus. It is remarkable that 29% had personal history of mixed anxiety-depression disorder. The ECG sign most frequently was T-wave inversion (71,2%) and the mean of Troponin-I peak was 5.8±7.8 ng/ml. The mean of initial LVEF was 40.5 ± 8.2%. At discharge was prescribed, 80.2% platelet aggregation inhibitors, 78.8% beta-blocker therapy, 92.3% angiotensin converting enzyme (ACE) inhibitors and 64.7% statins.

According to cardiac magnetic resonance findings and Mayo Clinic criteria, the 79.5% of patients were diagnosed of TC. Between patients with TC definitive and the rest, TC patients showed most frequently normal coronary angiography (97.1% vs 70%, p=0.03), less Troponin-I peak (3.9 ± 4.3 vs 13.4±1.3 ng/ml, p=0.05) and more elevation of ST- at initial ECG (72.8% vs 0%, p=0.07).

At follow up, in the TC group the mortality was 1.9% and there were two recurrence cases. However, in the non-TC group, there were not mortality or recurrence.

Conclusions: Patients with definitive CT diagnosis show more ST segment elevation, lower peak of troponin and normal coronary arteries more frequently than patients with initial suspicion of CT, but with another definitive diagnosis.

P269

Prevalence of anxiety and depression symptoms using HADS and BDI surveys, in patients with myocardial infarction with non-obstructive coronary arteries

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Background: Myocardial infarction with non-obstructive coronary arteries (MINOCA) is a working diagnosis for several disorders of the heart including takotsubo syndrome. Anxiety and depression are common among patients with coronary heart disease (CHD) and a recent myocardial infarction (MI). Anxiety is less studied in CHD but together with depression considered to be a riskfactor for recurrence of MI. Previous studies on anxiety and depression in patients with MINOCA are lacking but a recent quality-of-life study has identified mental distress after the acute event to be as prevalent as for CHD patients. Aims: To investigate the prevalence of anxiety and depression among patients with MINOCA compared to patients with CHD and healthy controls.

Material and Methods: 100 MINOCA patients were eligible for this study together with CHD patients and healthy controls. Participants responded to the Beck depression inventory (BDI) and the hospital anxiety and depression scale (HADS) 3 months after the acute event. The established cut-off scores of ≥10 on BDI and ≥8 on HADS-A and HADS-D for screening of anxiety and depression were used.

Results: Using BDI the prevalence of depression was higher in MINOCA patients (35%) compared with healthy controls (9%, P<0.001) and similar to CHD controls (30%, P=0.954). Using HADS-A, the prevalence of anxiety was higher in MINOCA (27%) compared with healthy controls (9%) and similar to CHD controls (21%, P=0,408). Using HADS-D, the prevalence of depression was higher in MINOCA patients (17%) compared with healthy controls (4%, P=0.003) and similar to CHD controls (13%, P=0.466).

Conclusions: This first study on mental health in patients with MINOCA showed that anxiety and depression are common with prevalence rates similar to those in CHD patients. Identification of mental illness in patients with MINOCA is crucial to improve the quality-of-life and to reduce hospital readmissions.

Table 1. BDI and HADS summary scores.

Summary scores	MINOCA	CHD	Healthy	MINOCA vs CHD (P-value)	MINOCA vs Healthy (P-value)
BDI	9.1±9.1	8.0±8.4	3.5±4.0	0.231	<0.001
BDI >=10	35%	30%	9%	0.954	<0.001
HADS	9.7±7.4	7.5±6.0	5.3±5.1	0.051	<0.001
HADS-D	4.2±3.7	3.3±3.1	2.1±2.3	0.100	<0.001
HADS-A	5.5±4.3	4.2±3.4	3.3±3.3	0.049	<0.001
HADS-D >=8	17%	13%	4%	0,466	0.003
HADS-A >=8	27%	21%	9%	0,408	0.002

Values are presented as mean ± standard deviation or number (percent).

Moderated Poster Session 5 - Acute Coronary Syndromes III Sunday, 04 March 2018 - 10:00 - 11:00

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Impact of platelet turnover on Long-Term adverse cardiovascular outcomes in patients with acute coronary artery disease

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Background: Increased platelet turnover and high platelet reactivity are associated with short-term major adverse cardiovascular events (MACE) after percutaneous coronary intervention (PCI) for acute coronary syndrome (ACS). We therefore investigated the impact of platelet turnover and function on long-term MACE.

Methods: Consecutive patients presenting with ACS undergoing PCI on aspirin and clopidogrel were included into this analysis. Cox proportional hazard models were applied in order to assess the prognostic impact of platelet turnover (reticulated platelet count [RPC], mean platelet volume [MPV]) and function on long-term MACE, a composite of cardiovascular death, non-fatal myocardial infarction and non-fatal stroke. All variables with a p-value < 0.05 in univariate analysis were forced into multivariable models to outline independent effects.

Results: We included 280 patients. Mean age was 63.4 years, 68.8% were male. Mean follow-up was 5.1 years.

In univariate analysis, RPC was associated with long-term MACE, both as continuous (HR 1.161 [95%CI 1.076-1.252]; p<0.001) and dichotomized (HR 3.216 [95%CI 1.526-6.794]; p=0.002) variable. After adjustment for significant confounders, RPC, continuously (HR 1.098 [95%CI 1.007-1.196]; p=0.034) and dichotomized (HR 2.610 [95%CI 1.166-5.840]; p=0.020), remained significantly associated with long-term MACE. MPV, and platelet function testing were not associated with adverse outcome in univariate analysis.

Conclusion: Our data show an independent association of RPC with long-term adverse outcome in patients presenting with ACS undergoing PCI on aspirin and clopidogrel. RPC might function as potential new marker of elevated atherothrombotic risk and may guide antiplatelet therapy.
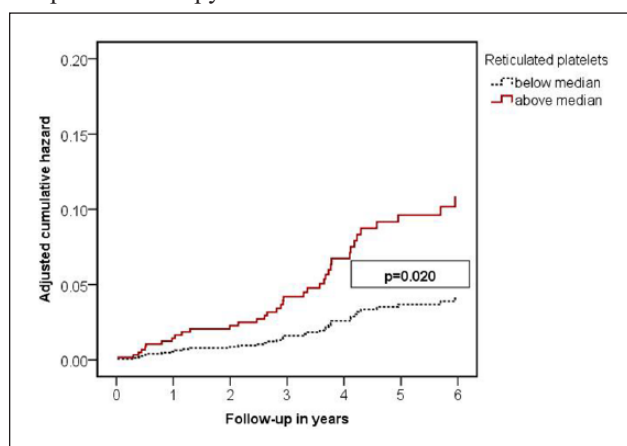
Figure. Adjusted MACE

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Acute kidney injury based on the KDIGO among ST elevation myocardial infarction patients treated by primary percutaneous intervention

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Background: Acute kidney injury (AKI) is associated with adverse outcomes after acute ST elevation myocardial infarction (STEMI). The recently proposed KDIGO criteria

suggested modifications to the consensus classification system for AKI, namely lower threshold of absolute serum creatinine increase and extending the time frame for AKI detection for up to 7 days. We evaluated the incidence, risk factors, as well as the long term mortality associated with AKI as classified by KDIGO definition in a large single center cohort of consecutive STEMI patients.

Methods: We retrospectively studied 2122 consecutive STEMI patients undergoing primary percutaneous coronary intervention (PCI). Recruited patients were admitted between January 2008 and May 2016 to the Cardiac intensive care unit with the diagnosis of acute STEMI. We compared the utilization of KDIGO and consensus criteria for the diagnosis of AKI, and its relation to long term mortality.

Results: The KDIGO criteria allowed the identification of more patients as having AKI (10.6% vs. 5.6%, p < 0.001) compared with the consensus criteria. Even mild elevation of serum creatinine (> 0.3 mg/dl) was associated with marked increase in all-cause mortality (HR 4.7, 95% CI: 3.1-6.43, p < 0.001). Patients with AKI having resolution of their renal function prior to hospital discharge had still significantly higher mortality compared to patients with no AKI (23% vs. 8%, HR 3.1, 95% CI: 2.09-4.90, p < 0.001).

Conclusion: KDIGO criteria is more sensitive in defining AKI compared with the consensus criteria in STEMI, and identifies at risk population for adverse long term outcomes.
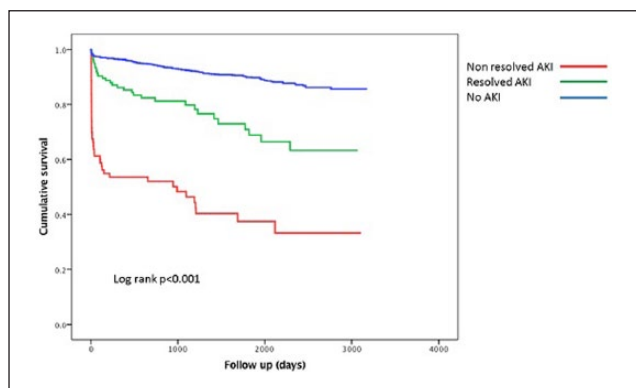
AKi resolution and cumulative survival

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Evaluation of the diagnostic precision of a single determination of high-sensitivity troponin in the screening of acute coronary syndrome in the emergency department

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Introduction and goals: The new clinical guidelines (ESC 2015) propose an algorithm, in which a single determination of high-sensitivity troponin (hsTnT) of less than 5 ng/L (Elecsys) could be used as an independent rule-out tool for acute coronary syndrome (ACS) in an emergency department (ED) setting, without need of further testing. Our goal was to evaluate its diagnostic precision and security.

Methods: We designed a prospective and consecutive registry of patients who presented with chest pain within the first 24h upon arrival to the ER, during the 2014-2016 period, with symptoms and non-diagnostic ECG, to whom the chest pain unit (CPU) protocol (assessment by a cardiologist, ECG, troponin measurement and ischemia test) was applied. We analysed those who presented with an initial hsTnT value of less than 5 ng/L. Two independent cardiologists assigned the diagnoses of ACS based on the results of tests. The presentation of cardiovascular events (AMI, revascularization or death) during the first month of follow-up was also analysed.

Results: Out of 1772 patients with chest pain, in 454 it was not possible to rule out an ACS, therefore the CPU protocol was applied. Of those, 118 (23%) had an initial hsTnT value of less than 5ng/L. None of these patients presented events during observation, and in 103 patients (87%), non-pharmacological treadmill stress tests were negative.

In case of positive or inconclusive results, the study was completed by nuclear stress testing (SPECT) or coronary angiogram, rendering only one case of unstable angina under medical treatment. During the 1 month follow-up, only one case of AMI that required revascularization was recorded, without any death. These data allowed to calculate a negative predictive value (NPV) of 99.9% for this hsTnT cut-off point.

Conclusion: In our population, a single determination of hsTnT of less than 5ng/L shows a high negative predictive value. Its implantation as a single rule-out test for chest pain should be prospectively examined in larger studies.

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Should we further investigate low risk non st elevation acute coronary syndrome?

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Introduction: According to current ESC guidelines, non ST elevation acute coronary syndrome (NST-ACS) with normal troponin (i.e. unstable angina pectoris - UA) patients who have no indication for invasive strategy, should be referred for stress imaging during admission or shortly after discharge. The introduction of high-sensitivity cardiac troponin (hsTn) measurements assays resulted in

an increase in the detection of MI (4% absolute and 20% relative increase) and a reciprocal decrease in the diagnosis of UA. Patients presenting to the ER with cardiac chest pain and hsTn under 5 ng/L have very good prognosis and extremely low risk for major myocardial events at 30 and 360 days. These selected patients have very low risk for positive stress imaging test.

Purpose: The aim of the study was to test whether low risk NST-ACS patients with no indication for invasive strategy and hsTnI under 5 ng/d can be managed conservatively with no need for additional risk stratification.

Methods: Retrospective analysis of all consecutive patients who underwent radioisotope cardiac stress test admitted due to unstable angina.in a single tertiary medical center.

Results: Between February 2016 and October 2017, 134 patients were admitted with a diagnosis of unstable angina and underwent radioisotope cardiac stress test. 84 (62.8%) of them were male with an average age of 66.9±7.8 and 101 (75.4%) of them had proven CAD in the past. 122 had hyperlipidemia, 69 diabetic, 116 hypertension and 69 were smokers. 85 (62.6%) patients with UAP had hsTI < 5 ng/dl on admission. Only one patient had ischemia on isotope scan indicating further coronary investigation. This patient did not have significant coronary disease indicating PCI. Accordingly, the negative predictive value (NPV) for the isotope scan was 98.8% and for PCI the NPV was 100%.

Conclusions: The NPV for significant coronary artery disease causing significant ischemia on stress cardiac isotope scan is high enough in patients with unstable angina with HsTI < 5 ng/dl to consider again whether indeed further risk stratification is needed in these patients.

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Is InterTAK Diagnostic Score applicable and predictive of poor prognosis in Portuguese Takotsubo Syndrome population?

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Introduction: Takotsubo syndrome (TS) mimics acute coronary syndrome in terms of symptoms, biomarkers, and ECG findings and is crucial find accurately predictor of TS diagnosis at patient's admission. Recently the International Takotsubo Registry validated the InterTAK Diagnostic Score (IDS) that estimates the probability of the presence of TS, assuming that the higher the score the greater the probability of TS diagnosis. This registry did not include Portugal. Our aim was to apply the IDS in a Portuguese multicenter database of TS patients and understand if this score is predictor of poor prognosis.

Methods: We analyzed 234 patients with definitive diagnosis of TS, enrolled in a multicenter database. We applied the IDS to our population, which include the sum of the variables: female sex (25 points), emotional trigger (24 points), physical trigger (13 points), absence of ST-segment depression (12 points), psychiatric disorders (11 points), neurologic disorders (9 points), and QTc prolongation (6 points). We used the cut-off value of 40 score points to predict all-cause mortality at follow-up through Cox regression model.

Results: Patients with TS were mainly females (n=210; 89.7%), most commonly after menopause (n=168; 80.0%), with mean age of 71.3±13.0 years. Emotional trigger was the most prevalent (n=109; 46.6%). The leading symptom on admission was chest pain (n=204; 87.2%). T-wave inversion were the main electrocardiographic abnormalities (n=94; 40.2%). Regional wall-motion abnormalities were present in most echocardiograms (n=206; 88.0%). During follow-up (mean 33 months) 15 patients died (6.4%). The recurrence rate of TS was 4.3%. Applying IDS to our TS population (mean: 30.8±12.3 points; minimum: 0 points; maximum: 71 points) we found that most TS patients had IDS $\leq$ 40 points (n=138; 59.0%). The IDS $\leq$ 40 group had higher rates of cardiovascular risk factors as dyslipidaemia (61.6% vs. 43.8%, p=0.008) and present none trigger (33.3% vs. 96.9%, p < 0.001) or atypical symptoms (18.1% vs. 5.2%, p=0.005) more often than IDS > 40 group. Others comorbidities were also more frequent in IDS $\leq$ 40 group, such as severe valve disease (14.5% vs. 5.2%, p=0.030). Regarding prognosis, multivariate Cox regression revealed that there were numerically more deaths in the IDS $\leq$ 40 group although it did not reach statistical significance (HR: 46,2; 95% CI: 0,55-3917,53; p=0.091).

Conclusion: In this Portuguese population with definitive diagnosis of TS we found unexpected low IDS values (low mean and most patients in IDS $\leq$ 40 group), raising the question of whether this score is applicable to our population with the same accuracy or the same variables than other European countries. Furthermore, lower score values seems to be associated with worse prognosis.

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Incidence and clinical impact of right bundle branch block in patients with ST-segment elevation myocardial infarction

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Introduction: Right bundle branch block (RBBB) has been associated with a poor prognosis in patients with acute myocardial infarction (AMI), namely in patients with ST-segment elevation MI (STEMI). The recent European Society of Cardiology guidelines on STEMI placed a greater emphasis on the importance of RBBB and the need for urgent revascularization.

Purpose: Evaluate the incidence and clinical impact of RBBB in patients with STEMI.

Methods: Retrospective, descriptive and correlation study with all patients admitted to a Cardiology department with a STEMI between the 1st of October 2010 and 31st August 2015. Patients were divided in two groups according to the presence, or not, of RBBB. The 1-year follow-up was made through phone call by a Cardiologist. The statistical analysis was performed in SPSS.

Results: 1208 patients were included, 75 (6.2%) of which had RBBB. Patients with RBBB were older (70.9 ± 13.4 vs 63.7 ± 13.4, P < 0.001) and had more frequently an anterior MI (70.7% vs 47.3%, p < 0.01), hypertension, diabetes mellitus and were less frequently smokers. There was a significant association between the presence of RBBB and a past medical history of AMI, heart failure, stroke/transient ischemic attack, peripheral artery disease, chronic kidney failure, cancer and dementia. There were no differences between the groups regarding sex, body mass index and history of valvular heart disease.

During hospitalization, the presence of RBBB was associated with a lower left ventricular ejection fraction (LVEF) (47.5% ± 13.7 vs 56.5% ± 12.9, p < 0,001), a Killip Class ≥ 2 at admission (26.7% vs 10.8%, p < 0,001), heart failure (29.3% vs 13.3%, p < 0,001), atrial fibrillation (12% vs 4.9%, p = 0,007), cardiac arrest (16% vs 6.5%, p = 0.002) and high grade or third degree heart block (12% vs 3.5%, p < 0,001). These patients required more frequently invasive and non-invasive ventilation and temporary transvenous cardiac pacing. Coronary catheterization was performed less frequently in patients with RBBB and the culprit artery was more often the left anterior descending artery.

Patients with RBBB had higher in-hospital mortality (21.3% vs 5.1%, p < 0,01), 1-year mortality (16.1% vs 6.9%, p = 0,01) and 1-year re-hospitalization (39.3% vs 16.3%, p < 0,01). Using multivariate statistical analysis, the presence of RBBB was independently associated with 1-year re-hospitalization (OR 2.86, 95% CI 1.5-5.5, p = 0.01), but not in-hospital mortality (OR 2.64, 95% CI 0.89-7.7) or 1-year mortality (OR 1.54, 95% CI 0.59 – 3.9).

Conclusion: Approximately six percent of patients with STEMI have RBBB. These patients are older, have more co-morbidities and a poorer prognosis during hospitalization. On multivariate statistical analysis, RBBB was independently associated with 1-year re-hospitalization, but not mortality. These findings highlight that RBBB is an important marker of prognosis and special attention should be paid to these group of patients.

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The treatment and mortality of patients with non-ST-segment elevation myocardial infarction according to estimated risk - real world data from Estonian Myocardial Infarction Registry

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Background: Current guidelines recommend using drugs from six different classes and invasive treatment strategy (coronary angiography and revascularization if applicable) for the most of non-ST-segment elevation myocardial infarction (NSTEMI) patients. However, the previous research has suggested that higher risk patients are less likely to receive guideline-suggested treatments.

Purpose: The purpose of the study was to describe the real-world practice of NSTEMI management during acute phase according to patients' estimated risk on admission and investigate if possible differences in treatment had impact on long-term prognosis.

Methods: The data on baseline characteristics and treatment were obtained from ongoing Estonian Myocardial Infarction Registry and data on mortality from the Population Registry. All consecutive NSTEMI patients <85 years old from years 2012 – 2014 were stratified into low (>4%), intermediate (4 – 12%), or high (>12%) mortality risk categories estimated by Grace 2.0. Optimal hospital treatment was defined as concomitant use of aspirin, P2Y12-receptor inhibitors, ACEi/ARBs, beta-blockers, statins, parenteral anticoagulants and coronary angiography during initial hospitalization. Mortality rates of optimally vs suboptimally treated patients stratified by risk group were compared using Cox regression.

Results: The study included 3281 NSTEMI patients with a mean age of 69.4 years, of whom 40% were women. 434 patients were classified as low, 596 as intermediate and 2251 as high risk according to Grace 2.0. 60%, 51% and 32% received optimal hospital treatment in low, intermediate and high risk group, respectively. Optimally treated patients had better survival across all three risk groups in crude and baseline-adjusted analyses (Figure 1).

Conclusion: NSTEMI patients with higher baseline mortality risk received less optimal treatment than

patients whose risk was estimated to be lower. The relative benefit from optimal NSTEMI treatment is similar across risk defined subgroups (HR-s are similar), but the absolute risk reduction is greatest among high risk patients. Lower prevalence of evidence based treatment among high risk patients (e.g. elderly, patients with diabetes or chronic kidney disease) may have contributed to poor prognosis.

Mortality of NSTEMI patients according to GRACE risk and hospital treatment
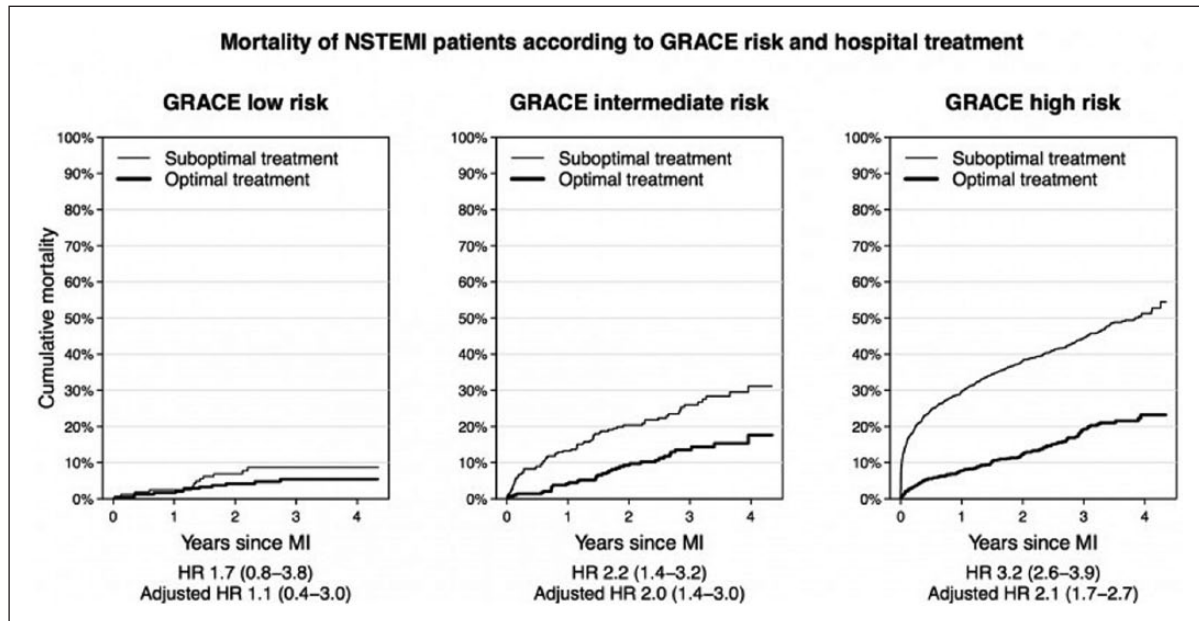
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Association between the number of recommended drugs prescribed at discharge and 1-year mortality after acute coronary syndrome

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Purpose: to evaluate the association between the number of drugs recommended by the clinical practice guidelines prescribed at discharge and mortality after acute coronary syndrome (ACS).

Methods: From January 2011 to September 2015 we included 1617 consecutive patients admitted for ACS in a tertiary hospital. We considered "optimal treatment" when patients were discharged under dual antiplatelet therapy (DAPT), angiotensin converting enzyme inhibitors (ACEi) or angiotensin II receptor blockers (ARB), high dose statins and beta-blockers (BB). A treatment score was created based on the number of recommended drugs prescribed, and 1-year mortality was compared on the basis of this score. A multivariate regression analysis was performed with optimal treatment and with every drug separately in order to identify independent predictors of 1-year mortality.

Results: 834 (51%) patients were on optimal treatment at discharge. According to "treatment score", 42 (2,6%) were discharged with one drug (Score1); 154 (9,5%) with two drugs (Score2); 587 (36%) with three drugs (Score3), and 834 (51%) received the four drugs (Score4). We found an inverse correlation between the score and 1-year mortality, with a mortality of 14,3% in patients with Score1, Score2 11,3%, Score3 7,9%, and Score4 2,8% (p < 0.001), and with the highest mortality in patients not receiving optimal treatment (8,9% vs 2,8%, p < 0.001). Multivariate analysis (table 1) found Score4 [OR 0,31 (0,1-0,93); p=0,038], peripheral vasculopathy [OR 2,15 (1,07-4,31); p=0,031], hemoblogin levels at admission [OR 0,87 (0,76-0,99); p=0,035] and left ventricle eyection fraction (LVEF) at discharge ([OR 0,95 (0,94-0,97); p < 0,001] to be independent predictors of 1-year mortality. The multivariate analysis of each drug separately only showed high dose statins [OR 0,58 (0,36-0,95); p=0,029] as an independent predictor of 1-year mortality.

Conclusions: there is an inverse correlation between the number of recommended drugs prescribed at discharge and 1-year mortality after ACS. Optimal treatment (patients receiving the four recommended drugs) and high dose statins are independent predictors of 1-year mortality in these patients.

Table 1. Predictors of 1-year mortality after ACS.

	OR (CI 95%)	P
Optimal treatment (Score4)	0,31 (0,1-0,93)	0,038
Hemoglobin (x g/dl)	0,87 (0,76-0,99)	0,035
Peripheral vasculopathy	2,15 (1,07-4,31)	0,031
LVEF at discharge (x 1%)	0,95 (0,94-0,97)	<0,001
High dose statins	0,58 (0,36-0,95)	0,029

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Culprit lesion versus multi-vessel intervention in patients with cardiogenic shock complicating myocardial infarction: Incidence and outcomes from The London Heart Attack Group

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Background: Despite advances in technology, patients with Cardiogenic Shock (CS) presenting with ST-segment myocardial infarction (STEMI) have a poor prognosis with high mortality rates. A large proportion of these patients have multi-vessel coronary artery disease, the treatment of which is still unclear. We aimed to assess the trends in management of CS patients with multi-vessel disease (MVD), particularly looking at the incidence and outcomes of MV intervention compared to culprit vessel only in a large contemporary cohort of patients undergoing percutaneous coronary intervention (PCI) for STEMI.

Methods and results: We undertook an observational cohort study of 21,210 STEMI patients treated between 2005 and 2015 at the 8 Heart Attack Centres in London, UK. Patients' details were recorded prospectively into local databases using the British Cardiac Intervention Society (BCIS) PCI dataset. 1058 patients presented with CS and MVD. Primary outcome was all-cause mortality.

497 (%) patients underwent multi-vessel intervention during primary PCI for CS with stable rates over time. Those patients undergoing MV intervention were more likely to be male, hypertensive and more likely to have poor LV function compared to the culprit vessel intervention group. Although crude, in hospital MACE rates were similar (40.8% vs. 36.0%, p=0.558) between the two groups. Kaplan-Meier analysis demonstrated no significant differences in mortality rates between the two groups (53.8% multi-vessel intervention vs. 46.8% culprit vessel intervention, P=0.252) during the follow-up period (Figure 1). After multivariate cox analysis (HR 0.73 95% CI 0.54-0.98) and the use of propensity matching (HR: 0.85 95% CI: 0.64-0.99) multi-vessel intervention was associated with reduced mortality.

Conclusion: Cardiogenic shock remains a major cause of mortality after AMI. Due to the high mortality rates in this large cohort of patients with AMI complicated by cardiogenic shock, multi-vessel intervention appears to be beneficial compared to culprit vessel intervention.
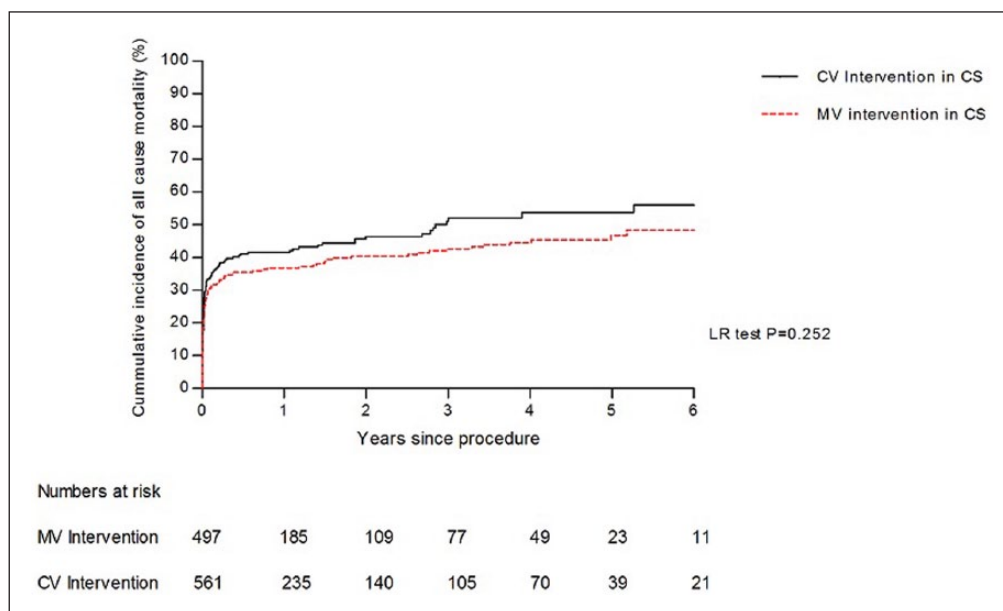
Figure 1

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A new cardiac troponin I assay with enhanced detection limit improves the rapid rule-out of acute myocardial infarction

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Background: The Singulex cardiac troponin I assay (hs-cTnI, Singulex Inc.), run on the Singulex Clarity system is based on the Single Molecule Counting technology that allows the detection of cTnI concentrations otherwise undetectable with previous assays. The limit of detection (LoD) reported by the manufacturer is of 0.08 ng/L, the 99th reference percentile (p99) is measured with <3.2% imprecision and the assay detects cTnI values higher than the LoD in 100% of healthy subjects. These unique characteristics may allow a better classification of patients admitted to the emergency department (ED) with suspected acute myocardial infarction (AMI), especially for the rule-out strategy.

Purpose: To evaluate the efficacy and the safety of AMI rule-out with the new hs-cTnI assay and compare them with the European Society of Cardiology (ESC) 0-1h rule-out algorithm based on high-sensitivity cardiac troponin T (hs-cTnT) assay. Efficacy was quantified as the percentage of the overall cohort assigned to the rule-out group and safety as the negative predictive value (NPV) for AMI in the rule-out group.

Methods: We prospectively included patients admitted to the ED with suspected AMI. Hs-cTnI and hs-cTnT were measured at admission (0h) and 1 hour later. To evaluate the hs-cTnI, patients were classified in the rule-out group when both values were below the p99 (8.67 ng/L). For hs-cTnT we used the cutoff values proposed in the 0-1h algorithm of the ESC guidelines. Final diagnostics were adjudicated by 2 independent physicians.

Results: We included 187 patients, 64% males, with mean age of 68±15 years old, 54% were smokers, 63% had hypertension, 26% had diabetes, 60% had an abnormal lipid profile and 11% had renal dysfunction. Final diagnosis was AMI in 13.4% of patients. Hs-cTnI levels were below the p99 at 0-1 hour in 72% of patients whereas only 52% were allocated in the rule-out group according to the hs-cTnT, based on ESC 0-1 hour algorithm (p < 0.001). Interestingly, NPV for AMI was 98.5% (96.1-100) in the hs-cTnI rule-out group, and 96.9% (93-100) in the hs-cTnT group.

Conclusion: The new hs-cTnI assay significantly increases the proportion of patients suitable for the rule-out strategy in patients admitted to the ED with suspected AMI, mantaining a very high NPV.

Adapted from: 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevationTask Force for the Management of Acute Coronary Syndromes in Patients Presenting without Persistent ST-Segment Elevation of the European Society of Cardiology (ESC)
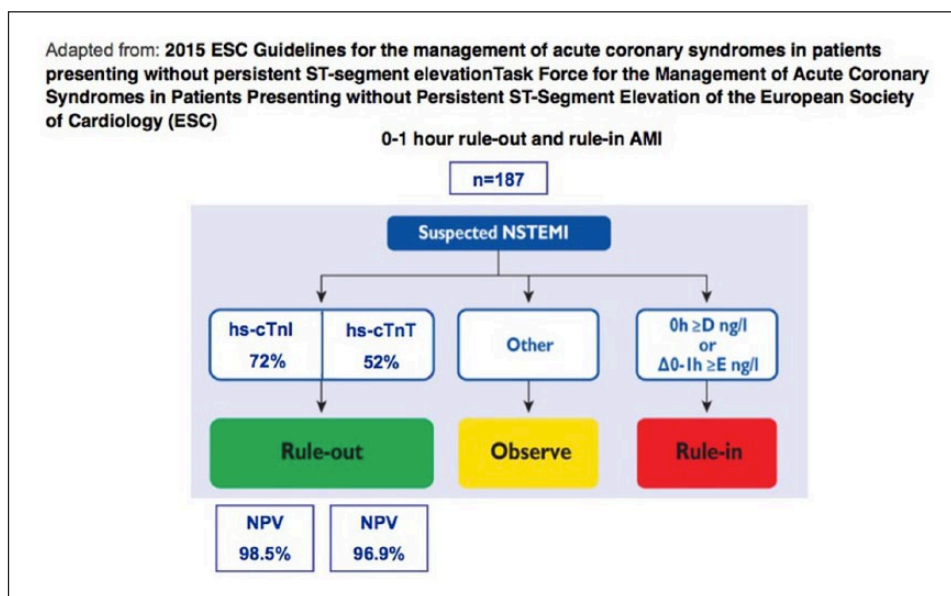
Moderated Poster Session 6 - Arrhythmias Sunday, 04 March 2018 - 10:00 - 11:00

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Osborn waves do not increase risk of arrhythmia in contemporary post cardiac arrest care

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Background: Osborn waves (OW), an upright deflection of the terminal QRS complex progressively seen in hypothermic conditions, have been suggested to be associated with risk of life-threatening arrhythmias in case reports. Targeted temperature management (TTM) following out-of-hospital cardiac arrest (OHCA) is generally considered safe, but arrhythmias are frequent adverse events.

Purpose: We investigated whether OW in TTM treated OHCA patients at 33°C and 36°C were associated with increased risk of clinical and sub-clinical arrhythmia.

Methods: The study includes data from the TTM-trials ECG-substudy (serial 12-lead ECGs at 5 predefined time points from 680 (94%) OHCA patients treated with TTM at 33°C vs. 36°C). Further, a pre-specified single-centre cohort of 113 patients had 48h 12-lead Holter recordings performed during the maintenance phase. The ECGs were stratified by presence of any OW and compared to data on occurrence of ventricular tachycardia (VT), ventricular fibrillation (VF) and ventricular and supraventricular ectopic activity.

Results: OW during TTM were present in 40% of the 680 patients, with higher prevalence in patients treated with 33°C (46% vs. 35%, p < 0.01). Neither the presence of OW at target temperature (Odds ratio=0.81 (0.49-1.34), p=0.42), nor the presence of any OW during post cardiac arrest care (Odds ratio=0.78 (0.51-1.20), p=0.26) were associated with an increased risk of life-threatening arrhythmias (VT/VF) after OHCA. Similarly, the Holter recordings did not reveal any increased burden of ventricular (p-interaction= 0.90) or supraventricular ectopy (p-interaction= 0.92) during TTM in patients with OW (Figure). Though not significant, a similar pattern of lower and not higher ectopy was seen by OW during TTM (Figure).

Conclusion: Osborn waves are frequently observed during TTM after OHCA, particularly in patients treated with TTM at 33°C. Osborn waves were not associated with increased risk of life-threatening ventricular arrhythmia or subclinical ectopic activity and may be considered a benign physiological phenomenon and not a pro-arrhythmic sign in this setting.
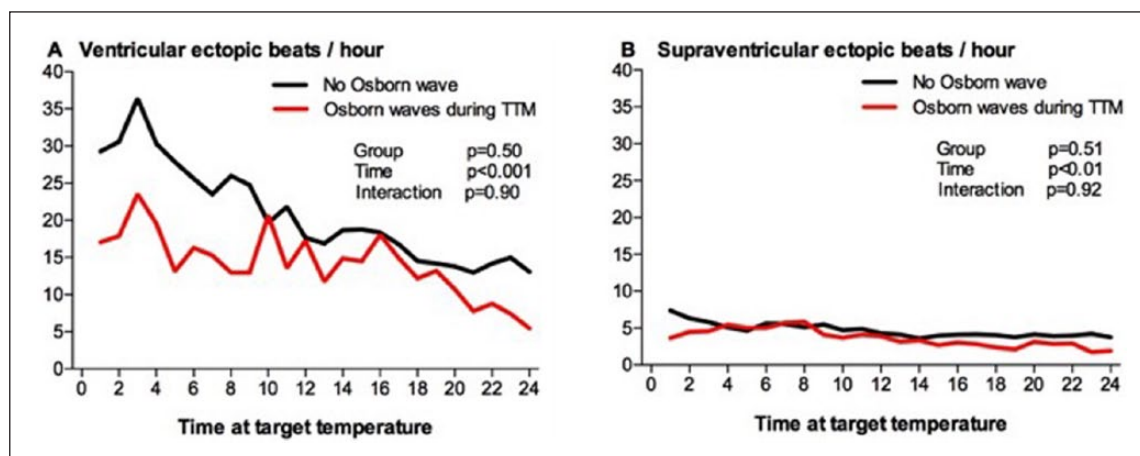
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Results of a single-centre registry of electric storms (STORM REGISTRY)

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Background: Electric Storm is a life-threatning event and significantly increases mortality among people with heart failure and, according to diffrent authors, it may reach up to 50% of patients in NYHA class III.

Purpose: The STORM registry is a single-centre on-going registry of patients with heart failure who were admitted to the Centre for Heart Diseases from beginning of 2009 to the end of 2016.

Methods: We analyzed investigation and treatment path as well as long-term prognosis of 83 patients admitted to our centre due to electric storm (ES) (altogether 107 cases).

Results: Mean age of the patients was 60,8 years. Etiology of heart failure in 74% was ischemic and 50,1% patients experienced previous MI. Mean left ventricle ejection fraction was 26,8% and 49,5% of individuals were in NYHA class II. 89,3% of the patients had implantable cardiowerters-defibrillators (ICD) or cardiac resynchronization devices with cardioverters-defibrillators (CTR-D). 69% had previous VT (sustained or non-sustained) and 47,1% were diagnosed with atrial fibrillation or flutter (paroxysmal or fixed). 23,4% of patients suffered from chronic kidney disease stage III or higher and 17% were diagnosed with hyperthyroidism. 12,4% has severe mitral regurgitation. In 55,7% of the patients coronary angiogram was performed and in 37,3% cases percutaneous coronary intervention (PCI) was performed. In 86,3% of PCI at least one stent (drug-eluting or bare metal) was implanted. In 18,9% of the cases of ES, VT ablation was performed. The median time from implantation of ICD/CRT-D to ES was 621 days (407-1207). The mean time from ES to death was 519 days. 12-month mortality from first ES in our population was 25,3%

Conclusions: In most patients admitted with ES the etiology of heart failure is ischemic. Over one-third of the population require PCI and nearly one-fifth should be treated with VT ablation.

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Atrial fibrillation and novel anticoagulants in women: is there any difference?

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Background: Atrial fibrillation (AF) increases the risk of thromboembolism and stroke; however, this risk is not the same depending on gender and its consequences in terms of severity of stroke and mortality. Women have a morse poststroke outcome than men in terms of motor and cognitive function and activities of daily living. The novel oral anticoagulants (NOAC) are especially appealing for stroke prevention in women with AF.

Purpose: The primary objective is to assess gender differences in baseline characteristics, efficacy and safety of NOAC in "real world".

Methods: 373 patients (167 women and 204 men) with AF and NOAC (Dabigatran, Rivaroxaban, Apixaban and Edoxaban) were compared. We included information into the CHA2DS2VASc score for assessing stroke risk and HAS-BLED score as a measure of bleeding risk; type and dose of NOAC and events: ischemic stroke or systemic embolism, bleeding and all-cause mortality.

Results: Mean follow up 521 days. Women present: mean age 77±12 (men 73±10) with CHA2DS2VASc score 4,4±1, significantly higher comparing with men (3,49±1,5, p < 0,001). There were no statistically significant differences between groups regarding to HASBLED (3,17), incidence of moderate to severe renal impairment, previous stroke, HTA or diabetes. Aspirin use and vascular disease were more frequent in men (23,5% vs7%, p < 0,001). Apixaban 5 and 2,5 mgr (22,8% and 30,5%) is the most used NOAC in women whereas in men is 27,5% and 23%. Dabigatran was preferentially prescribed in men: 16,8% the 110 mgr dose and 4,2% the 150 mgr dose vs 2,4% in women. Adverse events were lower for the women group. Regarding bleeding, incidence in men was 14,7% vs 6,6% in women (p < 0,013). The major bleeding rate was also lower for women than men (2 cases vs 12). Stroke is infrequent and differences between groups (6 cases in men vs 3 in women) are not statistically significant. Global mortality is higher in men vs women and it is related to tumors, sepsis and 4 severe hemorrhages.

Conclusions: Gender differences exist in medical management of patients with AF, and compared with men, women have been found to have greater thromboembolic risk. The highest stroke risk derives the greatest absolute benefit and this is observed in our series: the use of NOAC in female is more effective and safer than in men.

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Extrasystolic arrythmia: functional importance of different types

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Atrial fibrillation is considered to be a risk factor of thromboembolic events because of the high probability of mural thrombus in auricles with ability of its further fragmentation. The majority of researches acknowledge the kardioembolic nature of stroke. However it's not paid attention to the role of elastic and muscle-elastic arteries on the background of multifocal arterial atherosclerosis with extrasystoles and atrial fibrillation in tromboembolic danger.

Purpose: To determine the influence of intra-arterial hemodynamic and kinetic disorders of main arteries on the probability of thromboembolic events in the patients with different types of extrasystoles and atrial fibrillation.

Materials and methods: We examined 208 patients with the permanent form of atrial fibrillation and supraventricular and ventricular extrasystoles. We used extrasystoles classification in accordance to the moment of their appearance in cardio cycle. We have identified:

-Extrasysoles before the mitral valve opening.

-Extrasystoles in rapid ventricular filling phase before the transmitral blood flow peak.

-Extrasystoles in rapid ventricular filling phase after the transmitral blood flow peak.

-Extrasystoles in slow ventricular filling phase.

We registered doppler -ultrasound and sphygmograms of carotid, radial, ulnaris, posterior tibia, arch of foot arteries. We analyzed the peak speed direct blood flow, blood flow volume. To know the moment of extrasystoles appearance in cardio cycle and ectopic center localization we used apex-cardiography and electrocardiography. The volume of cardiac output and transmitral blood flow were measured by echocardiography. We determined the parameters of heart biomechanics and main arteries kinetics, which characterized speed, acceleration, capacity and work in each phase of heart cycle in systole and diastole, and also the periods of dominance of outflow over inflow. We valued the contribute to the circulation of the premature contraction and first post-extrasystolic contraction.

Conclusion: The main importance to the hemodynamics changes has the moment of extrasystole appearance in cardio cycle and the ability of the first post-extrasystolic contruction to reestablish an adequate resulting blood flow. On the background of multifocal lesions of main arteries the main importance has the first post-extrasystolic contraction. It is accompanied by the sharp increase of hemodynamic and kinetic parameters of arteries and the increased deformation of vascular wall. The maximums of these parameters are revealed in first post-extrasystolic contruction in case of extrasystoles before the mitral valve opening and before the transmitral peak flow. In atrial fibrillation the main danger are the first ventricular contractions after the maximum time pauses. It causes the significant increase of cardiac output, arteries diameter as well as non-stability of atheromas and mural thrombus fragmentation with high embolism probability.
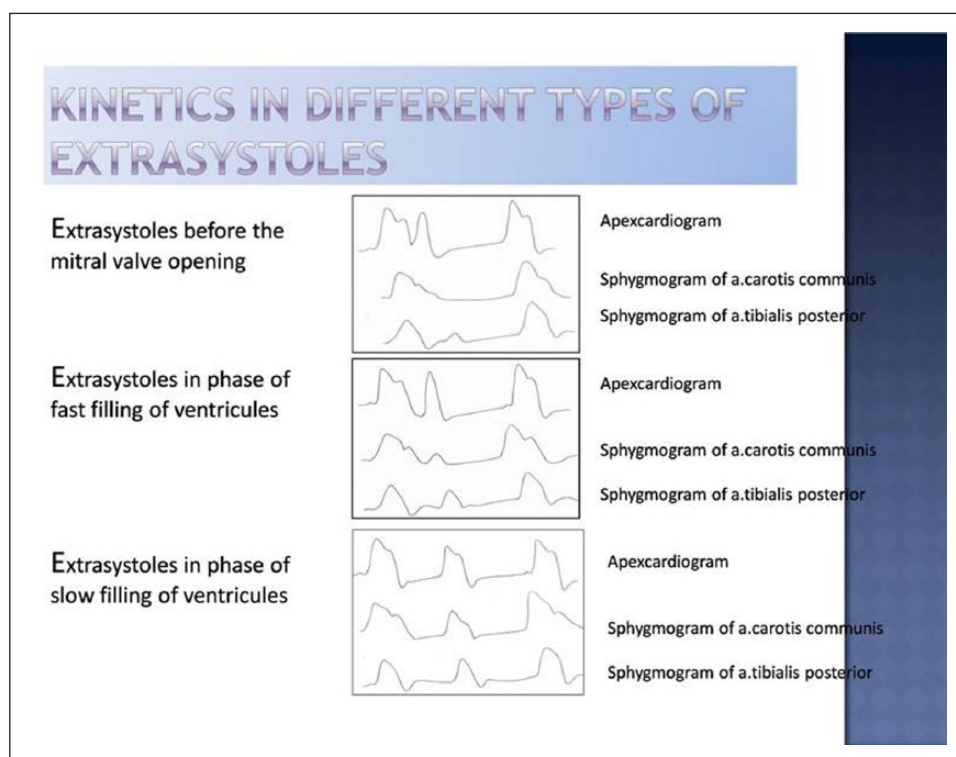
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Acute cardiovascular events in atrial fibrillation patients treated with non-vitamin K antagonist oral anticoagulants: a real-world registry results

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Background: The NOAC trials showed a risk reduction of stroke/systemic embolism and major bleeding in non-valvular atrial fibrillation (AF) patients treated with non-vitamin K antagonists (NOAC) compared to warfarin. There are limited comparative real-world data available for the NOAC.

Purpose: The objective of this study is double: on the one hand to describe the baseline characteristics of patients treated with NAOC and on the other hand to asses effectiveness and safety of NOAC described as acute adverse cardiovascular outcomes: all-cause mortality, bleeding and tromboembolic events: stroke (ischemic, hemorrhagic or cardioembolic), myocardial infarction, pulmonary and peripheral embolism.

Methods: Prospective observational analysis of the Hospital reference population treated with NOAC for stroke prevention in non valvular atrial fibrillation since September 2013. Follow up at 6 months interval until July 2017, permanent discontinuation, switch of NOAC or dose, or death. 373 consecutive patients with AF and NOAC (Dabigatran, Rivaroxaban, Apixaban and Edoxaban) were included. We registered information into the baseline characteristics, CHADS2VASC2 score, HASBLED, type and dose of NOAC and adverse events.

Results: Mean follow up 521 days. 44.8% women, mean age 75,18±11 years with 42% ≥80. CHA2DS2VASc score 3,9±1,6 and HASBLED 3,23±1,2. 13.9% were antiaggregated and 52,6% had glomerular filtration rate between 30-79 mL/min/1.73 m^2. The prevalence of the main comorbidities on initiation of NOAC treatment were: stroke 22.78% (n= 85), hypertension 80.16 % (N=299), diabetes 27.88% (n=104), vascular disease 16% (N= 60) and major bleeding 10,99% (N=41). The most used NOAC was Apixaban 51,8% (25,5% the 5 mgr dose and 26,3 % the 2,5 mgr) followed by 23,5% Dabigatran, 17,9% Rivaroxaban and 4,5% Edoxaban. Patients treated with Apixaban and Dabigatran had a significantly higher risk of embolism than those treated with Rivaroxaban in our series (Mean CHA2DS2VASc score 4,6 and 3,7 vs 3,2). Dabigatran 150 was preferentially prescribed in younger patients with mean HASBLED score =2. The most frequent NOAC used in patients with HASBLED score > 4 was Apixaban. The major bleeding rate was infrequent (N=14/3,75% for major bleeding and N=27/7.23% trivial bleeding) but higher for men than women (N=12 cases vs 2). 33 patients (8.8%) died: the main cause was cancer followed by sepsis and heart failure. No cases of pulmonary embolism or systemic embolism were observed. Stroke is infrequent (N=9) and related to history of previous stroke, elderly patients (>82 years) and CHA2DS2VASc punctuation between 5 and 7.

Conclusions: Analyses of real-world data can provide additional insights, complementing data from randomized clinical trials. Subgroup analyses (NOAC dosage, age, renal impairment, CHA2DS2-VASc or HAS-BLED score) show consistently lower risks of stroke/SE and major bleeding. Obtained data confirm the favourable risk benefit profile of NOAC in clinical practice.

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Cardiac arrest as myocarditis presentation: diagnostic and therapeutic challenges

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We present a case of a 34-year-old male, without relevant past medical history, who had a cardiorespiratory arrest (CRA) while he was running. Basic life support was immediately started and at the arrival of paramedics, it was documented ventricular fibrillation rhythm. The patient was submitted to two appropriated shocks and had recovery of spontaneous circulation. The electrocardiogram (EKG) post-CRA showed sinus rhythm, with no signs of channelopathy or other relevant changes.

At admission to the local hospital, he was in Glasgow coma scale of 10 (O1V3M6), with fever (38.3.°C) and tachycardia (heart rate 130bpm), without any other relevant changes at physical examination. Arterial gasometry revealed metabolic acidosis (pH 7.28, pO2 60.5 mmHg, pCO2 31 mmHg, HCO3- 16.1 mmol/L) and hyperlacticaemia (10 mmol/L). The other laboratory analysis at admission were remarkable for elevated serum creatinine (1.5 mg/dL), transaminases (AST 183 UI/L, ALT 254 UI/L), creatine kinase (CK) (384 U/ L) and troponin T hs (178 ng/L).

For having presented two convulsions in the emergency department, he was transferred to our hospital to perform a cranial computer tomography (CT).

At admission to our hospital another EKG was performed that was similar to the first one and the cranial CT did not show relevant changes. Laboratory analysis showed higher values of CK (1000 U/L) and troponin T hs (1267 ng/L).

The transthoracic echocardiogram (TTE) at admission revealed akinesia of the basal and medial segments of the anterior wall and hypokinesia of the basal and medial segments of lateral and anterior septal walls, with a slight reduced left ventricular ejection fraction.

An urgent invasive coronary angiography and aortography were performed and did not reveal relevant changes.

He was admitted to the Intensive Care Unit without inotropic support and was later transferred to the Cardiology Department, remaining asymptomatic from the cardiovascular point of view.

To better characterize the wall motion abnormalities observed in TTE, a cardiac magnetic resonance imaging was performed and revealed hypokinesia of the inferolateral

and lateral walls, with decrease in its thickness and an extensive pattern of subepicardial late enhancement (LE) in the lateral wall and intramural LE in the septum, compatible with inflammatory cardiomyopathy.

Given the rapid recovery and hemodynamic and arrhythmic stability it was decided not to perform endomyocardial biopsy. The indication for implantation of an implanted cardioverter defibrillator (ICD) was later discussed, and the implantation of subcutaneous ICD for secondary prevention of sudden cardiac death was decided. This case aims to illustrate possible diagnostic and therapeutic challenges in myocarditis, given the heterogeneity of clinical presentations and the controversy surrounding the decision on the implantation of ICDs in the subacute phase of cases of myocarditis that present with malignant arrhythmias.
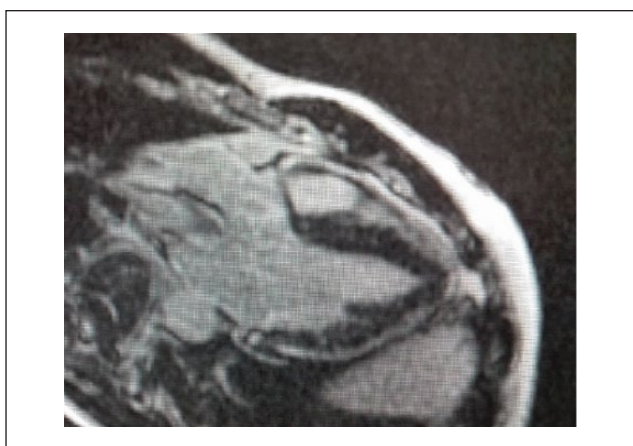
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Impact of percutaneous mitral valve repair on ventricular arrhythmic burden of patients with severe mitral regurgitation and heart failure

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Background: Ventricular remodeling and volume overload can lead to electrical instability in patients with LV dysfunction and severe mitral regurgitation (MR).

Purpose: We sought to investigate the impact of Mitraclip in the arrrythmogenic burden in such patients.

Methods: Prospective single-center registry of consecutive patients treated with MitraClip at our Institution between June 2014 and December 2016. Clinical, echographic and electrophysiological variables were recorded. The main outcome was the change in major ventricular arrhythmias

(MVA, a composite of non-sustained ventricular tachycardia-NSVT-, device shock or antitachycardia pacing-ATP-) in the prior year to MitraClip implantation and during follow-up.

Results: During this period a total of 54 patients (mean age 72.9± 8.9 ; 72.2% male) have undergone percutaneous mitral valve repair. Among them, 17 patients (mean age 73.8± 9.2, 64.7 % male) had received a cardiac device with continuous cardiac monitoring prior to MitraClip implantation (70.5 % defibrillator, 14 % CRT, 17,6% pacemaker). Mean ejection fraction was 33% ± 12.9 %, mean end-diastolic volume was 182.8±53 ml and all of them had severe functional MR. All patients were in NYHA functional class III-IV prior to procedure. MitraClip was successful in 94.1 % of the cases with 41.2% of patients receiving ≥2 clips.

A total of 25 MVAs were recorded in the year prior to device implantation (NSVT 12, shocks 2 and ATP 11). Notably, only 1 NSVT was recorded during a median follow up of 452 days (IQR 189-600), being this difference statistically significant (p=0.042). No differences were observed in the rate of atrial arrhythmias (3 episodes prior to clip vs. 1 episode after, p=NS).

Conclusion: Mitraclip therapy might be associated with a reduction in the burden of ventricular arrhythmias in patients with LV dysfunction and severe functional MR.

Table 1. Arrhytmias before and after Mitraclip.

	MVA	Atrial arrhytmias
Prior to Mitraclip	25	3
After Mitraclip	1	2
P value	0.042	NS

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Impact of cardioversion on ventricular repolarization during persistent atrial fibrillation

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Purpose: Changes in ventricular repolarization during atrial fibrillation (AF) reduction are poorly understood. The aim of this study is to analyze changes in variables analyzing ventricular repolarization immediately after return to sinus rhythm.

Methods: We analyzed 100 patients who were hospitalized for permanent AF and having recovered a stable sinus rhythm spontaneously or in response to therapy reduction. We measured QTc interval (Bazett), Tp-Te duration in DII just before cardioversion and immediately after restoration of sinus rhythm.

Results: We defined 4 groups: spontaneous restoration of sinus rhythm (group 1, n = 36), antiarrhythmic therapy (group 2, n = 32), electrical cardioversion (group 3, n = 13), electrical cardioversion +antiarrhythmic therapy (group 4, n = 19). All parameters remained similar before AF reduction (QTc , p=0,25, Tp-Te, p= 0,28) among the fourth groups. After restoration of sinus rythm, ventricular repolarization parameter was significantly prolonged In all groups (QTc from to 422,65 ±60ms to 444,81±64 (p < 0.001); Tp-Te from 64,46±23 to 83,4±36 (p=0,04)).

Electrical cardioversion with taking antiarrhythmic drugs, is characterized by the most increased QTc interval (p=0,04) after restoration of sinus rhythm. Moroever , we noted that there is a negative correlation (r= −0,56, p<0,001) between QTc prolongation and QTc duration at baseline.

Conclusions: These findings suggest electrical vulnerability immediately after restoration of sinus rhythm more important with electrical cardioversion. Particular caution should therefore be applied whenever class III antiarrhythmic drugs are administered

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Electrical storm risk factors, management, and outcomes: preliminary results from the international ELECTRA registry

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On Behalf of: the ELECTRA study team

Background: 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. ES is a clinical emergency, its prevalence steadily increasing along with the number of implantable cardioverter-defibrillator implanted in developed countries. The intErnationaL eLeCTRicAl storm registry (ELECTRA, NCT02882139) is a multicentre, observational, prospective clinical study with two major aims.

Purpose: We aim to create an international database on ES encompassing clinical features, pharmacological management, and interventional treatment strategies. Moreover, we aim to describe mortality and rehospitalization rates in patients with ES over a long follow-up.

Methods: A minimum of 500 patients will be included in the present registry, and each patient will be followed-up for a minimum of three years. The sample size was selected on the estimated enrolment rates of the participating centers during a 3-year enrollment period. The inclusion criteria are a diagnosis of ES, age ≥18 years old, and written informed consent. The exclusion criteria are no ICD implant, confirmed or suspected use of drugs with known direct pro-arrhythmic effect, and inability to express an informed consent for the study. The primary endpoint is all-cause mortality. The main secondary endpoint is hospitalization for all causes. Other secondary endpoints include ES recurrences, unclustered VTs/VFs recurrences, and hospitalizations for HF worsening.

Results: One-hundred and seventeen patients were enrolled so far (102 males, mean age 67.3±14.7 years). Mean ejection fraction was 32.1±10.7 %, and 61 patients (52.1%) already had at least one VT/VF episode before ICD implant. Each patient had a median of 6 ATPs and 3 shocks during the ES index event, which lasted a median time of 10.5 hours. VT was the triggering arrhythmia in 88% of the cases, mainly monomorphic VT (40.2%) or VT of unknown morphology (41%), while polymorphic VT (6.8%) and VF (12.0%) were rarer. During the 1-year follow-up available, 15 patients (12.0%) died, ten for non-sudden cardiac death, one for sudden cardiac death and four for non cardiac-related causes. Thirty-two (27.4%) patients had an ES recurrence, 39 (33.3%) had an unclustered VT/VF recurrence, and 18 (15.4%) had at least one heart failure-related admission during the 1-year follow-up. Mean hospitalization length was 13.3±5.7 days.

Conclusions: The ELECTRA registry aims to give a solid answer to many open questions, as to estimate with good precision the incidence of death and cardiovascular events, to delineate which baseline characteristics are more commonly associated with ES, and to define the contemporary standard of care for ES. Data from the present registry could also become a solid foundation for phase III randomized clinical trial on treatment of ES.

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Electrocardiographic measures of repolarization dispersion and arrhythmic outcomes among STEMI patients with pre-infarction angina undergoing primary percutaneous coronary intervention

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Background: Arrhythmias are considered one of the major causes of death in patients with ST elevation myocardial infarction (STEMI), particularly in the early in-hospital

phase. Pre-infarction angina (PIA) has been suggested to have a protective role in STEMI.

Objectives: To study the difference in acute electrocardiographic findings between STEMI patients with and without PIA undergoing primary percutaneous coronary intervention (PPCI), and to assess the in-hospital arrhythmias in both patient groups.

Material and Methods: We prospectively enrolled 238 consecutive patients with first acute myocardial infarction. Patients were divided into 2 groups; those with or without PIA. ECG data recorded and analyzed included; ST segment resolution at 90 minutes, QRS comlex fragmentation, corrected QT (QTc) interval and dispersion (QTD) , TP-TE interval and dispersion and TP-TE / QT ratio. In-hospital arrhythmias encountered in both groups were recorded.

Results: Of the 238 patients included, 42 (17%) had PIA and 196 (83%) had no PIA. Patients with PIA had higher rates of ST segment resolution at 90 min. (83% vs. 51%, $P < 0.0001$), whilst patients with no PIA had higher values of QTc (445.34±50 Vs 422.29±41 ms, p=0.006), QTD (70±25.6 Vs 56.09±20.7 ms, p= 0.001), TP-TE interval (90.49±18.89 Vs 81.238±12 ms, p= 0.003), TP-TE dispersion (17.98±6.23 Vs 13.596±4.26 ms, $p < 0.0001$) compared to those with angina preceding their incident infarction (PIA). This was reflected into significantly higher rates of in-hospital arrhythmias among patients with no PIA (26% Vs 7%, p=0.004).

Conclusion: PIA patients had better electrocardiographic measures of repolarization dispersion, and encountered significantly less arrhythmic events compared to patients who did not experience PIA.

Treatment strategies for the complex decompensated Heart Failure/cardiogenic shock patient: the what and when of drugs and devices Sunday, 04 March 2018 - 11:00 - 12:30

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The incidence of cardiotropic viruses in the myocardium in patients with acute decompensated chronic heart failure

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Background: Inflammation plays a crucial role in the progression of chronic heart failure and its decompensated. Experimental studies have shown repeatedly that activation of inflammation in the heart provokes left ventricular remodeling and left ventricular dysfunction. However, anti-inflammatory therapy widely lacks positive outcomes. However, no reports on the study of molecular and cellular phenotypes of myocardial inflammation (viral, viral and autoimmune inflammatory and autoimmune type) in patients with acute decompensated chronic heart failure (ADHF) and ischemic cardiomyopathy.

The purpose of study to determine the frequency of occurrence of inflammation and the profile of cardiotropic viruses in the myocardium by endomyocardial biopsy, and immunohistochemistry analysis.

Methods: This open-label, nonrandomized, single-center, prospective trial - NCT02649517. This trial includes ADHF patients with ischemic systolic dysfunction underwent percutaneous coronary intervention/coronary artery bypass graft with optimal results not earlier than 6 months after surgery and acute coronary syndrome. Patients receive standard treatment of ADHF according to ESC guidelines. All patients undergo invasive coronary angiography to exclude the progression of coronary heart disease as the cause of ADHF. Endomyocardial biopsy (EMB) and following immunohistochemical analysis were performed to determine type of inflammation in the myocardium. The following parameters are assessed during hospitalization: inflammatory infiltrate in the myocardium.

Results: The subanalysis of the 25 patients (16% female, 84% men, left ventricular ejection fraction 29.17±9.4%) with ADHF hospitalized from January 2015 to A May 2017. The average age of our patients was 59,8±9,3 years. All of the patients underwent endomyocardial biopsy which revealed signs of myocarditis in 16 patients (64%) and no myocarditis in 9 patients (36%). The presence of signs of myocarditis with cardiotropic viruses was found in 16 cases (64%), and cardiotropic viruses without myocarditis in 7 cases (28%). The presence of cardiotropic viruses with signs of myocarditis was found in 16 cases (64%), and cardiotropic viruses without myocarditis was only in 7 cases (28%). Viruses in the myocardium were determined in 21 cases (84%). The most common combinations were Enterovirus with Human herpesvirus 6 in 12 patients (48%) and Enterovirus with Epstein-Barr virus in 7 patients (28%). The correlation was found between the infiltration of CD 45+ cells in the myocardium and presence of Enterovirus.

Conclusion: The results showed the frequency of occurrence of myocardial inflammation 64% and cardiotropic viruses 84% in myocardium in patients with ADHF. The most encountered viruses in myocardium were Enterovirus and Human herpesvirus 6.

Anti-thrombotics in patients at simultaneous risk of stroke and stent thrombosis
Sunday, 04 March 2018 - 11:00 - 12:30

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Ultra-low-dose twice-daily aspirin improves haemostasis and maintains platelet inhibition in acute coronary syndrome patients receiving ticagrelor

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Background: Aspirin 75 mg once daily (OD) and ticagrelor 90 mg twice daily (BD) represent a standard regimen of antiplatelet therapy in acute coronary syndromes (ACS). Despite this, risk of recurrent thrombotic events remains a significant problem yet bleeding is also a frequent complication. The PLATO study suggested that higher aspirin doses may be inferior in ticagrelor-treated patients with ACS. Reducing bleeding risk whilst maintaining antithrombotic benefits would improve outcomes.

Purpose: We characterised a novel regimen of ultra-low dose aspirin given BD with ticagrelor in ACS.

Methods: 20 patients receiving aspirin 75 mg OD and ticagrelor 90 mg BD for ACS entered a randomised crossover design, taking aspirin 20 mg BD during one 14 day period and 75 mg OD in the other. Ticagrelor was continued throughout. At the end of each period, principal metabolites of thromboxane A2 and prostacyclin were measured by ELISA in serum and urine respectively. Pre- and post-dose maximum platelet aggregation (MA) to arachidonic acid (AA), collagen and adenosine diphosphate (ADP) were assessed by light transmittance aggregometry. Post-dose bleeding time was determined using a standard lancet method.

Results: 16 males and 4 females completed the study (mean age 64.3 ± SD 11.9 years). Compared to 75 mg OD, post-dose (peak effect) serum thromboxane B2 was significantly greater in those receiving the novel regimen (3.03 ng/ml ± 3.64 ng/ml vs. 0.83 ± 1.93, p=0.018]), however there was no significant difference between pre-dose (trough effect) levels (3.51 ± 4.07 ng/ml vs. 2.48 ± 3.14, p=0.23). There was a trend towards greater urinary prostacyclin metabolite with 20 mg BD (33.1±18.9 pg/mg creatinine vs. 28.3±12.4, p=0.16). MA to 1mM AA was well inhibited by both regimens pre- (8.5 ±14.3% vs. 5.1±3.6%, p=0.24) and post-dose (8.7±14.2% vs. 6.6±5.3%, p=0.41). There were no significant differences in responses to ADP. Post-dose but not pre-dose MA to collagen 4 μg/ml was significantly greater with the novel regimen (16.5±15.6% vs 9.0±5.7%, p=0.007), whereas there was no significant difference for collagen 16μg/ml. Bleeding time was significantly shorter when receiving the novel regimen compared to the standard (680±306s vs. 834±386s, p=0.02).

Conclusion: Compared to aspirin 75 mg OD, ultra-low-dose BD aspirin provided consistent inhibition of thromboxane release and platelet aggregation, reduced peak-trough variation and improved haemostasis. Further studies are warranted to assess whether aspirin 20mg BD provides a better balance of efficacy and safety in combination with ticagrelor.
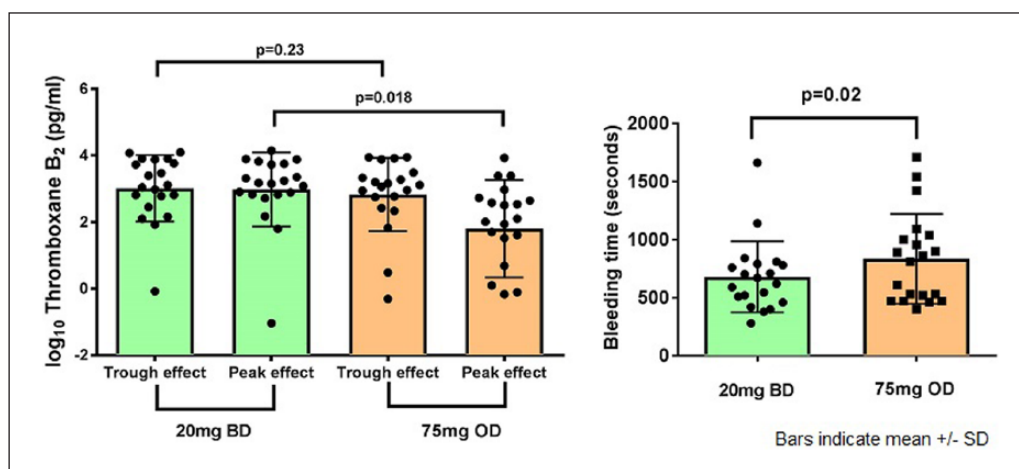
Hot Topics in acute coronary syndrome Sunday, 04 March 2018 - 11:00 - 12:30

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Early rule-out of acute myocardial infarction by copeptin and troponin; procore: a prospective european registry

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On behalf of: ProCore

Purpose and methods: European prospective registry (Germany, Austria, Switzerland, France, Spain, United Kingdom, Turkey, Lithuania, Hungary) about discharge of patients with Copeptin below cut-off (10 pmol/l) and Troponin below the 99th percentile if a thorough clinical assessment allowed discharge in general.

Primary endpoint: all-cause mortality within 30 days

The study is registered at clinicaltrials.gov: NCT02490969

Results: The characteristics of patients are shown in the table. 42.5% (n=974) patients were primarily discharged using the new strategy. 30 days mortality was 0.1% (n=1, died from metastatic lung cancer) in this group, compared to 1.2% in the other patients (p=0.003).

Conclusions: The new copeptin/troponin based rapid rule out and discharge strategy is safe and effective in European clinical routine.

Table 1. Characteristics of patients.

Variable		All patients registered (n = 2294)
Leading Symptom	Chest Pain	70.6 % (n = 1619)
	Dyspnea	5.2 % (n = 119)
	Abdominal Pain	2.9 % (n = 66)
	Headache	0.4 % (n = 9)
	Diffuse Symptoms / Initially Mixed Symptoms	12.9 % (297)
	Focal Neurology	0.7 % (n = 16)
	None of the Previous	7.3 % (n = 168)
Gender	Male	57.2 % (n = 1313)
	Female	42.8 % (n = 981)
Age	Min - Max	18 - 101 years
	Median	59 years
Onset of symptoms	0 - 3 hours	26.3 % (n = 558)
	3 - 6 hours	13.3 % (n = 283)
	6 - 12 hours	11.2 % (n = 238)
	> 12 hours	49.2 % (n = 1043)
Medical history	Coronary artery disease	29.2 % (n = 656)
	Prior myocardial infarction	11.7 % (n = 262)
GRACE-Score	25%/75%tile	67/114
	Median	89

Young Investigator Awards Abstracts Sunday, 04 March 2018 - 11:00 - 12:30

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Analytical variation in high-sensitivity troponin I measurements - comparison of live and batched analyses

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Background: Studies evaluating high-sensitivity troponin (hs-Tn) assays for diagnosing myocardial infarction, are mainly performed in batches of frozen samples. It is a matter of debate whether troponin measurements in clinical routine ("live" measurements) provide comparable assay accuracy. In particular, for the use of guideline recommended very low troponin cutoffs, a reliable assay performance at these low concentrations is crucial.

Methods: High-sensitivity assayed troponin I (hs-TnI, Abbott Architect) was measured in blood samples from 1,040 individuals with suspected myocardial infarction. The assay was measured in clinical routine (live) as well as in batched analyses of frozen samples of the same individuals at 0h, 1h and 3h. Dual measurements were performed in batch samples. To analyze correlation of batch and "live" samples Pearson correlation coefficient (r) was calculated.

Results: There was no significant difference in median hs-TnI levels between live and batched measurements. Inter assay variation was lower in batch-wise analyses (coefficient of variability (CV): 3.6% vs. 5.6%). Troponin I levels in the high-sensitive range (0 to 40 ng/L) showed acceptable correlation in both types of measurements: r was 0.89 at 0h (Figure 1A), 0.94 at 1h and 0.93 at 3h. When only very low concentrations (0-10 ng/L) were considered, a modest correlation was observed: r was 0.59 at 0h (Figure 1B), 0.66 at 1h, 0.60 at 3h, respectively. In dual measurements of the same batch sample correlation was high even in the very low range: r=0.99 at 0h, 0.98 at 1h and 0.98 at 3h.

Conclusion: There is a considerable analytical difference between live and batched analyses at very low troponin I levels. Impact of these differences on diagnostic performance and outcome in patients with suspected myocardial infarction needs further investigation. These results have potential influence on current ESC guidelines, which recommend the application of very low troponin cutoffs for early rule-out protocols.

Correlation of batch-wise and "live" measured hs-TnI results at 0h in the high-sensitive range 0-40 ng/L (A) and at very low troponin levels 0-10 ng/L (B).
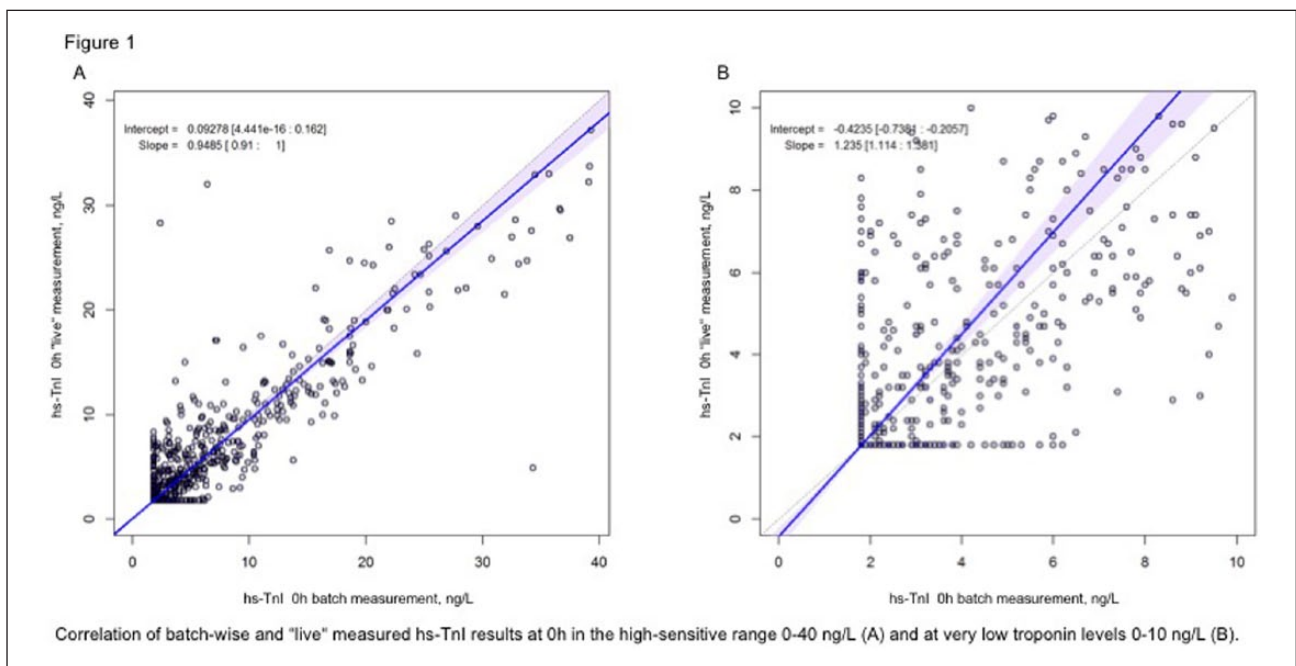
Figure 1

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NO-sGC-cGMP pathway stimulation lowers pulmonary vascular resistance in a porcine model of acute pulmonary embolism

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Background: Pulmonary vasodilators as add-on to current treatment strategies in acute pulmonary embolism (PE) may improve right ventricular unloading and hence improve outcome in patients with acute PE. We investigated three different stimulators of the nitric oxide (NO)-soluble guanylate cyclase(sGC)-cyclic guanosine monophosphate (cGMP) pathway in a porcine model of acute PE: Direct stimulation by inhaled NO, stimulation of sGC by intravenous riociguat, and inhibition of phosphodiesterase type 5 by intravenous sildenafil.

Purpose: To investigate if stimulation of the NO-SGC-cGMP pathway by inhaled NO, riociguat, or sildenafil causes pulmonary vasodilation and improves right ventricular function in experimental acute PE.

Methods: Danish Landrace pigs (60 kg) were anaesthetized and ventilated. Two pre-formed autologous blood clots (20cm x1cm) were administered to the pulmonary circulation through a 26F sheath in the right external jugular vein and animals were randomized to four increasing clinical equivalent concentrations of either vehicle (n=6), inhaled NO (n=6), riociguat (n=6) or sildenafil (n=6). Sham animals (n=4) underwent instrumentation but received no PE or treatment. The hemodynamic and biochemical response was evaluated at baseline, after PE and after each concentration by biventricular catheterisation, invasive pressure measurements, respiratory parameters and blood analysis. Data were analysed by two-way ANOVA with multiple comparisons and are presented as mean ± SEM.

Results: Administration of the PEs caused a 3-fold increase in pulmonary vascular resistance (PVR) compared to baseline (Figure 1). All three treatment strategies lowered PVR compared to Vehicle. Sildenafil, but not inhaled NO or riociguat, caused a decrease in systemic vascular resistance (SVR) (Dose 3: sildenafil 678±41 vs. vehicle 1081±93, dynes, p=0.023) but with an increase in cardiac output (Dose 3: sildenafil 8.8±0.8 vs. vehicle: 5.9±0.2, L/min, p < 0.0001). Systemic blood pressure was unaltered in all three treatment groups.

Conclusion: Stimulation of the NO-SGC-cGMP pathway by inhaled NO, riociguat, and sildenafil reduces pulmonary vascular resistance in a porcine model of acute PE without lowering of systemic blood pressure.
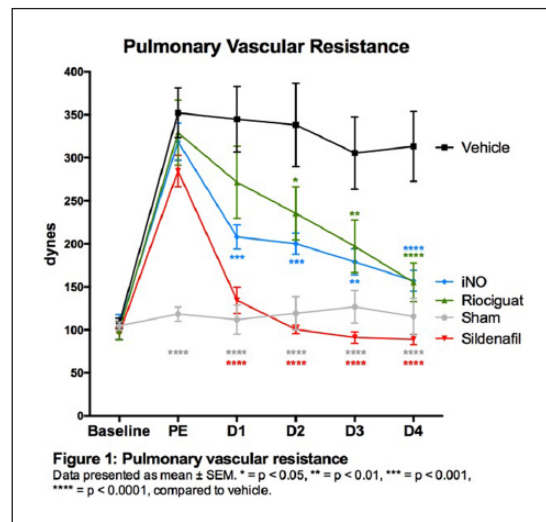
Figure 1: Pulmonary vascular resistance

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Copeptin and troponin for rule-out of AMI reduces length of stay (the AROMI study)

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On behalf of: AROMI- investigators.

Background: Patients suspected of acute myocardial infarction (AMI) are frequent in both emergency and cardiac departments, but while only a minor proportion are finally diagnosed with AMI, a large number are discharged without initiation of any treatment. Accelerated rule-out of AMI may reduce overcrowding and optimize resource use.

Purpose: To evaluate whether accelerated rule-out, combining copeptin and high sensitivity troponin T (hs-cTnT) reduces Length-of-Stay (LOS) compared to a standard diagnostic strategy based on repeated troponin-measurement.

Methods: In a randomized, controlled, open-label, multicentre study (AROMI), patients suspected of AMI were randomized 1:1 to:

"Standard diagnostics" (repeated hs-cTnT measurements, 3-6 hours interval) or "Accelerated diagnostics" using the

combination of copeptin (measured in a pre-hospital blood sample to ensure optimal timing) and hs-cTnT measured at arrival to hospital; both markers negative - ruled out AMI.

Power calculations estimated the need for 450 patients discharged after rule-out of AMI in each randomization group. "Rule-out patients" were defined as patients discharged, within 24 hours. LOS was evaluated using registrations from a patient administrative system.

Results: After inclusion of 1336 patients, 450 patients had been discharged after rule-out in each group. LOS was significantly lower in the accelerated rule out group, compared to the standard diagnostic group, with an estimated reduction of 50 minutes, table 1.

In patients discharged within 12 hours, LOS was reduced by 72 minutes(p < 0.0001) and in the accelerated group 26% were discharged within 5 hours, compared to only 7% in the standard group, figure 1. One site had equal LOS, due to a setup delaying discharge in all patients. After exclusion of this site, LOS was reduced by 90 minutes (p < 0.0001).

Conclusion: The combination of copeptin and hs-cTnT for early rule out of AMI reduces the LOS significantly with up to 1.5 hours. Safety of the rule out strategy will be evaluated later in the AROMI study.

Table 1.

	Accelerated diagnostics	Standard diagnostics	Difference (95%CI)	p-value
Included in total, n	686	650	-	-
Discharged <24h/<12h, %	66/47	69/50	-	0.15/0.37
LOS, patients discharged<=24h, hours	9.7	10.6	0.83 (-)	0.0002
LOS, patients discharged <=12h, hours	6.8	8.0	1.2 (0.8 - 1.5)	<0.0001
LOS, patients discharged <=12h, site 1	6.1	7.6	1.5 (0.7 - 2.3)	0.0005
LOS, patients discharged <=12h, site 2	7.8	8.2	0.4 (-0.2 - 1.1)	0.1957
LOS, patients discharged <=12h, site 3	6.4	7.9	1.5 (1.0 - 2.0)	<0.0001
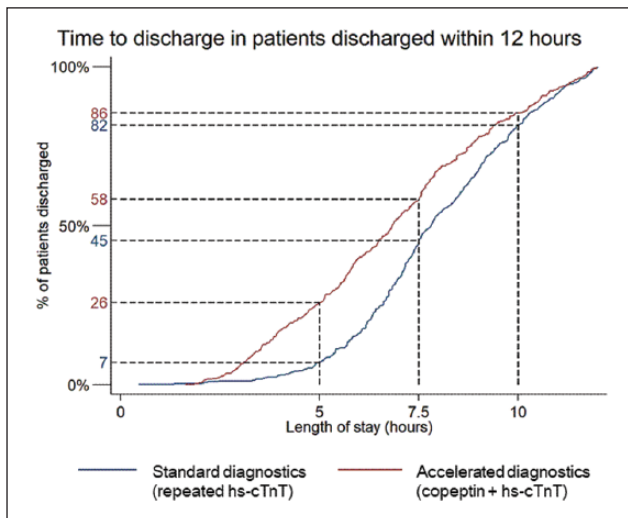
Figure 1

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Complete revascularisation versus culprit only lesion intervention in ACS patients with multi-vessel disease: Incidence and outcomes from The London Heart Attack Group

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Background: A large proportion of patients presenting with non-ST-segment elevation myocardial infarction (NSTEMI) present with multi-vessel disease (MVD). There is uncertainty in the role of complete coronary revascularisation in this group of patients. We therefore aimed to investigate the outcomes of multi-vessel (MV) intervention compared to culprit vessel (CV) only intervention in a large contemporary cohort of patients undergoing percutaneous coronary intervention (PCI) for NSTEMI.

Methods and results: We undertook an observational cohort study of 37,491 NSTEMI patients treated between 2005 and 2015 at the 8 Heart Attack Centres in London, UK. Patients' details were recorded at the time of the procedure into local databases using the British Cardiac Intervention Society (BCIS) PCI dataset. 21,857 patients (58.3%) presented with NSTEMI and MVD. Primary outcome was all-cause mortality at a median follow-up of 4.1 years (IQR range: 2.2-5.8 years).

11,737 (53.7%) patients underwent multi-vessel intervention during PCI for NSTEMI, which significantly increased during the study period (P=0.006). Those patients undergoing CV intervention were more likely to be male, diabetic, have a history of previous MI, and previous PCI compared to the MV intervention group. Although crude, in hospital MACE rates were similar (52.0% vs 48.0%, p=0.462) between the two groups. Kaplan-Meier analysis demonstrated significant differences in mortality rates between the two groups (22.5% multi-vessel intervention vs 25.9% culprit vessel intervention, P=0.0005) during the follow-up

period (Figure 1). After multivariate cox analysis (HR 0.92 95% CI 0.87-0.98) and the use of propensity matching (HR: 0.85 95% CI: 0.78-0.99) multi-vessel intervention was associated with reduced mortality.

Conclusion: In NSTEMI patients with MVD, complete coronary revascularisation appears to be superior to culprit only vessel PCI in terms of long-term mortality rates. Further Randomised study is needed.
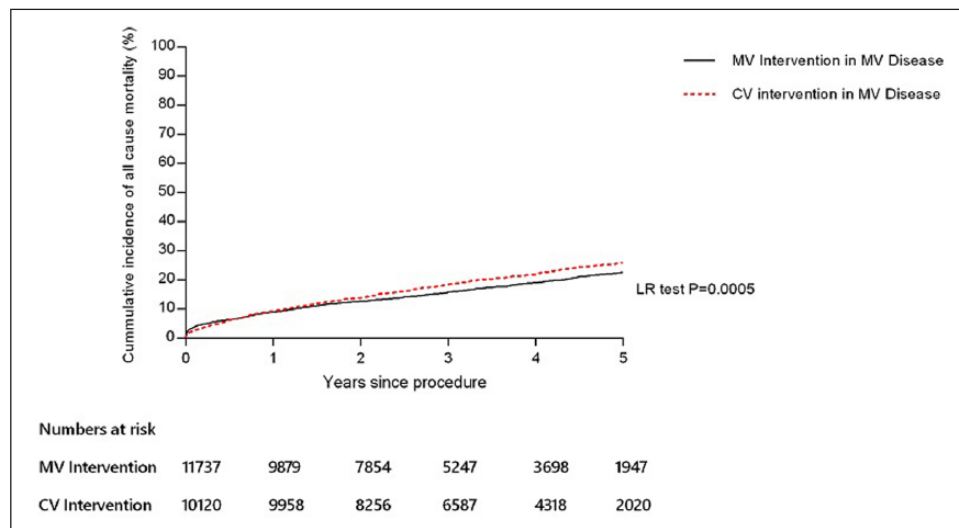
Figure 1

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Impact of age on the performance of the ESC 0/1h-algorithms for early diagnosis of myocardial infarction

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On Behalf of: APACE Investigators

Background: High-sensitivity cardiac troponin (hs-cTn) T and I concentrations increase with higher age, which may affect the performance of the European Society of Cardiology (ESC) 0/1h-algorithms for rule-out and rule-in of acute myocardial infarction (AMI).

Purpose: To evaluate the impact of age on the ESC 0/1h-algorithms.

Methods: We prospectively enrolled unselected patients presenting to the emergency department with symptoms suggestive of AMI. Final diagnoses were adjudicated by two independent cardiologists. Hs-cTnT and hs-cTnI concentrations were measured at presentation and after 1h. Patients were stratified according to age (<55 years [young], ≥55 to <70 years [middle-age], ≥70 years [old]). Safety was quantified as sensitivity in the rule-out zone, accuracy as specificity in the rule-in zone and efficacy as the proportion of patients triaged towards rule-out or rule-in within one hour. To extend and corroborate the concept of the ESC 0/1h-algorithm in older patients, diagnostic performance was further assessed using stepwise modified cut-off criteria. Subgroup analyses were performed in early presenters (chest pain onset within 2h prior presentation) and very old patients with an age over 80.

Results: Among 3123 patients, prevalence of AMI increased with increasing age (young 6.4%, middle-aged 15%, old 27%, p<0.001). The ESC hs-cTnT 0/1h-algorithm ruled-out 956 (85%) young patients (sensitivity 100% [95%CI, 94.9-100]), 606 (65%) middle-aged patients (sensitivity 99.3% [95%CI, 96.0-99.9]), and 317 (30%) old patients (sensitivity 99.3% [95%CI, 97.5-99.8]). Likewise, 92 (8%) young patients (specificity 97.0% [95%CI, 95.8-97.9]), 141 (15%) middle-aged patients (specificity 96.1% [95%CI, 94.5-97.2]), and 272 (25%) old patients (specificity 92.7% [95%CI, 90.7-94.3]) were ruled-in, respectively. Efficacy substantially decreased with increasing age (young 93%, middle-aged 80%, old 55%, p<0.001). Similar results were found for the ESC hs-cTnI 0/1h-algorithm.

Conclusions: While the safety of the ESC 0/1h-algorithms remained very high, increasing age significantly reduced overall efficacy and the accuracy of rule-in. Individualized higher cut-offs for older patients only slightly improved overall efficacy and the accuracy of rule-in.
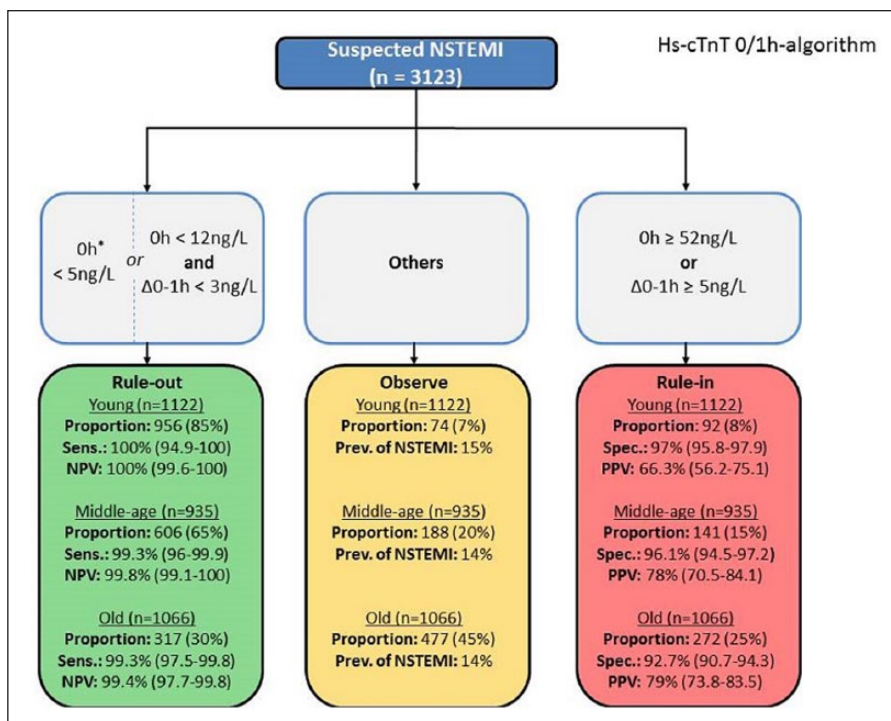
Performance according to age

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percutaneous unloading of the left ventricle during extracorporeal membrane oxygenation in cardiogenic shock: ongoing experience from a high-volume centre

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Objectives: We recently published data on the beneficial impact of left ventricular (LV) unloading with a percutaneous ventricular assist device (pVAD) during extracorporeal membrane oxygenation (ECMO) for patients in cardiogenic shock (CS) as compared to a matched cohort of patient on ECMO without mechanical unloading. Here, we present ongoing experience with this approach.

Methods: 90 patients with CS were treated with an ECMO plus pVAD at our institution from September 2013 until September 2017. Patients were male in 77% with a mean age of 55 (± 12.9) years. The CS was of ischemic origin in 60% of the cases, in 30% an acute decompensated heart failure was present and in 10% the underlying cause was an acute myocarditis. A total of 80% of the patients underwent cardiopulmonary resuscitation (CPR) before implantation of the ECMO and in 45% the ECMO was implanted under active CPR. Mean lactate upon presentation was 9.5 (±5.8) mmol/L with a mean pH of 7.1 (±0.2). SAVE-Score was -12 (±6.0) predicting a survival rate below 20%. The ECMO and the pVAD were implanted via femoral access with distal perfusion cannula at both sides whenever possible.

Results: Mean time on ECMO and pVAD were 7 (±6) days. 52% of the patients were successfully weaned from the ECMO with the help of the pVAD. In 5% of the cases patients were not weaned from the ECMO but directly implanted with a durable left ventricular assist device (LVAD). In another 5% patients underwent transition from ECMO to a high-flow pVAD and received an LVAD later on. 30-day survival rate was 45%, which is significantly higher as the predicted survival rate by the SAVE-Score. Relevant bleeding complications were seen in 18% of the cases and in 25% of the cases we observed peripheral vascular complications.

Conclusion: LV unloading using a pVAD is a promising option for patient with CS on ECMO. In parallel to our previously published data, the ongoing experience with this approach confirms an improved survival rate in these patients compared to patients treated with ECMO alone. Furthermore, this approach facilitates the weaning procedure as it allows the treating physician to access multiple weaning options. Although two devices were used, the bleeding and ischemic complications were not increased as compared to published data on ECMO alone.

Safe rule-out and rule-in of AMI Sunday, 04 March 2018 - 14:00 - 15:30

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Safety protocol of a chest pain unit in a hospital with high patient influx

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Introduction: The chest pain units (CPU) are the best system to identify, treat and early rule out an acute coronary syndrome (ACS), allowing discharge or ambulatory management. However, the safety of this procedure varies greatly depending on the series.

Purpose: Evaluate the safety to rule out ACS and proceed to discharge from a CPU in a hospital with high attendance in Catalonia.

Methods: A prospective registry, between 2014 and 2016, of consecutive patients who presented to the emergency department with chest pain (CP) of less than 24h of evolution, with symptoms and non-diagnostic ECG, and to whom the CPU protocol (assessment by a cardiologist, ECG, troponin measurement and ischemia test) was applied. Two cardiologists independently assigned the diagnosis of ACS based on the set of tests. The presence of cardiovascular events (AMI, revascularization or death) was analysed during the first month.

Results: Out of 1772 consultations for CP, there were 454 cases in which it was not possible to rule out an ACS; hence the CPU protocol was applied. In this subgroup, 58.2% were men aged 57 (+/−12 years), 23% were diabetic and 34% had 2 or more cardiovascular risk factors, with typical chest pain of +4 (+/−2) according to the Geleijuse score. The CPU protocol was positive in 95 patients (20.9%), who were admitted. Of these, 17 (17.8%) were recoded as ACS by cardiologists (12 positive tests, 1 with ECG changes, 2 with clinical recurrence, 2 with positive troponin testing). The protocol was negative in 360 patients (79.3%). Of the latter, 3 presented events during the follow-up (1 NSTE-ACS and 2 STE-ACS), none of them fatal, estimating a negative predictive value of the protocol of 99.2%.

Conclusions: The application of our CPU protocol is safe, both due to its high predictive value and the absence of fatal events during follow-up.

Pre-hospital ACS: diagnosis and treatments Sunday, 04 March 2018 - 14:00 - 15:30

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Presentation, clinical profile and prognosis of young patients with myocardial infarction with Non Obstructive Coronary Arteries (MINOCA) - results from the VIRGO study

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Objective: We studied young patients with acute myocardial infarction (AMI) to compare the clinical characteristics and outcomes between MINOCA versus obstructive disease (MI-CAD), and among MINOCA patients by sex and subtype.

Design, Setting, and Participants: VIRGO, a prospective observational study of patients 18-55 years of age presenting with an AMI was conducted between 2008 – 2012 in 103 hospitals using a 2:1 women to men enrollment ratio. Using an angiographically-driven taxonomy, we defined patients as MI-CAD if revascularized or plaque ≥50%. MINOCA included AMI patients with <50% obstruction or a non-plaque mechanism, e.g., spontaneous coronary artery dissection [SCAD]. Patients without angiogram or receiving thrombolytics pre-angiogram were excluded.

Outcomes and Measures: Overall and sex-specific comparisons of 1- and 12-month mortality, functional (Seattle angina questionnaire [SAQ]) and psychosocial (perceived stress and depression) status.

Results: Of 2,690 patients undergoing angiography, 2,374 (88.4%) were MI-CAD, 299 (11.1%) MINOCA and 17(0.6%) remained unclassified. Women compared with men and non-whites compared with whites had about 5- and 2-times higher odds of having MINOCA (14.9% vs 3.5%; OR 4.84; 95% CI 3.29, 7.13), and (14.9% vs 10.0%; OR:1.57,95% CI 1.21,2.04) respectively. MINOCA patients were 9 times more likely to be without traditional cardiac risk factors (8.7% vs 1.3%; p < 0.001) but more predisposed to hypercoagulable states than MI-CAD (3.0% vs 1.3%; p=0.036). MINOCA patients were 1.6 times more likely to present with NSTEMI than MI-CAD (78.6% vs 47.9%; p < 0.001). Women with MI-CAD were significantly more likely than MINOCA to be menopausal (55.2 vs. 41.2%; p < 0.001), or had history of gestational diabetes (16.8% vs. 11.0%; p=0.028). The MINOCA mechanisms varied, 75 (25.1%) had a non-plaque mechanism identified (61 SCAD, 11 coronary artery spasm, 3 embolization) while the majority remained undefined. Clinical profiles and management of MINOCA varied by mechanism. Overall mortality was 1.7% and adjusted 12-month SAQ quality of life score was not significantly different (76.5 vs 73.5 for MINOCA and MI-CAD respectively; p=0.06). Women with MINOCA reported higher perceived stress than men with MINOCA at 12-months (mean score 21.5 vs 17.3; p=0.03) and similar perceived stress to women with MI-CAD.

Conclusion and Relevance: Young patients with MINOCA/SCAD were more likely women, non-white, had fewer traditional cardiac risk factors than MI-CAD patients and yet had clinical outcomes that were comparable to MI-CAD. MINOCA patients showed a heterogeneous profile in phenotypes and management when investigated for underlying mechanisms, warranting further research.

Moderated Poster Session 7 - Out of Hospital Arrest/Acute Heart Failure/Aortic Disease Sunday, 04 March 2018 - 15:30 - 16:30

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Effects of the inhaled Xenon in combination with therapeutic hypothermia on left ventricular dysfunction associated with cardiac arrest: analysis with transthoracic echocardiography

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Background: We previously reported that xenon combined with hypothermia attenuates brain white matter injury in comatose survivors of an out-of-hospital cardiac arrest(OHCA). However, the effects of xenon on left ventricular dysfunction associated with cardiac arrest remain unknown.

Purpose: To evaluate post-cardiac arrest left ventricular dysfunction during the Inhaled Xenon in Combination with Therapeutic Hypothermia management compared with standard hypothermia in OHCA survivors.

Methods: A total of 110 comatose patients who had experienced OHCA with ventricular fibrillation or pulseless ventricular tachycardia as initial cardiac rhythm were randomized to receive either inhaled xenon with at least 40% end-tidal concentration combined with hypothermia (33°C) for 24h (the xenon group), or hypothermia treatment alone(the control group). Coronary angiography interventions were done before ICU admission. 21 controls and 17patients in the xenon group completed echocardiography protocol and were included in this analysis. Echocardiography (GE Vivid9 or i) was done on admission to hospital and repeated 24 ± 3h after completion of therapy. The primary endpoint were Ejection fraction (EF, Simpson's method), global peak systolic longitudinal strain, and strain rate (GLS, and GLSr, Speckle tracking). The secondary outcomes were the regional longitudinal strain in ischemic, and non-ischemic area (RLS ischemic, and RLS non-ischemic), and the diastolic measures (e', E/A, and E/e'). All parameters were measured off-line blinded to randomisation and time-point.

Results: The baseline characteristics did not differ significantly between the control and xenon groups. On arrival to hospital average EF, and GLS were moderately reduced in both the control and xenon groups (38 ± 11 vs. 39 ± 10%, p=0.71) and (-7.7 ± 3.4 vs.-9.1 ± 5.2%, p=0.69),

respectively. GLSr was similar between the control and xenon groups median[IQR] -0.5[-0.6 to -0.3] vs. -0.5[-0.6 to -0.4]1/s, p=0.69). During the first 72h after OHCA, there were no significance difference between the control and xenon groups in heart rate(p=0.43), mean arterial pressure(p=0.74) and noradrenaline dose(p=0.40). In 24h after completion of therapy EF, GLS, and GLSr were significantly higher in xenon group compared with the control group (42 ± 10 vs. 50 ± 10%, p=0.02, -9.8 ± 6.0 vs. -14.7 ± 8.0%, p=0.006, and -0.63[-0.7to-0.4]vs. -0.80[-1.4 to -0.65]1/s, p=0.01, respectively). There was no significant difference between the RLS ischemic, and RLS non-ischemic in xenon group in 24h after completion of therapy(p=0.25). There were no significant difference in diastolic measures between the study groups in 24h after completion of therapy, e' (p= 0.22), E/A (p=0.13) and E/e' (p= 0.11).

Conclusion: Among comatose survivors of OHCA, inhaled xenon combined with hypothermia, compared with hypothermia alone, may improve the recovery of post-cardiac arrest left myocardial dysfunction demonstrated by the echocardiographic outcome.

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Impact of the time between onset of out-of-hospital cardiac arrest and initiation of extracorporeal membrane oxygenation in patients with acute coronary syndrome

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Purpose: Extracorporeal membrane oxygenation (ECMO) is effective in treating patients with refractory cardiogenic shock or cardiac arrest due to acute coronary syndrome (ACS) that is resistant to conventional cardiopulmonary resuscitation (CPR). We sought to evaluate the impact of delay in establishing ECMO support on the prognosis of patients arriving in cardiac arrest due to ACS.

Methods: We retrospectively analyzed clinical records of ACS patients who arrived in cardiac arrest and received ECMO treatment between Jan 2006 and Jun 2017. We analyzed the time of the cardiac arrest, arrival at hospital, and successful ECMO introduction, electrocardiography findings on arrival, mortality rates, and rate of successful weaning from ECMO.

Results: Fifty-one patients were included in this study, and the onset time of cardiac arrest was recorded in 49 cases. The mean age was 70.1 ± 11.5 years, and mean onset-to-door time was 32.1 ± 17.2 minutes, door-to-ECMO

time was 29.2 ± 23.1 minutes, and onset-to-ECMO time was 61.9 ± 28.5 minutes. Onset-to-ECMO time was ≤ 60 minutes in 28 patients (57.1%) and > 60 minutes in 21 patients (42.9%). Initial electrocardiographic rhythm was of ventricular tachycardia or ventricular fibrillation in 35.3% and asystole or pulseless electrical activity in 64.7% of the patients. The mortality rates at 3, 7, and 30 days after admission in patients with onset-to-ECMO times of ≤ 60 minutes and > 60 minutes were 21.4% vs. 47.6% (p = 0.070), 39.3% vs. 76.2% (p = 0.019), and 64.3% vs. 85.7% (p = 0.114), respectively. The incidence of successful weaning from ECMO was 57.1% vs. 28.6% (p = 0.081), respectively.

Conclusions: Longer onset-to-ECMO time contributed to a higher mortality rate in patients arriving in cardiac arrest due to ACS.

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Mechanical chest compression devices in out of hospital cardiac arrest - an indication for a traumatic body-CT scan?

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Background & Aims: Mechanical chest compression devices have seen increased use in recent years for patients suffering from an out of hospital cardiac arrest (OHCA).

Five large post product placement studies, found equivalent results comparing the outcome of patients with those treated with manual cardiopulmonary resuscitation but little is known about the traumatic complications they can cause or their daily use treating OHCA.

We analyze the experience since the introduction of these devices in the emergency system of our province by describing the efficacy and security

Methods: All patients admitted to the cardiology intensive care unit with a diagnosis of out-of-hospital cardiac arrest from January 2016 (beginning of the mechanical compression program) were included prospectively.

The resuscitation times, survival at discharge, neurological status at discharge defined by the Glasgow-Pittsburgh Cerebral Performance Category (CPC) scale and the traumatic complications presented by the patients who received mechanical compression were compared with those who received manual compressions.

A traumatic complication was defined as any thoracic or abdominal trauma that could be explained as a consequence of the resuscitation and a X-Ray and/or CT-Scan

were performed to all patients and informed by the radiology service independently.

Results: Between January 2016 and August 2017, 67 patients with a diagnosis of out-of-hospital cardiac arrest were identified.

Eleven patients (16%) received mechanical compressions (1 with Autopulse and 10 with LUCAS) and 56 patients (84%) received manual compressions.

The first major finding of our study was similar efficacy at discharge for patients in both groups (CPC 1 or 2: Mechanical 44%, Manual 37%, p=0.74 and survival at discharge: Mechanical 45%, Manual 69%, p=0.122) despite longer ROSC times for the mechanical group: 48.3 ± 26 minutes, Manual Group: 22.4 ± 17 minutes (p < 0.001).

Imaging tests were performed in 65 patients. Two patients died early, so no imaging test was available.

The traumatic lesions were significantly more frequent in the group with mechanical compressions (91% vs 19.6%, p < 0.001). The most common traumatic injuries were costal fractures in 9 patients (82%). We identified 3 patients from this group with more than 3 traumatic lesions in different organs and in of the 2 patients, abdominal traumatic lesions were identified.

Eleven patients (19.6%) with traumatic lesions were identified from the group of manual compressions. No patient in this group was diagnosed with traumatic abdominal injuries.

Conclusions: A significantly higher incidence of traumatic injuries was detected in patients resuscitated with mechanical compression systems. This group had longer ROSC times with no significant difference in CPC or survival at discharge.

Systematic use of imaging tests at admission may be a reasonable option to detect the presence of potentially serious complication.

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Impact of the change in basic life support guidelines concerning pulse assessment among the general population

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Background: The vast majority of out-of-hospital cardiac arrests are witnessed by bystanders who are not health professionals. Carotid pulse assessment to recognize

cardiac arrest by laypersons has not been recommended in International Guidelines since 2000, because it is not well correlated with circulatory status. The most recent Guidelines advise all bystanders against carotid pulse palpation.

Purpose: We aimed to analyse the real knowledge and attitudes towards cardiac arrest among the general population, and the adherence to current Basic Life Support (BLS) Guidelines; focusing on the recognition of cardiac arrest by people of different ages.

Methods: People ≥12 years old were invited to participate in a cross-sectional descriptive survey on knowledge of BLS in the context of the European Restart a Heart Day 2016. The survey was carried out simultaneously on 18th October 2016 in different primary care centres, pharmacies, sports centres, schools, high-schools and universities in the North-Eastern territory of our city, with an approximate population of 450000 inhabitants. The study has been approved by the Ethics Committee.

Results: 3125 people (0.7% of the reference population) participated in the survey. The analysis was performed on 3067 questionnaires; 58 questionnaires with default form were not included. In 35 cases age was not recorded. Since the first source of answers were schools and high-schools (49.9% of all answered questionnaires), 1250 answerers were 12 to 18 years old, mean 14.1, SD 1.9 years ("Young Group"). On the other hand, 1782 people that were older than 18 (mean 48.6, SD 17.8 years) were considered the "Adult Group". One of the multiple choice questions of the survey was "How do you identify a cardiac arrest?" and only 35.9% answered correctly as "unresponsive and not breathing", while 50.4% considered "unresponsive, not breathing and without pulse" to be the right option. However, although a higher proportion of subjects in the "Adult Group" had received BLS training (37.6% vs 28.8% in the "Young Group", $p < 0.001$), teenagers answered better to this question (43.8% vs 30.5%, $p < 0.001$) while an important part of adults thought that pulse assessment was necessary to identify cardiac arrest (45.6% "Young Group" vs 53.8% "Adult Group", $p < 0.001$). One reason that could explain why carotid pulse assessment is still wrongly considered among general population in the algorithm of BLS could be the influence of Media and old Guidelines; and this could justify the different approach between both groups.

Conclusions: This study carried out in a general population of our city, shows that correct identification of cardiac arrest is poor, especially among adults, who mainly still rely on pulse assessment that may delay the initiation of chest compressions and defibrillation. Training programs in BLS based on current Guidelines should be delivered to people of all ages, including adults who received previous training.

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Coronary angiography in resuscitated out-of-hospital cardiac arrest

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Background: Every year in the UK, CPR is attempted in nearly 30,000 people who suffer out-of-hospital cardiac arrest (OHCA). In 80% the aetiology is cardiac. Criteria for early coronary angiography are not clear and practice is variable. Current guidelines put a large emphasis on the presence of ST-elevation on the post-arrest electrocardiogram. Early prognostication in this patient group can be challenging. The Cardiac Arrest Hospital Prognosis (CAHP) score has previously been used to predict neurological outcome in patients admitted to intensive care.

Aim: To evaluate the use of coronary angiography in patients successfully resuscitated following OHCA and the correlation between ST elevation and a typical culprit lesion. The ability of the CAHP score to predict mortality will also be reviewed.

Method: Retrospective review of all patients aged ≥ 18 brought to hospital following OHCA between 03/03/2015 - 26/03/2016. This included 187 patients during the study time period. Successful return of spontaneous circulation (ROSC) was achieved in 69 patients. 16 of these were excluded as there was an obvious non-cardiac cause, leaving 53 for analysis.

The CAHP score was calculated for each patient based on age, non-shockable rhythm, time from collapse to basic life support, time from basic life support to ROSC, location of cardiac arrest, epinephrine dose, and arterial pH.

Results: Mean age was 63.5 years and 74% were male. 19% had ST elevation, 9.5% had left bundle branch block, 41.5% had ischaemic changes other than ST elevation and 30.2% had a normal ECG. 30 patients (56.5%) underwent cardiac catheterisation during their admission and 12 (40%) were found to have a typical culprit lesion.

In those who underwent coronary angiography with ST elevation (n = 8), 3 patients (37.5%) had a typical culprit lesion. Those with a normal ECG (n = 6) or an ECG with ischaemic changes other than ST elevation (n = 15) 50% and 40% had typical culprit lesions respectively (p = 0.91).

Patients who underwent CA were younger (57 versus 72.7 years); more likely to have ST-elevation (26.7% versus 8.7%), have a history of chest pain (26.7% versus 8.7%), be WHO class 0 (83.3% versus 34.8%); and less likely to die (46.7% versus 73.9%).

42.5% of all patients presenting after OHCA survived until hospital discharge.

CAHP scores were calculated for every patient. Mean CAHP score was 111 in those who survived and 166.5 in those who died (p<0.0001) with an area under the curve of 0.88.

Conclusion: Post resuscitation ECG was not predictive of significant underlying coronary pathology. Guidelines for the management of patients successfully resuscitated following OHCA should not rely on the presence of ST-elevation when deciding on early coronary angiography. CAHP score may be helpful in predicting mortality.

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High sensitivity troponin T- the value as prognostic marker in patients with heart failure with preserved ejection fraction

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Background: More than half of the patients diagnosed with heart failure have a normal ejection fraction. The outcome of these patients differs from that seen in patients with reduced ejection fraction. Increased level of cardiac troponins has already been correlated with the poor outcome in heart failure with reduced ejection fraction (HFrEF), but there is little evidence regarding the correlation between elevated troponin and heart failure with preserved ejection fraction (HFpEF).

Purpose: Our aim was to evaluate the utility of high sensitivity troponin T (hsTnT) in predicting all-cause long-term mortality in heart failure with preserved ejection fraction.

Methods: HFpEF patients hospitalized consecutively in our clinic from January 2011 to December 2014 were screened for this study. Patients with hsTnT evaluation on admission were included in our sample. Patients with acute coronary syndromes, pulmonary embolisms, and in hospital mortality were excluded. Clinical, laboratory and echocardiographic parameters were recorded for all patients on admission. hsTnT values are expressed as median (interquartile range). Survival status was assessed in February 2017.

Results: Our sample consisted of 137 HFpEF patients, 67.9% female, with a mean age of 66.63±11.39 years. The median value of hsTnT was 8.49 [IQR 5.67-13.78] pg/ml.

Death rate was 20.3% after a mean follow-up of 4.48 years.

hsTnT was directly correlated with age (r=0.629, p < 0.001), NYHA class (r=0.544, p < 0.001), length of hospital stay (r=0.321, p<0.001) and NTproBNP levels (r=0.502, p < 0.001).

Median hsTnT levels were higher in patients with hypertension vs normotensives (8.81 [IQR 6.04-15.1] vs 5.67 [IQR 4.19-10.78] pg/ml, p=0.035), with diabetes mellitus (DM) vs without DM (12.05 [IQR 7.44-11.71] vs 7.28 [IQR 5.06-11.71] pg/ml, p=0.002), with prior myocardial infarction (MI) vs without a history of MI (16.01 [IQR 6.7-26.93] vs 8.06 [IQR 5.58-12.62] pg/ml, p=0.022), with atrial fibrillation vs sinus rhythm (17.77 [IQR 9.4-30.01] vs 7.36 [IQR 5.16-12.6] pg/ml, p < 0.001) and patients with chronic kidney disease vs normal kidney function (12.46 [IQR 8.51-22.64] vs 6.91 [IQR 4.32; 9.49] pg/ml, p < 0.001).

ROC curve analysis identified hsTnT as a predictor for long term all-cause mortality with an AUC of 0.780 (95%CI 0.669-0.891), p < 0.001, for acute decompensated heart failure with an AUC of 0.763 (95%CI 0.661-0.865), p < 0.001 and for NYHA class IV with an AUC of 0.885 (95%CI 0.775-0.996), p < 0.001.

Conclusion: hsTnT is a reliable predictor for all-cause mortality in patients with HFpEF. Also, hsTnT level is correlated with acute decompensation and severity of HF and is closely associated to concomitant comorbidities. The prognostic value of elevated hsTnT should therefore be intrepreted in the clinical context.

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Plasma volume variation as a tool ajust diuretic therapy in patients with acute decompensated heart failure

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Background: Excessive depletion of vascular volume after diuretic therapy for acute decompensated heart failure (ADHF) is common and may lead not only to activation of the renin-angiotensin-aldosterone system but also to acute kidney injury. Our aim is to evaluate the relation between the degree of contraction of vascular volume, using the percentage of alteration in the plasma volume and the glomerular filtration rate (GFR), after the use of diuretics, in patients admitted with ADHF.

Methods: Retrospective study of 258 patients (74.2 ± 17.3 years, 45.7% male) admitted in the emergency department between January and June 2016, for ADHF, defined by the presence of ≥ 2 signs or symptons of heart failure. All the patients were treated with diuretic therapy. We evaluate the diference between admission and discharge values of hemoglobin (ΔHb), hematocrit (ΔHtc), sodium (ΔNa), and the GFR evaluted by the Modification of Diet

in Renal Disease (MDRD). The relative change in plasma volume (%PV) from admission until discharge was estimated by: $\{([Hb\ admission/Hb\ discharge]\times[(100\text{-}Htc\ discharge)/(100\text{-}Htc\ admission)])\text{-}1\}\times100$.

Results: Of the 258 patients admitted with ADHF, we excluded 11.6% (n=30) for missing laboratory values or description of blood loss/need of blood transfusion during hospital stay. After diuretic therapy (average of maximum dose of furosemide administered 69.3±17.3mg), the incidence of increase in the %PV was 61% (n=139) and in the decrease was 39% (n=89). We further divide the patients in two groups according to the average %PV (2.5%): group 1 with preserved volume [%VP > 2.5% (from > 2.5% to 44%, n=101], and the group 2 with diminished volume [%VP < 2.5% (from -13.8% to <1.5%, n=127]. There were no statistically significant difference regarding ΔNa (average of 0.73±3.52mEq for group 1 vs. 1.52±4.56mEq for group 2, p=0.396). Patients in the group 2 showed greater positive variations of ΔHb (group 1 average of -1.34±0.78 g/dl vs. group 2 0.57±1.01g/dl p ≤ 0.001) and in ΔHtc (group 1 average of -4.66±2.69% vs. group 2 2.21±3.23%, p ≤ 0.001). We also conclude that patients in the group 2, with volume contraction, where those who, during hospital stay, had the lowest peak GFR (average of 49.7±25.9 ml/min/1.73m2 for group 1 vs 41.8±19.8ml/min/1.73m2 for group 2, p= 0.045).

Conclusions: The present study establish a relation between the percentage of alteration in the plasma volume and the lowest peak value of GFR (acute kidney injury), in patients with ADFH, treated with diuretic therapy. Besides that, the values of hemoglobin and hematocrit seems to be the most useful laboratory values to evalute congestion vs contraction of volume. The sequential evaluation of the percentage of variation in the PV could be a useful tool to avoid the overuse of diuretic therapy in these patients and prevent the ocorrence of acute kidney injury during hospital admission.
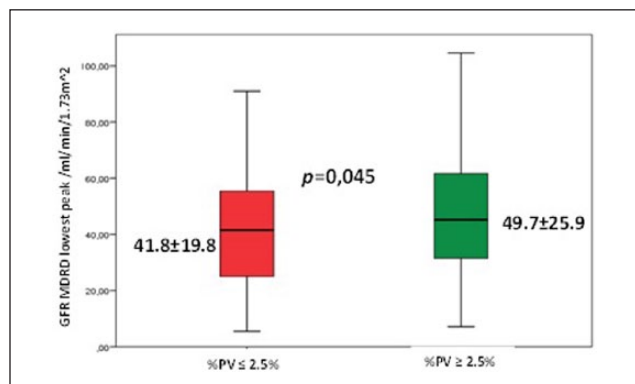
PV variation and impact on GFR (MDRD)

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Intermittent prosthetic valve dysfunction: a clinical case

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A 70-year-old woman was admitted to the coronary care unit for acute pulmonary edema. She had a personal history of permanent atrial fibrillation and had undergone composite valve graft replacement of the ascending aorta with a mechanical monoleaflet prosthesis, mitral valve annuloplasty and left internal mammary artery-left anterior descending coronary artery bypass grafting 15 years ago. She was on anticoagulation with acenocoumarol. Last echocardiographic assessment demonstrated preserved left ventricular function.

The patient attended the emergency department referring progressive dyspnea over the last two weeks, with significant worsening of functional class. She was discharged with diuretic dose adjustment but less than 24 hours later she returned with increased work of breathing, tachypnea, sweating and peripheral coldness. Intravenous furosemide was administrated in increasing doses with good diuretic response. Initial electrocardiogram showed diffuse ST depression with isolated ST elevation in lead aVR and bedside echocardiography displayed moderated left ventricular (LV) systolic disfunction due to diffuse changes in regional contractility. Suspecting an acute coronary syndrome, loading dose of dual antiplatelet therapy was given. However, after clinical improvement, electrocardiogram and LV function normalized. Consequently cardiac catheterization was not preferentially performed.

Despite a poor acoustic window, transthoracic echocardiography revealed elevated transaortic valvular gradients. The patient underwent a transesophageal echocardiogram (TEE) which showed intermittent severe aortic regurgitation. In left ventricular outflow tract a small mobile mass was seen. Although the patient did not present infectious clinic, she had remained apyrexial with normal acute phase reactants and there was no history of inadequate anticoagulation either, the diagnosis of infective endocarditis or thrombus was considered. She received empiric antibiotic therapy of late prosthetic valve infective endocarditis along with low molecular weight heparin at therapeutic levels.

During the first 48 hours of admission she presented another episode of acute pulmonary edema that required noninvasive ventilation.

On the fourth day, she showed transitory unilateral reactive mydriasis which resolved within a few hours.

The case was accepted for cardiac surgery. Preoperative cardiac catheterization identified restricted leaflet motion of the aortic prosthesis with intermittent lock in open position, leading to severe regurgitation. At surgery thrombus growing around pannus was discovered below the aortic anullus, blocking the prosthetic valve.

Intermittent prosthesic dysfunction may represent a diagnostic challenge, as reflected here, in a patient on adequate anticoagulation and with poor transthoracic window, circumstances that made it difficult a proper initial diagnosis and illustrate the importance of TEE in patients with prosthetic valves.
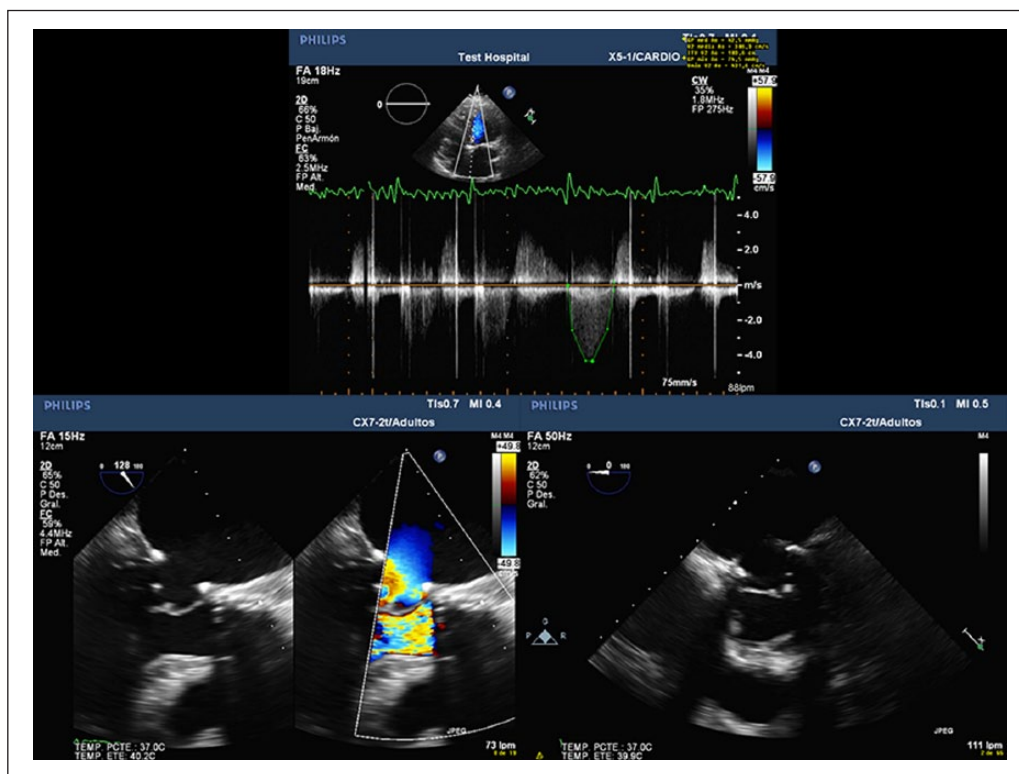
Intermittent aortic regurgitation

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Acute hemodynamic changes after TAVI assesed by a minimally invasive monitoring system

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Background: Severe aortic stenosis causes chronically increased left ventricle (LV) afterload which, if left untreated, leads to myocardial hypertrophy and ultimately dysfunction. Trans-catheter aortic valve implantation (TAVI) immediately decreases LV afterload by reducing the pressure gradient through the aortic valve.

Purpose: The aim of this prospective study was to use the minimally invasive pressure recording analytical method (PRAM) to investigate whether TAVI can provide information concerning acute LV function and hemodynamic changes.

Methods: Twenty-three consecutive patients with severe aortic stenosis (50% males, mean age 82 years) and a preserved ejection fraction underwent successful TAVI at our Centre. Before and within six hours after the procedure, radial artery PRAM was used to assess systolic, diastolic, dicrotic and mean arterial pressure; the systemic vascular resistance index (SVRI) and cardiac index (CI); stroke volume (SV), dP/dtmax, and cardiac cycle efficiency (CCE). The patients also underwent two-dimensional echocardiography before and after the procedure.

Results: TAVI did not change mean systolic (157 vs 140 mmHg), diastolic (67 vs 52 mmHg), dicrotic (97 vs 81 mmHg) or mean arterial pressure (97 vs 82 mmHg). CI was significantly lower after the procedure (2.67 ± 0.46 vs 2.54 ± 0.57 L/min/m2, $p < 0.001$), CCE improved from -0.09 ± 0.36 to 0.20 ± 0.25 (p= 0.023), and dp/dt

from 0.95±0.21 mmHg/msec to 1.08±0.27 mmHg/msec (p=0.001), and the SVRI decreased from 2973±638 to 2689±687 dynes (p < 0.001). The improvement in CCE (ΔCCE=0.33±0.29) linearly correlated with the decrease in mean trans-valvular doppler gradient (from 62±16 mmHg to 12±6 mmHg; Δmean Gradient 49±16 mmHg; Pearson correlation: R 0.46: p < 0.001, Fig. 1), but not with the improvement in aortic valve area, and post-TAVI CCE became linearly correlated more closely with dp/dt after TAVI (pre-TAVI Pearson's R 0.44; p < 0.001; post-TAVI Pearson's R 0.72; p < 0.001, Fig.2), whereas the intervention did not influence the inverse linear relationship between CCE and SVRI. There were no differences in functional LV ehcocardiographic parameters.

Conclusions: This is the first prospective study to evaluate the acute changes of hemodynamic parameters induced by TAVI. As expected, valve replacement led to an inotropic improvement as shown by the significant increase in dp/dt, and an major improvement in CCE, which represents the overall performance of the cardiovascular system in terms of the ratio between hemodynamic work and heart energy expenditure. The increase in this parameter reflects a reduction in the energy spent by the cardiovascular system to maintain hemodynamic balance in the setting of acute valve stenosis, a correction that outweighs changes in the SVRI. Furthermore, the improvement in energy expenditure can be assesed by means of a simple echocardiographic parameter: the decrease in the mean trans-valvular gradient.

Fig. 1. Linear correlation between improvement of CCE (Δ CCE) and improvement of mean transvalvular gradient assessed with conventional echocardiography.

Fig.2. CCE after TAVR became more linearly correlated to dp/dt (dp/dt also significantly increase after TAVR)
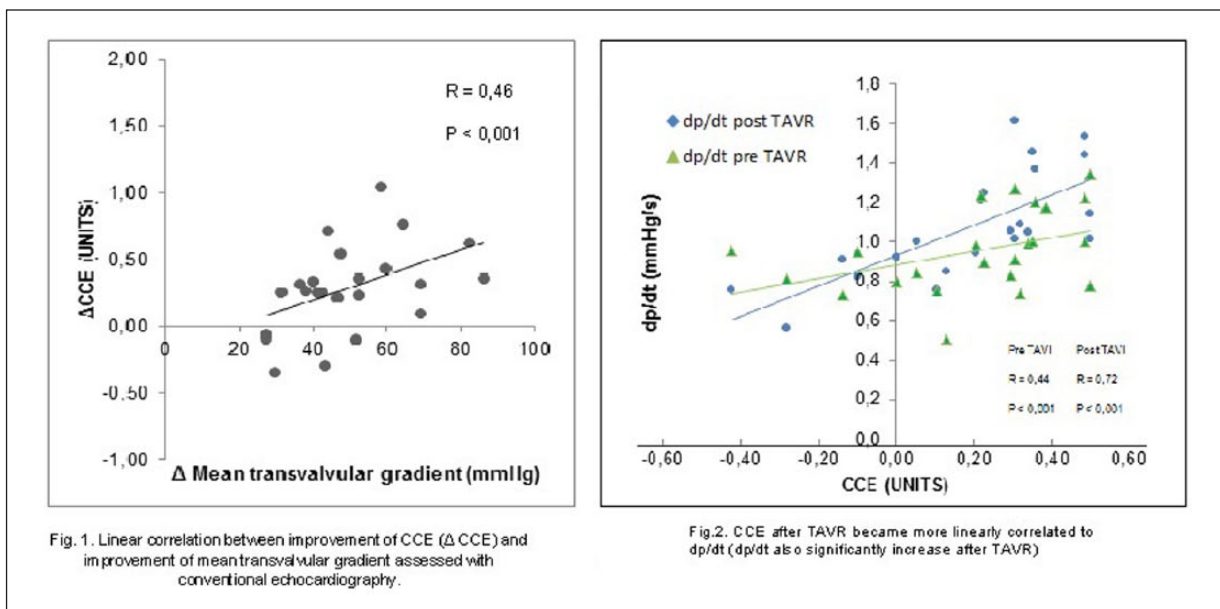
Figure 1 and 2

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Ticagrelor in misdiagnosed aortic dissections - does double antiplatelet therapy worsen prognosis?

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Introduction: Acute Aortic Dissection (AAD) shares many symptoms and signs with the more common Acute Coronary Syndrome (ACS). Misdiagnosis of AAD and subsequent treatment with Double Antiplatelet Therapy (DAPT) is common. DAPT is a combination of acetylsalicylic acid and a P2Y12-inhibitor where Ticagrelor has largely replaced Clopidogrel in recent years. ACS is more common and delaying treatment with DAPT may be harmful but DAPT may increase mortality and bleeding in patients with AAD that require emergent surgery. Clopidogrel based DAPT has been associated with higher shortterm mortality, but data is scarce on Ticagrelor-based DAPT.

Purpose: The study assessed the negative effects of DAPT in patients with misdiagnosed AAD. This represents a pitfall in a common clinical situation where more knowledge is needed.

Methods: This retrospective study included all patients treated for AAD in our hospital in 2012 to 2016 (n=123). DAPT treated patients were compared to the controls at up to one year after the incident. The outcome variables included mortality in-hospital, at 30 days and at one year and bleeding parameters.

Results: No significant difference in mortality in-hospital, at 30 days or at one year was found. The amount of intra operative bleeding was higher in the DAPT-group. The need for surgical revision was 38,5% in the DAPT group and 15,4% in the control group. This difference was however not statistically significant. No difference in group characteristics was found.

Conclusions: Ticagrelor-based DAPT given to misdiagnosed patients with acute aortic dissection was uncommon and was not associated with higher mortality at up to one year. Bleeding during surgery was higher in the DAPT group and there was a non-significant trend towards higher rates of surgical revision.

Table 1. Patient characteristics and results.

	All (n=123)	DAPT (n=17)	No DAPT (n=106)	p
Age mean(SD) years	64,2(12,5)	63,2(10,1)	64,4(12,9)	0,283
Female gender n(%)	45(36,6)	6(35,3)	39(36,8)	0,905
Stanford type A n(%)	84(68,3)	15(88,2)	69(65,1)	0,057
Mortality in-hospital n(%)	17(13,8)	3(17,6)	14(13,2)	0,704
Mortality, 30-days n(%)	22(17,9)	3(17,6)	19(17,9)	1,000
Mortality, 1 year n(%)	25(22,1)	3(17,6)	22(22,7)	1,000
Intraoperative bleeding ml mean(SD)	2253(1803)	2950(1795)	2094(1783)	0,033
Postoperative bleeding, ml mean(SD)	1266(762)	1200(761)	1281(769)	0,718
Surgical revision n(%)	15(19,2)	5(6,4)	10(12,8)	0,115
Pathologic ECG n(%)	36(39,1)	11(68,8)	25(32,9)	0,008
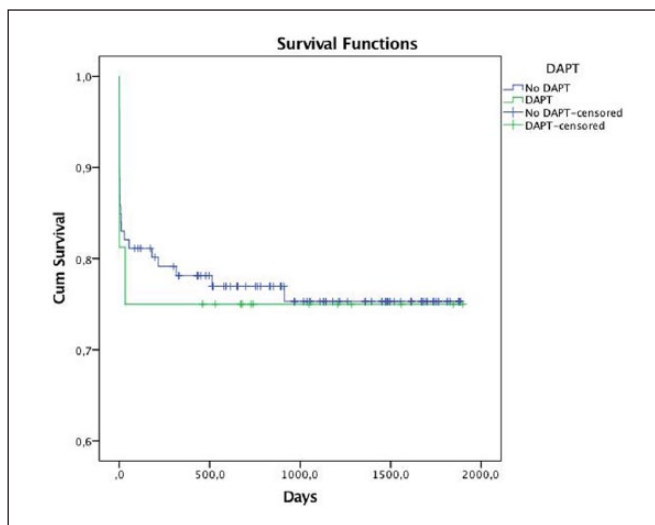
Kaplan-Meier AAD DAPT

Moderated Poster Session 8 - Young Researchers in Acute Cardiovascular Care II
Sunday, 04 March 2018 - 15:30 - 16:30

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Severe aortic regurgitation in a quatricuspid aortic valve, a false rheumatic disease

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A 62 year-old-female with a clinically stable moderate aortic regurgitation since the last 15 years presented with symptoms and signs of acute heart failure to the emergency room. The transthoracic echocardiogram (TTE) showed a dilatation (LVED 68 mm/ LVES 57 mm) and severe left ventricular dysfunction (EF 30%), with severe aortic regurgitation (AR). She had been previously asymptomatic and she had been labeled as rheumatic valvulopathy, despite the absence of a history of rheumatic fever in her childhood. The patient was admitted to the acute coronary care unit, where she received intensive diuretic therapy and an infusion of levosimendan was administered, showing an improvement in LVEF (39.3 %). TTE was not optimal for the analysis of the aortic valve (AV) morphology and AR quantification, therefore transesophageal echocardiography (TEE) was performed. It revealed a quadricuspid aortic valve (QAV) with severe regurgitation (Pictures A, B, C and D). Also the angiogram showed a severe AR and the four aortic cusps, no coronary arteries anomalies were found (Pictures G, H and I). To complete the study of the AV anatomy, a cardiac magnetic resonance was performed before discharge (Pictures E, F and J). One month later the patient underwent surgery for aortic valve replacement. (Mosaic bioprosthesis 21 mm).

Congenital anomalies of the AV represent a 3-6% of adult congenital heart disease, being bicuspid AV the most frequent (2%), followed by unicuspid and quadricuspid. The existence of a QAV is even more exceptional, with a prevalence of 0,008% in autopsy series, 0.013 to 0.043% in echocardiographic series, and 1% in those operated by AR. Seven types or anatomical variants are described according to the size of the cusps (Hurwitz and Roberts' anatomical classification of QAV 7 subtypes A-G). The most frequent are type B (three cusps of equal size and one smaller or rudimentary) and type A, with four cusps of equal size. This case is type D: one large, two intermediate and one small cusp. The QAV develops in most cases insufficiency, even when the 4 aortic cusps are of the same size. It strangely generates stenosis and often requires replacement in the fifth or sixth decade of life, and is also usually associated with other congenital anomalies, among which the most frequent are coronary abnormalities, present in up to 10% of cases. Thus the preoperative diagnosis of a QAV is very important. With this regard, the TEE is a useful and very accessible tool for the morphological diagnosis of AV disease, to detect abnormalities in the ascending aorta and birth defects in the coronary arteries. In other hand, the surgeon should be aware of this for planning the surgery, since fixing the valve prosthesis involves the occlusion of the coronary ostium.

A QAV must be considered as a malformation which leads to severe valve failure in later life, so it require a continuous follow-up from the patients to prevent heart failure and acute cardiac events.
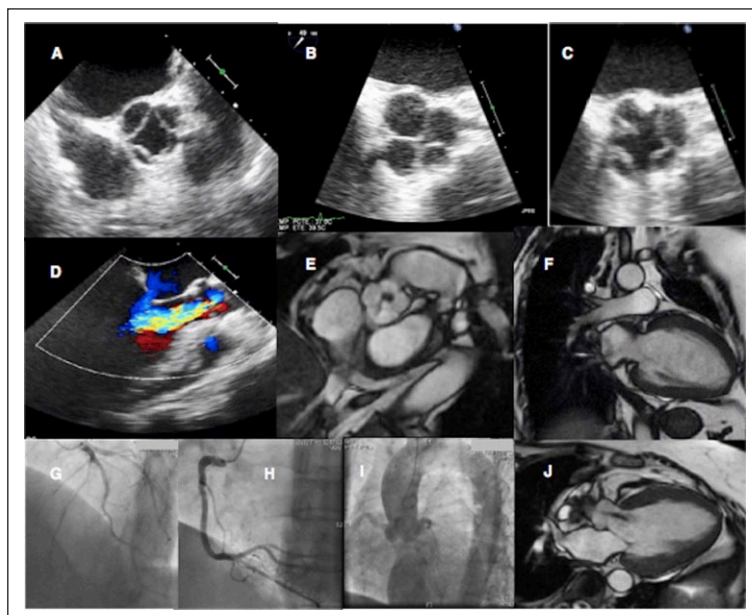
Quatricuspid Aortic Valve.

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Single stage approach using cardiopulmonary bypass and deep hypothermic circutalory arrest for the resection of relapsed intravenus leiomyomatosis with extension to right heart

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Introduction: Intravenus leiomyomatosis (ILM) with heart extension is a rare complication of benign uterine tumors through pelvic and abdominal veins towards the inferior vena cava (IVC) and right heart in fertile woman. Symptoms can be dyspnea, heart failure, syncope, arrhythmia, pulmonary embolism, and sudden death. Diagnosis is made by abdominal ultrasound and computer tomography (CT) scan that show invasion from the uterus through the venous system to the right heart. Definitive diagnosis is confirmed by histopathological analysis. The treatment is surgical resection in one or two stages.

Case report: The patient was a 45-year-old woman with a history of arterial hypertension, obesity, uterine fibroids and two pregnancies. In 2014 she underwent an intracardiac tumor resection surgery due to a preoperative diagnosis of myxoma. Two years after surgery she was admitted with progressive dyspnea and syncope. An ecocardiographic examination showed dilatation of right cavities with homogeneous, mobile mass, from the IVC with a diameter of 18 mm. The mass was protruding through the tricuspid valve (TV) to the Right Ventricle (RV) with a diameter of 50 mm.

Thoraco-abdomino-pelvic CT scan confirmed the transthoracic echocardiography (TTE) featurings; moreover, a huge mass from left ovarian vein protruding inside the IVC wich was partialy occluded, was observed (Fig. 1 A, 1 B).

Surgical resection was decided by a multidisciplinary surgical team: gynecologist and cardiovascular surgeons.

Resternotomy. Median laparotomy with total anexhysterectomy was performed with evidence of invasion of the left ovarian vein by the uterine tumor. Cannulation of ascending aorta, superior vena cava and right femoral vein was performed for cardiopulmonary bypass (CPB) iniciation after heparin administration. Cooling to 20 °C. After reaching the temperature, deep hypothermic circulatory arrest (DHCA) was started and the extraction of intracardiac leiomyoma through right atriotomy was performed. During the DHCA the IVC was explored from the abdominal side and the entire leiomyoma was resected in a single surgical time (Fig. 1 C). Total CPB was 104 minutes, aortic clamping was 66 minutes, DHCA and cerebral protection with local ice and Thiopental sodium was 46 minutes. Postoperative was without complications and patient was discharged at 8th postoperative day. At 6-months follow up the patient was asymptomatic and returned to normal life. TTE showed normal heart cavities, no tricuspid insufficiency and a normal IVC diameter with adequate inspiratory collapse. No intracavitary images. Histopathology diagnosis was proliferation of fused mesenchymal cells without atypia intermixed with abundant myxoid matrix and hyalinized areas; no atypical cells or necrosis (Fig. 1 D).

Conclusion: Resection of these tumors in single stage using CPB and DHCA is a safe, radical and uncomplicated procedure. It may reduce the discomfort and risk of a second operation.
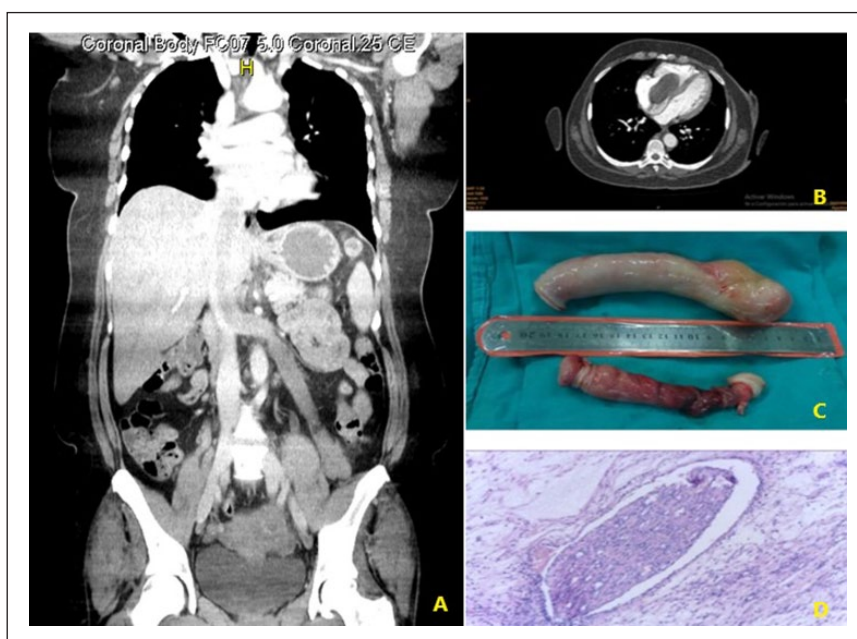
Figure 1. A-B-C-D

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Central acute pulmonary embolism: impact on clinical presentation and short- and medium-term outcomes

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Background: Emboli in pulmonary trunk or main pulmonary arteries and saddle emboli are centrally located in pulmonary arterial tree. Clinical features and prognosis in central acute pulmonary embolism (PE) are not well known.

Purpose: We aimed to (1) estimate prevalence of central acute PE; (2) identify predictors of central acute PE; and (3) assess impact of central acute PE on haemodynamic status, validated risk parameters in acute PE, and short- and medium-term outcomes.

Methods: We retrospectively studied 356 consecutive patients hospitalized for acute PE along 3 years for acute PE confirmed by computed tomographic pulmonary angiography (CTPA). We defined central PE as one affecting at least one main pulmonary artery, including saddle pulmonary emboli, and non-central PE as one located in lobar, segmental, or sub-segmental pulmonary arteries. Data on initial haemodynamic status, laboratory results, and right ventricular (RV) function were retrieved. Outcomes were haemodynamic decompensation within 7 days and all-cause mortality within 7, 30 and 90 days.

Results: Patient's median age was 65.9 ± 17.4 years, and 37.9% (n=135) were male. Acute PE was central in 39.9% (n=142) and non-central in 60.1% (n=214). DVT presence was the only identified predictor of central PE (p=0.004, OR 2.85, CI 95% 1.41-5.78). Central PE was not predicted by age, sex, chronic heart failure, chronic pulmonary disease, active cancer or glomerular filtration rate. Central PE patients were more likely to be haemodynamically unstable at initial presentation than non-central PE patients (14.1 vs 2.8%, $p < 0.001$), and had higher shock index (median 0.75 vs 0.65, $p < 0.001$) and modified shock index (median 0.98 vs 0.89, p=0.003). They also had higher concentrations of troponin I (median 0.13 vs 0.02 ng/mL, $p < 0.001$) and NT-proBNP (median 3160 vs 1404 pg/mL, p=0.020), and higher rates of RV dysfunction (58.6 vs 32.3%, $p < 0.001$). Central PE patients were more likely to undergo fibrinolysis (11.3 vs 0.9%, $p < 0.001$). However, outcomes were similar between central PE and non-central PE patients, namely haemodynamic decompensation within 7 days, and all-cause mortality within 7, 30 and 90 days (p=0.528, p=0.703 and p=1.000, respectively). Blood lactate concentration and PESI score did not significantly differ between the two groups (p=0.074 and p=1.000, respectively).

Conclusions: Patients with centrally-located acute PE were more haemodynamically unstable, and had more myocardial injury and more frequent RV dysfunction. In our study, however, they did not have a worse outcome. Prognostic impact of centrally-located acute PE must be studied prospectively. If negative prognostic impact is confirmed, centrally located acute PE should ultimately be addressed in clinical practice guidelines.

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Mitochondrial respiratory capacity in skeletal muscle after out-of-hospital cardiac arrest

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Background: Preclinical studies suggest that mitochondria are important factors of reperfusion injury, both as targets and effectors. The association between cardiac arrest and mitochondrial function in peripheral tissue has thus far not been assessed.

Purpose: To compare oxidative phosphorylation capacity in resuscitated out-of-hospital cardiac arrest (OHCA) patients undergoing targeted temperature management (TTM) compared with healthy controls, and to assess associations between mitochondrial function and markers of compromised perfusion in OHCA patients.

Methods: Twenty-one comatose OHCA patients (17M/3F) were included the day after admission to an intensive care unit. Skeletal muscle biopsies were obtained 28 hours after TTM was initiated, and maximal mitochondrial respiratory capacity was analyzed by high-resolution respirometry (Complex I (CI): Glutamate, malate, ADP; Complex I+II (CI+II): addition of succinate; electron transfer system (ETS) capacity: addition of a protonophore). Flux control ratio was calculated as CI+II/ ETS x 100%. Data were compared to twenty healthy control subjects (CON) matched by age.

Results: Median CI respiration was similar in OHCA and CON (23 (18-26) vs. 22 (19-26) pmol O2/mg/s, p=0.76, Figure), whereas respiration with dual electron input (CI+II) was significantly reduced in OHCA patients compared with CON (53 (42-59) vs. 64 (54-68) pmol O2/mg/s, p=0.01, Figure). Median ETS capacity was significantly reduced in OHCA patients compared with CON (63 (51-69) vs. 73 (66-78) pmol O2/mg/s, p=0.005, Figure).

Maximal coupled mitochondrial respiration in OHCA patients was not associated with central venous oxygen saturation (SvO2, p=0.26), arterial lactate concentrations (p=0.43), or arterial CO2 partial pressure (p=0.35), all measured simultaneously with biopsy sampling. Median flux control ratio was 86% (80-89%) in OHCA patients vs. 88% (81-92%) in CON (p=0.66).

Conclusions: Mass specific maximal coupled mitochondrial respiration as well as electron transfer system capacity

were significantly reduced in OHCA patients compared to healthy controls. The clinical relevance of this warrants further research.
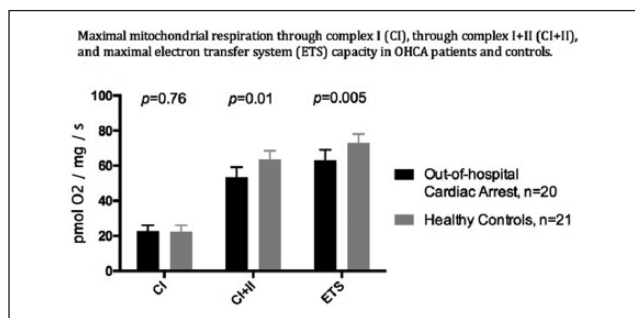
Figure

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Electrocardiographic parameters, peak of cardiac markers and time to reperfusion in patients with acute left circumflex occlusion

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Background/Introduction: Left circumflex (LCx) occlusion is underdiagnosed in most of reperfusion studies about myocardial infarction, due to its poor electrocardiographic expressiveness and late diagnosis. This late diagnosis leads to longer reperfusion time and higher infarct size.

Purpose: To compare peak of cardiac biomarkers, electrocardiographic abnormalities, reperfusion delay and rate of arrhythmias between acute coronary syndromes (ACS) due to left anterior descending (LAD), left circumflex (LCx) or right coronary artery (RCA) occlusion.

Methods: Observational retrospective study including 1051 coronary angiographies in a single university hospital between July 2016 and July 2017. We analyzed baseline and angiographic characteristics, clinical presentation, delay from emergency unit to interventional cardiology department, peak of creatin-phosphokinase (CPK) and troponin I, electrocardiographic parameters and presentation of arrhythmias during admission.

Results: 410 patients (73.3% male; 66.3 ± 13.3 years) with ACS were analyzed, of which LAD, LCx and RCA were occluded in 16%, 9.8% and 18.1% respectively. 55.3% of cases with LCx occlusion presented as ST Segment Elevation Myocardial Infarction (STEMI) and 44.7% were initially diagnosed as Non-ST Segment Elevation Myocardial Infarction (NSTEMI). We found no differences in baseline characteristics comparing patients with Cx as the culprit artery with the others. Peak CPK (1086.6 ± 986.1 IU/l vs 392.5 ± 327.1 IU/l, p=0.041) and peak troponin I (28.7 ± 29.2 ng/ml vs 7 ± 6.6 ng/ml, p=0.046) were significantly higher in LCx occlusion than in RCA in NSTEMI. The most frequent ECG findings in patients with Cx occlusion were the combination "ST depression in V1-V4 leads and ST elevation in inferior leads" (18.4%). Isolated ST depression in I, AVL, V4-V6 leads was the most frequent finding detected in NSTEMI due to LCx occlusion (17%). No differences between mean time from symptoms onset to emergency unit and time from emergency unit to invasive cardiology department arrival in NSTEMI were detected (p=0.480; p=0.256). Nevertheless, mean time emergency unit to invasive cardiology department was 357.3 and 896.9 minutes in LAD and Cx respectively in NSTEMI and STEMI (p=0.026) (Figure 1). We detected a higher rate of third degree atrioventricular block in RCA occlusions (0%, 0% and 11.4% respectively, p=0.001).

Conclusions: Cx occlusion was only responsible for 9.8% acute coronary syndromes (55.3% of cases presented as STEMI and 44.7% as NSTEMI). The most frequent ECG abnormalities were ST depression of V1-V4 leads with ST elevation in inferior leads. Patients with LCx occlusions and NSTEMI presented higher levels of CPK and troponin and longer delay from emergency unit to arrival at the invasive cardiology department.

Figure 1. Delay from symptoms onset to emergency and invasive cardiology department
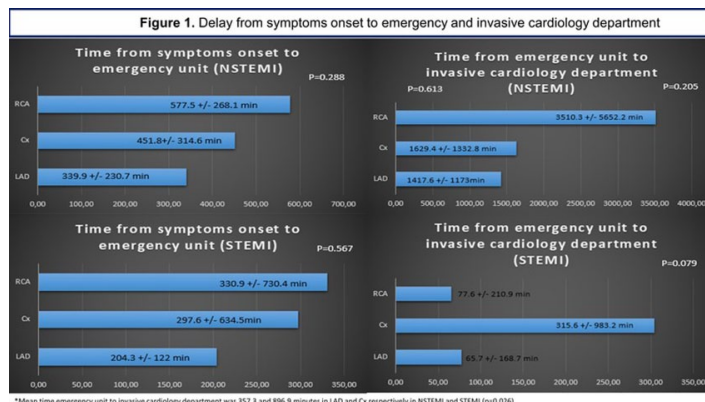
Delay from symptoms to reperfusion

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Neurological complications in infective endocarditis: insights from a tertiary centre

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Background: A wide spectrum of neurological complications may be observed in infective endocarditis (IE) and increase morbidity and mortality. Recent data suggests that neurological events are a major determinant of prognosis, and that surgery has a central role in improving outcome.

Methods: Retrospective analysis of patients admitted in a tertiary care with a diagnosis of IE from 2006 to 2016. A comparison between patients with and without neurological complications was performed, and predictors of embolization to the central nervous system (CNS) were determined. Cox regression was used to identify predictors of outcome.

Results: We identified 147 episodes of IE (142 patients), 27.9% with evidence of embolization. The most common site was the CNS (48.8%); 35% of this patients presentwith neurological symptoms at admission. Patients with CNS embolization were predominantly male, with a mean age of 59±13 years; 15.0% were IV drug users and 10.0% had HIV infection; none had involvement of right-sided valves; the most common agents were Staphylococcus (35.0%) and Streptococcus (30.0%). Patients presented with ischemic stroke in 73.7% of cases (haemorrhagic transformation in 35.7%), haemorrhagic stroke in 20.0%, mycotic aneurism in 25.0%, and myelitis / meningitis in 5.0%. 45.0% had recurrence of stroke. During follow-up (mean 305±435 days), 35% were submitted to surgery (mean time from admission to surgery 37±10 days), in-hospital mortality was 40.0%, and 1-year mortality 44.4%.

Comparing with the global population, patients with CNS embolization were more likely to be younger than 76 years, to have diabetes or immunosuppression, and involvement of the mitral valve (p < 0.05 in all cases). They also had longer hospitalization (56±32 vs. 41±22 days; p=0.027). In multivariate logistic regression, the independent predictors of CNS embolization were diabetes and involvement of the mitral valve (HR 4.3; 95% CI 1.5-12.4; p=0.008, and HR 3.1; 95% CI 1.1-8.7; p=0.027, respectively).

Staphylococcus infection was associated with higher in-hospital mortality, while surgery was associated with reduced mortality, both in-hospital and at 1 year (0% at 1 year in patients submitted to surgery vs. 66.7%; p=0.007). There was also a trend to higher mortality in HIV patients. In multivariate Cox regression, HIV infection was the only independent predictor of mortality, both in-hospital and at 1

year (HR 9.9; 95% CI 1.4-71.8; p=0.023, and HR 8.7; 95% CI 1.2-63.2; p=0.032, respectively).

Conclusions: In this population of patients with IE, embolization to the CNS was common, more often presented as ischemic stroke, and was associated with longer hospitalization and high mortality. This study is in line with recent data showing that, in patients with CNS embolization, surgery should be the favoured approach. It also shows that patients with HIV infection have a particularly poor prognosis, highlighting the role of the endocarditis team with a multidisciplinary approach.

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The prognostic role of hyperglycemia inSTEMI patients depends on the presence of diabetes: does a glucidic pre-conditioning exist?

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Background: Patients with ST-Elevation Myocardial Infarction (STEMI) showing hyperglycemia (HG) at hospital admission present a worse prognosis. However, it is unclear whether HG is a marker of a greater neurohormonal activation in response to the infarction or plays a direct role in worsening prognosis. Furthermore, some limited data suggest that the presence of diabetes mellitus (DM) may influence the prognostic impact of hyperglycemia.

Purpose: The aim of this study was to investigate the prognostic impact of HG at hospital admission in patients undergoing primary PCI (pPCI) for STEMI, and the influence of the presence of DM in hyperglycemic patients on prognosis.

Methods: We prospectively enrolled all consecutive STEMI patients undergoing pPCI in our Department in 2005-2016 (n =2547). HG was defined as plasma glucose values >198 mg/dL (or >11 mmol/L), in according to previous literature. Differences between patients with and without HG were analyzed by Chi-square tests for categorical variables and by Student t-test for comparison of means of continuous variables. Univariate mortality analyses were performed by Kaplan-Meier curves with log-rank test, multivariable analysis by logistic regression models including as covariates left ventricular ejection fraction (LVEF), eGFR at admission, age > 75 years, basal hemoglobin and Killip class at presentation ≥ 2.

Results: HG was observed in 17 % of the patients; 47.8 % with and 52.2 % without DM. Patients with HG were more often female (p<0.001), hypertensive (p<0.003) and smokers (p<0.001); they had a higher Killip class ≥ 2 and incidence

of chronic kidney disease at presentation, presented a lower LVEF and had a greater use of IABP (all p<0.001). All-cause 30-day mortality was 4.3% overall: 11.8% and 2.8% in patients with and without HG, respectively (p<0.001). All-cause 30-days mortality in diabetics was 4.8% and not significantly different between patients with and without HG: (5.7 % in HG and 3.8 % in patients without HG, p=0.393). On the other hand, 30-days mortality in non-diabetic patients was 4.2%: 17 % and 2.7 % in patients with and without HG (p<0.001, see Figure). At multivariable analysis HG was an independent predictor of 30-days mortality in the overall population (HR 2.4, 95%IC 1.3-4.4, p<0.006); specifically, it was an independent predictor in non-diabetic patients (HR 3.1, 95%IC 1.4-6.6, p<0.004) but not in diabetics (HR 1.6, 95%IC 0.5-5.7, p<0.456).

Conclusions: Our data show that hyperglycemia is an independent predictor of worse prognosis in STEMI patients treated by primary PCI. However, the prognostic impact of hyperglycemia is present only in non-diabetic patients. This finding is in agreement with the hypothesis that chronic exposure to elevated glucose levels in diabetics could set the stage for a protective "glucidic pre-conditioning" mechanism.
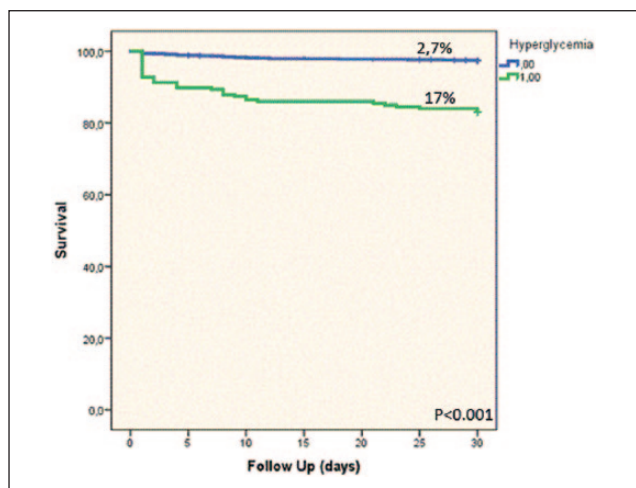
Malplan Meier Curves

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New doppler sign of Takotsubo cardiomyopathy? Report of five cases

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Background: Takotsubo cardiomyopathy (TCM) represents 1%–2% of patients with suspected acute myocardial infarction (MI).

TCM is characterized by a transient left ventricular (LV) systolic dysfunction, often mimicking an anterior MI. Differential diagnosis is crucial in acute settings. Echocardiographic diagnosis is usually based on circumferential pattern of wall motion abnormalities.

Methods: We performed a standard transthoracic echocardiogram in 5 patients with TCM in 24 hours after the symptoms onset. Diagnosis of TCM was based on revised Mayo Clinic criteria. All the patients did not have obstructive coronary lesions on angiogram and demonstrated substantial improvement of LV systolic function within 2 weeks. Among our control group of 10 patients with an anterior MI, 5 patients received an inotropic support (dopamine 10-15 mcg/kg/min).

Results: All the TCM patients demonstrated a circumferential pattern of wall motion abnormalities, consistent with apical variant of TCM. Two patients developed acute mitral regurgitation. One patient had severe LV hypertrophy and LV outflow tract obstruction. We noted a "third peak of transmitral flow" in all patients with TCM, using PW Doppler. It appeared at isovolumetric contraction period and probably represented basal to apex blood flow, contributing to apical ballooning. It disappeared in 3 days after the initial examination. We did not see this doppler pattern in MI patients, including those on inotropic support.

Conclusion: We observed an additional basal-to-apex flow in a small group of patients with Takotsubo cardiomyopathy. To confirm sensitivity and specificity of this sign for Takotsubo cardiomyopathy further studies are necessary.
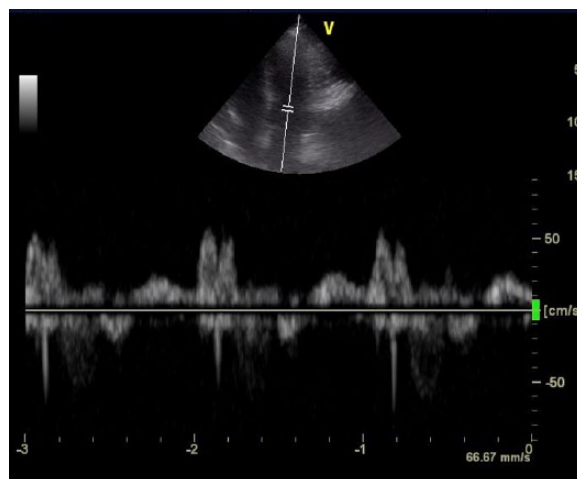
Transmitral flow of patient with TCM

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How does statin therapy influence acute coronary syndrome presentation and outcome?

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Introduction: Statin therapy is nowadays a cornerstone in primary and secondary prevention of cardiovascular events.

Purpose: To characterize the influence of previous therapy with statins on clinical and electrocardiographic presentation of Acute Coronary Syndrome (ACS) and its influence on in-hospital morbidity and mortality.

Methods: We evaluated 746 patients admitted in a Cardiac Care Intensive Unit diagnosed with ACS. We considered 2 groups: patients with previous therapy with statins and patients without previous therapy with statins. We identified demographic factors, personal history, clinical and electrocardiographic presentation of ACS, coronary angiography and angioplasty. The following in-hospital complications were defined: heart failure (HF), cardiogenic shock, re-infarction, stroke, major bleeding and need for blood transfusion. In-hospital mortality was compared between both groups.

Results: Thirty-eight percent (280) of the evaluated patients were previously treated with statins. These patients had a higher prevalence of hypertension (90.7% vs 65.4%, p < 0.001), diabetes (45.0% vs 27.8%, p < 0.001), dyslipidemia (81.8% vs. 36.6%, p = 0.001), chronic renal failure (18.6% vs 7.6%, p = 0.001), stroke (10.7% vs. 4.5%, p = 0.003), previous acute myocardial infraction (AMI) (45,0% vs 12,6%, p = 0.001) and previous coronary artery bypass graft (13.2% vs. 2.0%, p = 0.001). They also had less smoking habits (37.4% vs 13.9%, p = 0.001). Patients with previous statin therapy were less frequently admitted with ST elevation AMI (24.6% vs 49.2%, p = 0.001) and more frequently admitted for non-ST elevation AMI (56.1% vs 40, 9%, p = 0.001) and Unstable Angina (10.7% vs 5.6%,

p = 0.02). The rate of coronary angiography was similar between both groups; however, patients receiving previous statin therapy underwent less frequently angioplasty. During hospitalization, there were no differences in any of the complications considered, nor in in-hospital mortality between the 2 groups.

Conclusions: In patients with ACS, previous therapy with statins seems to influence the presentation of ACS, but does not affect in-hospital morbidity and mortality. An important percentage of patients with diabetes, previous AMI or stroke were not on statins therapy as is recommended in guidelines.

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Successful surgical repair of ventricular septal rupture developed in three days after off-pump CABG

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A 73-year-old man was admitted to our hospital with anterior ST elevation myocardial infarction (MI). Emergency coronary angiography revealed multiple in-stent restenosis including total occlusion of left anterior descending branch. We performed off-pump CABG with LIMA and SVG. On POD3, new-onset murmur appeared. Transthoracic echocardiogram (TTE) showed Ventricular septal rupture (VSR) complicating anterior wall myocardial infarction. Emergency surgical repair of VSR with "Extended sandwitch patch technique" was successfully performed the same day. TTE revealed no residual flow ten months after surgery.

VSR is a rare but catastrophic complication of acute MI. Although it is commonly developed after PCI, it can be after CABG. This is the world-first case reported as VSR after CABG. We should keep in mind that VSR can be developed after not only PCI but also CABG.

ACCA Research Prize Sunday, 04 March 2018 - 16:30 - 17:30

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Biomarkers reflecting cardiovascular stress, neuroendocrine response, and inflammation are predictive of late cardiogenic shock in patients with suspected ST-elevation myocardial infarction

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Background Of the 5-10% of ST-elevation myocardial infarction (STEMI) patients deteriorating into cardiogenic shock (CS), 1/3 develops shock during the hospital admission (late CS). This leaves a potential diagnostic window for identification of these patients before the vicious circle of CS has accelerated out of control. Biomarkers may prove valuable in this setting.

Purpose: To assess biomarkers reflecting cardiovascular stress (pro-atrial natriuretic peptide (proANP)), neurohormonal response (Copeptin and Midregional-pro-Adrenomedulin (MRproADM)), and inflammation (ST2), and their association with late CS.

Methods: Of 2247 consecutive patients admitted for acute coronary angiography with suspected STEMI the vast majority (>93%) had proANP, Copeptin, MRproADM, and ST2 measured before angiography. We compared patients developing late CS (n=64) with patients without shock (n=2022). A predictive value for late CS with an area under the Receiver Operating Characteristic (ROC) curve (AUC) > 0.8 was considered "good".

Results: Patients developing late CS had significantly higher levels of proANP (median (25th; 75th percentile) 1666 (1308; 2640) vs. 794 (488; 1275) pmol/L, p<0.0001), Copeptin (141 (47; 301) vs. 55 (15; 147) pmol/L, p<0.0001), MRproADM (1.28 (0.90; 1.83) vs. 0.71 (0.58; 0.92), nmol/L, p<0.0001), and ST2 (73 (45; 154) vs. 40 (30; 57), ng/mL, p<0.0001) compared to patients without shock.

A twofold higher level of all four biomarkers were independently associated with development of late CS (OR (95% CI) proANP 1.80 (1.34 – 2.42), p=0.0001; Copeptin 1.32 (1.11 – 1.58), p=0.002; MRproADM 2.70 (1.80 – 4.04), p<0.0001); ST2 1.83 (1.38 – 2.43), p<0.0001), when adjusted for age, stroke, time from symptom debut to angiography, shock index (heart rate / systolic blood pressure), being comatose after cardiac arrest, and admission lactate serum concentration. However, only MRproADM showed good predictive value (ROC AUC 0.82, p<0.0001) of late CS development (figure).

Conclusion: Patients with suspected STEMI deteriorating into CS has elevated serum concentration of proANP, Copeptin, MRproADM, and ST2 compared to patients without shock. All four biomarkers were independently associated with late CS, but only MRproADM showed good predictive value on late CS development. These biomarkers may play a pivotal future role in early risk stratification of STEMI-patients and potentially reduce mortality in late CS patients due to early identification and intervention.

Prediction of late CS development

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Hypoglycemic events during hospitalization in diabetic acute coronary syndrome patients treated with vildagliptin vs. guidelines based medical therapy

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Background: Morbidity and mortality in diabetic patients with Acute Coronary Syndrome (ACS) are dramatically higher compared to non-diabetic patients, particularly in patients with hypoglycemic events during hospitalization. Galvus (Vildagliptin) is an oral anti-diabetic drug of the new DPP-4 inhibitor class of drugs, it exhibits less frequent hypoglycemic events in Type 2 Diabetes Mellitus (T2DM) patients.

Objectives: To suggest a new paradigm of treatment in hospitalized diabetic ACS patients by adding Vildagliptin to conventional Insulin-only treatment.

Methods: 100 T2DM adult patients were enrolled when admitted to the ICCU with ACS diagnosis. Patients were divided into two groups in a randomized controlled manner. The control group received subcutaneous Insulin-only therapy while the study group received oral Vildagliptin in addition to the subcutaneous Insulin. Mean glucose values per hospitalization day, mean insulin values given for correction and hypoglycemic events (glucose<70 mg/dl) were documented.

Results: 8 events of hypoglycemia occurred in the control group in comparison to none in the Vildagliptin treated group(t(45)=2.070, p<0.001(. STEMI and NSTEMI diagnosed patients had significantly (p<0.05) higher number of hypoglycemic events compared to Unstable Angina diagnosed patients. No significant differences were found between the two groups in glucose level(t(88)=-0.739, p=0.462), and in given insulin units(t(87)=0.471, p=0.639).

Conclusions: In T2DM patients hospitalized for ACS, an addition of Vildagliptin to the routine subcutaneous insulin-only therapy significantly attenuated hypoglycemic events while maintaining identical mean glucose levels and insulin dosage compared to insulin-only therapy. Further studies are required to verify the promising results and to support it as a superior standard of treatment.

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Cardiac macrophages in wound healing following myocardial infarction: from experiment to clinic

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Introduction: Macrophages are key innate immune cells that play a significant role in transition from inflammatory to regenerative phase during wound healing following myocardial infarction (MI). Despite the progress of experimental studies devoted to the innate immune response following MI, there is no significant advancement in clinical studies.

Purpose: The purpose of the research was to translate experimental knowledge regarding macrophage subsets and their biomarkers in post-infarction left ventricular remodeling and myocardial regeneration into results observed in clinical settings. We suggested protocol based on usage of macrophage biomarkers to study cellular basis of cardiac remodeling and healing in patients with MI.

Methods: The study included 41 patients with fatal MI type 1. All patients were divided into 4 groups depending on the timeline of MI histopathology. In addition to routine histopathological analysis macrophages infiltration was assessed by immunohistochemistry. We used CD68 as a marker for the cells of the macrophage lineage, while CD163 and stabilin-1 were considered as M2-like macrophage biomarkers. Nine patients who died from non-cardiovascular causes comprised the control group.

Results: The figure (Figure 1) demonstrates results of immunohistochemical analysis. In the control group the number of CD68+ and CD163+ macrophages was lower than in the infarct, peri-infarct and non-infarct areas during all phases of MI (p < 0.001). Simultaneously the quantity of stabilin-1+ cells in the control group was higher in all the areas during inflammatory phase of MI (p=0.01). We noticed that numbers of CD68+, CD163+ and stabilin-1+ macrophages depended on MI phase. The number of CD68+ cells correlated with the day of MI: strong positive correlation was found in the infarct area (R=0.67, p=0.001) and moderate positive correlation was noticed in the peri-infarct area (R=0.55, p < 0.001). There was similar relationship for CD163+ (infarct area: R=0.61, p=0.001; peri-infarct area: R=0.66, p < 0.001) and stabilin-1+ cells (infarct area: R=0.6, p < 0.001; peri-infarct area: R=0.42, p=0.007).

Conclusions: Our study translated experimental knowledge regarding macrophage subpopulations in post-infarction myocardial regeneration into clinical. We observed cardiac macrophage response following MI reminded a murine

model. Our data indicate following: (1) dichotomous M1-M2 model is not sufficient to completely describe functions of macrophage subsets; (2) characterization of macrophage phenotypes by multiple biomarkers is promising; (3) stabilin-1 could be used as macrophage biomarker in cardiac wound healing in patients with MI. Our study supported diagnostic prospects for implementation of macrophage phenotyping in clinic. Identifying effective biomarkers of different macrophage subsets in patients with MI might become the basis of the method to predict adverse cardiac remodeling and the first step to develop myocardial regeneration target therapy.

Figure 1. The vertical axis represents the number of cells. **Group 1 (n=13)** comprised patients who died during the first 24 hours of MI; **group 2 (n=11)** - patients who died within 24-72 hours of MI; **group 3 (n=9)** - patients who died on days 4-10 after MI; **group 4 (n=8)** - patients who died on 11-28 days after MI.
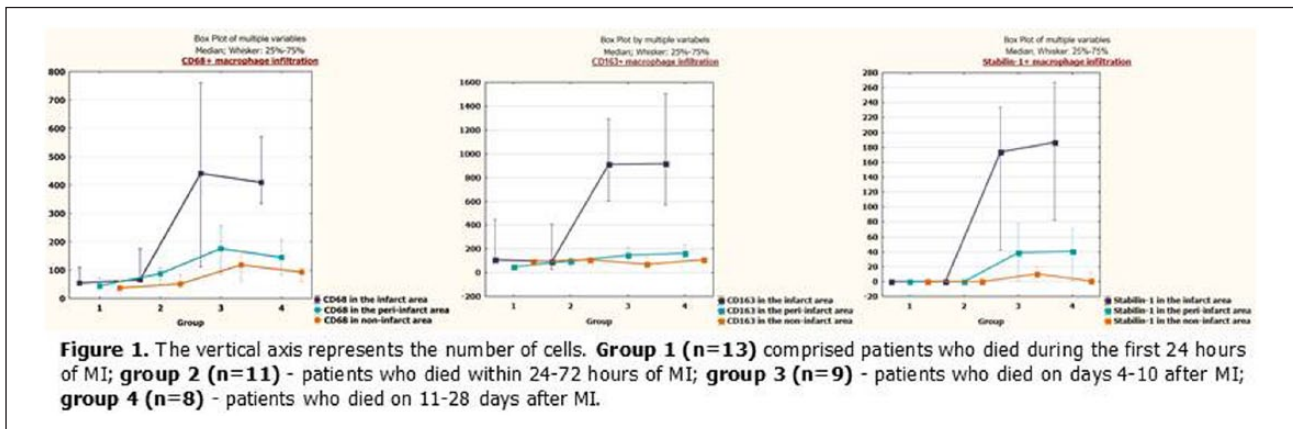
Cardiac macrophages during MI

398

12-month mortality after early and late resuscitated cardiac arrest in acute myocardial infarction

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Patients after resuscitated cardiac arrest (rCA) during acute myocardial infarction (AMI) are at higher risk of in-hospital and post-discharge adverse events. However, prognostic role of early (less than 48 hours from the onset of AMI) rCA is still controversial. We aimed to compare 12-month mortality of patients after early and late rCA during AMI.

Methods: We used the Polish Registry of Acute Coronary Syndromes (PL-ACS) database from 2009-2014 linked to the government data on deaths after discharge. Early rCA patients were defined as those with cardiac arrest within the first 2 days from the onset of AMI who did not died at the same day, regardless the CA appeared during pre-hospital or in-hospital phase.

Results: From 167,625 patients with NSTEMI and STEMI 3,564 (2.1%) survived cardiac arrest. Among them in 3,100 (87%) it was early rCA and in 464 (13%) late rCA. Before hospital discharge, 32% of patients with early and 59% with late rCA died (p < 0.001). In-hospital deaths were associated with older age, cardiogenic shock, lower left ventricle ejection fraction (LVEF) and with lower rates of revascularization (table). Among discharged home, patients with early rCA were younger, more frequently presented STEMI and cardiogenic shock, and were slightly more often treated by PCI or CABG than patients with late rCA. Of note is, that early rCA patients were more frequently discharged with LVEF > 40% (58% vs. 40% in late rCA). The rates of ICD/CRT-D implantations were higher after late rCA. 12-month post-discharge mortality was significantly lower after early than late rCA (12.3% vs. 21.1%, p < 0.001). Anyway, after adjustment in multivariate Cox regression model both early (HR=1.79, 95%CI=1.58-2.03) and late (HR=1.77, 95%CI=1.30-2.41) were significantly and similarly associated with higher 12-month post-discharge mortality.

Conclusions: Early resuscitated cardiac arrest is associated with lower mortality than late. However, adjusted effect of early and late resuscitated cardiac arrest on 12-month post-discharge mortality seems to be comparable.

	Early rCA		Late rCA	
	In-hospital death	Discharged home	Discharged home	In-hospital death
Number of patients, N (%)	994 (32%)	2106 (68%)	190 (41%)	274 (59%)
Age, years	71	63	68	75
STEMI, %	63	69	60	56
Killip 4 on admission, %	42	17	5	13
Coronary angiography, %	88	93	89	84
PCI, %	77	86	81	72
CABG, %	0.7	2.2	1.1	1.1
LVEF > 40%, %	20	58	40	27
LVEF <= 35%, %	66	25	44	62
ICD/CRT-D during hospitalization, %	0.1	1.9	14.2	0.4
ICD/CRT-D after discharge, %		4.8	6.3	
30-day post discharge mortality, %		2.2	2.3	
12-month post discharge mortality, %		12.3	21.1	

12-month post-discharge mortality

Hazard ratio (95% confidence interval)   P value

	Hazard ratio	P value
Age (per 5 years more)	1.32	<0.0001
LVEF (per 5% less)	1.25	<0.0001
Invasive treatment (PCI)	0.59	<0.0001
Diabetes mellitus	1.35	<0.0001
Early resuscitated cardiac arrest	1.79	<0.0001
Late resuscitated cardiac arrest	1.77	0.0003
STEMI (vs. NSTEMI)	0.97	0.079

0.33   1.0   3.0

Table and Figure

Poster Session 3 - ST Elevation ACS Sunday, 04 March 2018 - 09:00 - 12:30

Case Reports

P399

A rare coronary anomaly detected during an acute myocardial infarction

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Introduction: Anomalous origin of left and right coronary arteries from a single coronary ostium in the right sinus of Valsalva is rare.

Case presentation: A 60-year-old male patient was submitted to catheterization laboratory for primary percutaneous coronary angioplasty with a diagnosis of an acute inferior myocardial infarction. He had several risk factors including smoking, hypertension, and type 2 diabetes mellitus. Selective right coronary angiography showed a total thrombotic occlusion at the proximal segment of the RCA. The proximal segment of the RCA was completely occluded with thrombus. The coronary artery was cannulated by a Judkins right (JR4) guiding catheter. After thromboaspiration, a bare metal stent was implanted in the stenotic segment of the RCA with a satisfactory immediate angiographic result. The left main coronary artery (LMCA) was originating from the right aortic sinus and there was severe stenosis (70%) at the mid-segment of the LMCA. Five days later, the patient developed prolonged chest pain. The patient was taken to the catheter laboratory again. The RCA had no significant lesions with a good angiographic result after stenting. However, the LMCA had a severe focal lesion in its mid portion. The course of the LMCA was posterior to the aortic trunk.

The single coronary ostium was engaged with a multipurpose (MP) guiding catheter and direct stenting of the lesion was successfully performed by using a drug eluting stent.

Angiographic result after stenting was satisfactory with no residual stenosis. The patient had an uneventful recovery and was discharged on medical therapy with aspirin, clopidogrel, betablockers, angiotensin-converting-enzyme inhibitor and statins. An exercise stress test performed 6 months later was normal and the patient is free of symptoms after 9 months of follow-up.

Conclusion: We describe a rare case of a patient who had an anomaly of the left and right coronary arteries with a single coronary ostium in the right sinus of Valsalva, in which percutaneous coronary intervention was successfully performed in the RCA and LMCA. Selecting the appropriate guiding catheter in single coronary artery is commonly difficult due to the tortuous angle and unusual direction of the coronary artery. In addition, if a dissection occurs, it may extend retrogradely and involve the origins of the LMCA and RCA, and the consequences may be serious. Therefore, selecting the appropriate guiding catheter and other equipment is essential to the technical success of the procedure.

P400

Acute ST-elevation myocardial infarction: Evaluation of new time delay threshold values till primary percutaneous coronary intervention and their effects on outcome

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Background: Primary percutaneous coronary artery intervention (PCI) in patients with acute ST-elevation myocardial infarction (STEMI) leads to myocardial salvage. The 2017 European Society of Cardiology Guidelines for the treatment of acute STEMI introduced new time targets for coronary reperfusion.

Objectives: To test whether shorter periods to primary PCI improve coronary flow, myocardial perfusion and left ventricular systolic function.

Methods: 170 patients with acute anterior STEMI treated by primary PCI were evaluated. Time periods from onset of chest pain to first medical contact (FMC) and from FMC to primary PCI (FMC- PCI) and from pain to primary PCI (Pain - PCI) were recorded.

Results: Patients with pain-PCI<300 min, tended to achieve TIMI grade III more frequently (51%vs 33%), p=0.06 and more frequent MBG≥2, (53% vs 36%), p=0.08. Partial ST-elevation resolution was achieved more frequently in patients with pain- PCI<180min (87% vs 65%), p<0.05. Lower peak troponin levels were found in patients with pain- PCI<300 min (49.2±45.2 vs 84.2 ±43 ng/ml), p=0.03. In patients with pain-PCI< 180min, ejection fraction (LVEF) increased by 10±8% vs 5.5±5%, p<0.05. In patients with pain-FMC < 90 and < 120 min the increase in LVEF was larger than in others, p<0.05. FMC- PCI less< 180min was associated with larger increase in LVEF, p<0.05.

Conclusion: Decreasing pain to PCI intervals, improves myocardial perfusion and LVEF.

P401

Acute combined myocardial infarction resulting from simultaneous thrombotic occlusion of right coronary and left anterior descending coronary arteries: an uncommon finding with fatal outcome

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Introduction: Acute combined myocardial infarction (MI), resulting from simultaneous thrombotic occlusion of more than one vascular territory, is uncommon. We report a case of acute combined MI resulting from simultaneous thrombotic occlusion of right coronary (RCA) and left anterior descending (LAD) coronary arteries, ultimately causing patient's death.

Case description: A 60-year old man presents to the emergency department (ED) complaining about oppressive chest pain since 30 minutes before. Past medical history was irrelevant except for smoking. He was haemodynamically stable at presentation. ECG showed an injury current in inferior (DII, DIII and aVF) and precordial lateral (DI, V4-V6) leads (figure A).

Emergent coronary angiogram disclosed acute thrombotic occlusion of both dominant middle RCA (figure B) and middle LAD (figure C). Primary percutaneous coronary intervention (PCI) with aspiration thrombectomy and stenting were provided for both culprit lesions. TIMI 3 distal flow was achieved for both RCA and LAD.

Bedside echocardiography revealed severely depressed left ventricular function due to regional hypokinesia in multiple vascular beds. Patient's clinical condition progressed into cardiogenic shock refractory to increasing inotropic doses. Pulseless electrical activity and cardiac arrest ultimately occurred. Echocardiography excluded mechanical complications other than pump failure. Cardiopulmonary resuscitation manoeuvres were unsuccessful.

Discussion: Simultaneous ST-segment elevation in both inferior and precordial ECG leads more commonly results either from occlusion of a hyper-dominant coronary artery that passes around the apex and extends into the contralateral territory, or from occlusion of a coronary artery that supplies a large network of collateral vessels on which the contralateral territory depends.

Combined acute MI resulting from the simultaneous acute occlusion of two vessels in different territories, as reported in here, is even rarer. To the author's knowledge, relatively few cases are reported in literature; some emphasized the role of paradoxical embolization through a patent foramen ovale as a cause for the simultaneous acute occlusion of two vessels.

Acute combined MI is not specifically addressed in clinical practice guidelines; therefore, standard treatment, including emergent coronary angiography and primary PCI for both culprit lesions was undertaken.

Patients with simultaneous acute thrombosis of more than one coronary artery had higher incidences of cardiogenic shock, pulmonary oedema and sudden cardiac death in a retrospective cohort study.

Conclusion: Acute combined MI, resulting from simultaneous thrombotic occlusion of more than one vascular territory, is uncommon. Standard treatment, including primary PCI for both culprit lesions, should be offered. Despite prompt intervention, outcome tends to be poorer.
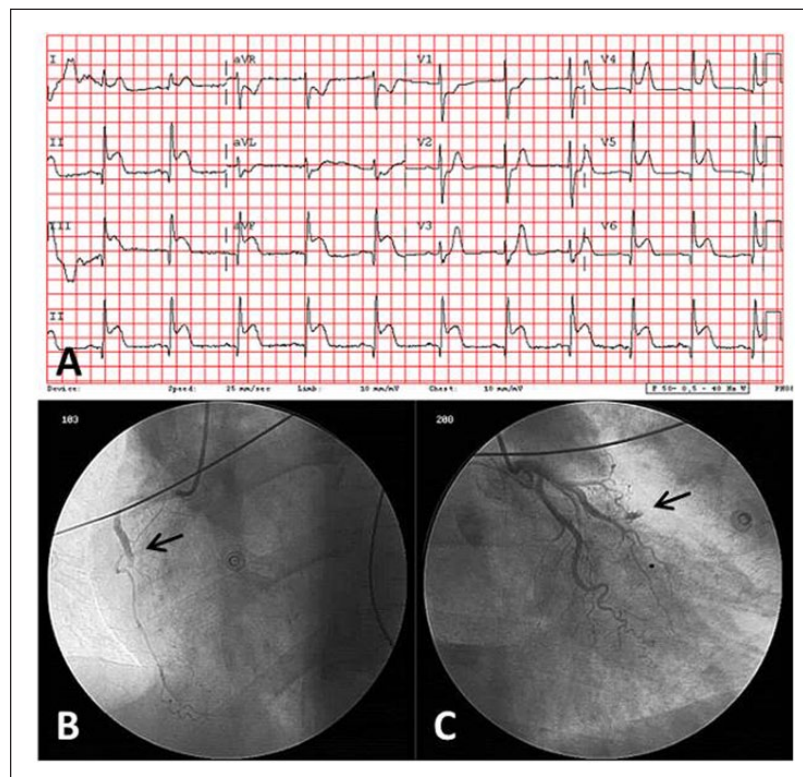
ECG (A) and occluded RCA (B) and LAD (C)

P402

Aneurysm and ventricular septal defect after inferior acute myocardial infarction

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Introduction: Mechanical complications (MC) are one of the most undesirable complications that can occur in acute myocardial infarction. The incidence of MC has decreased due to effective early revascularization treatments such as primary angioplasty. Despite this, rapid and accurate diagnosis and early treatment are necessary.

Clinical case: A 68-year-old man, with no previous cardiac medical history, was admitted at his reference hospital with the diagnosis of inferior myocardial infarction, no primary PCI or fibrinolysis was performed, and after 5 days he was discharged.

Two days after, he consulted again for persistence of chest pain and dyspnea, TTE shows posterobasal aneurysm with 14 mm ventricular septal defect (VSD); severe mitral regurgitation and severe pulmonary hypertension. The ECG shows signs of necrosis in II, III and AVF.

He is transferred to our hospital with the diagnosis of cardiogenic shock, vasoactive and inotrope drugs are initiated and a intra aortic balloon pump is implanted.

After hemodinamic stabilization, coronary angiography is performed showing severe three-vessel and left main coronary artery disease.

In the TEE, a 4cm inferobasal aneurysm, severe MI due to mitral asymmetric leaflet tethering and a VSD of 7.5mm.

Emergency surgery was performed: Double by-pass (SF-AD and SF-OM); mitral annuloplasty and closure of the septal defect with a pericardial patch.

The correct functioning of the mitral valve and the absence of leakage through the interventricular septum were controlled by TEE.

In the postoperative period, IABP was withdrawn on postoperative day 3; dobutamine and noradrenaline are withdrawn on postoperative day 5, remaining stable clinically and hemodynamically , is transferred to cardiology ward, being discharged a week later.

Conclusion: Although the incidence of VSD has decreased in the percutaneous coronary intervention era, prompt diagnosis are necessary due to the high mortality associated with VSD, and definitive surgery remains the treatment of choice , despite of the high operative mortality, around 43%, which represent the highest mortality rate of any cardiac surgery.
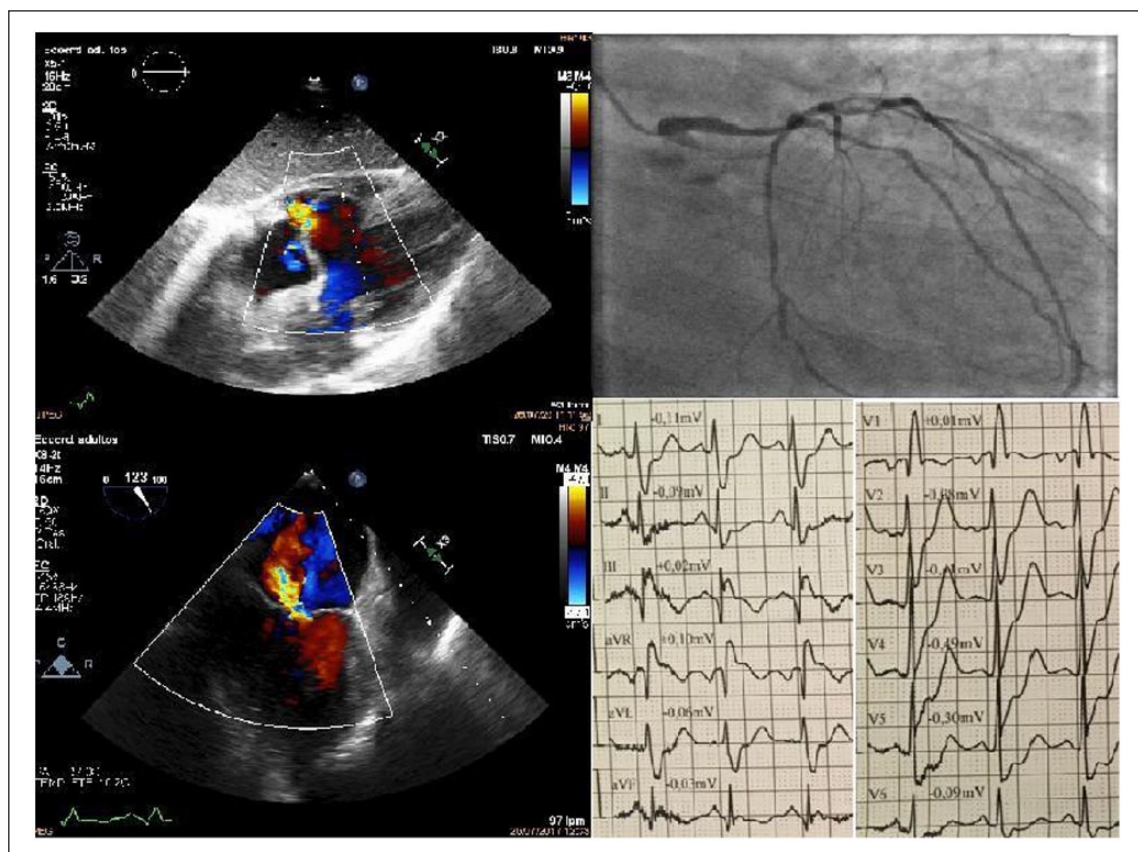
P403

Papillary muscle rupture and acute mitral regurgitation in inferior transmural acute myocardial infarction: a rare, but still fatal, mechanical complication in the reperfusion era

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Introduction: Papillary muscle rupture occurs in 1% of patients with ST elevation myocardial infarction (MI). We report a case of acute mitral regurgitation seconday to papillary muscle rupture in inferior transmural MI.

Case description: A previously healthy 47-year-old man presented to the emergency department (ED) complaining about abrupt onset of shortness of breath. He was diaphoretic and in severe respiratory distress. Respiratory rate was 44/min, SpO2 was 84% on high-flow oxygen mask, blood pressure was 90/50 mmHg, and heart rate was 150 bpm. Extremities were cool and hypoperfused. Bilateral rales, extending through the entire lung field, and a soft systolic cardiac murmur were audible. Chest radiograph documented pulmonary oedema (figure A) On ECG, atrial flutter, and inferior injury current were seen (figure B). Echocardiography disclosed a totally ruptured papillary muscle and complete eversion of the posterior mitral leaflet (figure C), with severe mitral regurgitation (figure D).

Immediate patient's management consisted in orotracheal entubation, mechanical ventilation and vasopressor support with noradrenalin. Intra-aortic balloon pump (IABP) conterpulsation was initiated in the catheterization laboratory.

Emergent coronary angiography showed an occluded right coronary artery. The patient had undergone emergent mitral valve replacement. However, refractory cardiogenic shock and multiorgan failure supervened; he finally died three days after surgery.

Discussion: Acute pulmonary oedema and hypotension are the most typical manifestations of papillary muscle rupture. A new holosystolic murmur is typical but underappreciated. Inferior wall infarction can lead to rupture of the posteromedial papillary muscle. Secondary mitral regurgitation can be promptly recognized by echocardiography. Color flow Doppler imaging is particularly helpful in distinguishing acute mitral regurgitation from a ventricular septal defect, a differential diagnosis in the setting of posterolateral STEMI.

In haemodynamically unstable patients with papillary muscle rupture, standard treatment support, such as mechanical ventilation and vasopressors, should be provided. IABP is critically important for haemodynamic support in most patients before coronary angiography. Obviously, severe hypotension contra-indicates direct vasodilator therapy. Emergency surgery is the only effective treatment. Mitral valve replacement is usually necessary. Operative mortality is as high as 20–25%.

Conclusions: Papillary muscle rupture should be suspected in patients with transmural infarctions (most typically in inferior location) presenting with severe pulmonary oedema and hypotension. Echocardiography should be immediately obtained. IABP is critical for patient's stabilization. Emergency surgery is mandatory. Despite being relatively rare in the reperfusion era, papillary muscle rupture may still be a fatal complication of transmural myocardial infarction.
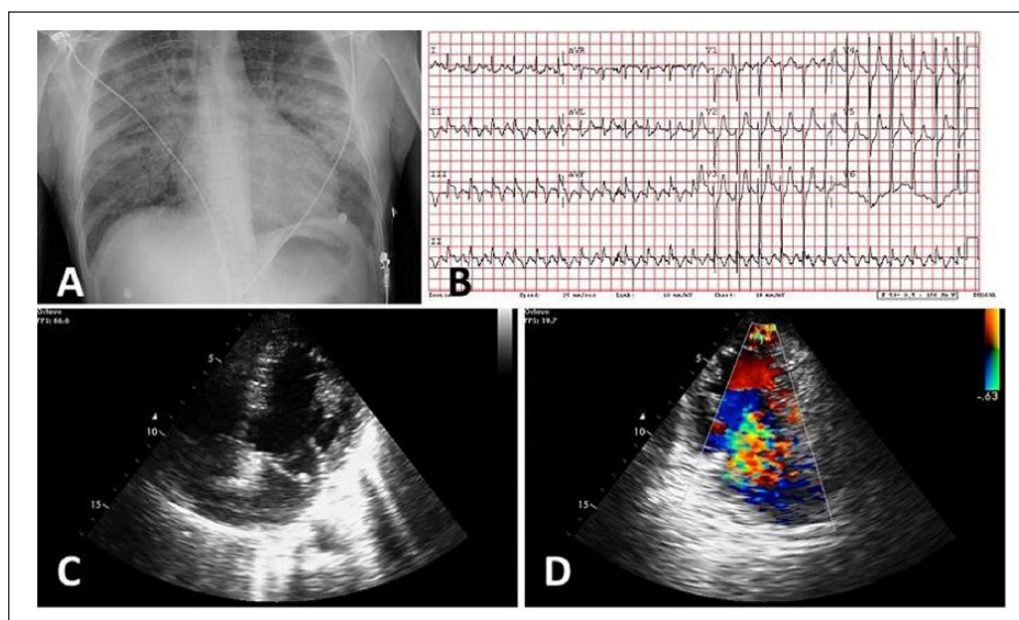
Chest radiograph, ECG and echo images

P404

ECMO as bridge to recovery in ventricular septal defect after anterior acute myocardial infarction

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We present the case of a 72 year old man, with no previous medical history, who presented an episode of chest pain 1 week ago, self-limited, assessed in emergency department, being discharged.

He returns complaining for rapidly progressive dyspnea at the emergency department (NYHA class III-IV). In ECG, there is an extensive ST elevation (V2-V6).

An urgent transthoracic echocardiogram showed severe systolic dysfunction, extensive anterior dyskinesia and mid-distal interventricular communication (gradient VI-VD of 90mmHg).

Is admitted to the intensive care unit, IABP was implanted and urgent coronary angiography was performed in which a thrombotic occlusion of ostial DA was observed, performing balloon angioplasty.

Delaying surgery of VSD (> 14 days after AMI) was decided jointly with the Cardiac Surgery Service. Initially it presented clinical improvement, reason why it was possible to withdraw the IABP but then started with respiratory insufficiency and multiorganic failure, requiring reimplantation of the IABP, with improvement in the later days.

The VSD closure was performed by a pericardial patch, resecting the infarcted myocardium. During the postoperative period, the patient persist with cardiogenic shock despite supportive therapies requiring the implantation of VA ECMO, as well as vasoactive drugs at high doses.

24 hours after surgery, TEE showed clots in lateral and posterior left ventricle that were surgical drained with with minimal posterior hemodynamic improvement

5 days after surgery, despite supportive therapies, including IABP and ECMO, the patient patient died from progressive heart failure.

Conclusion: Although ECMO is a good option to maintain patients' hemodynamic stability as a bridge to recovery, the mechanical complications of acute myocardial infarction have a fatal prognosis.
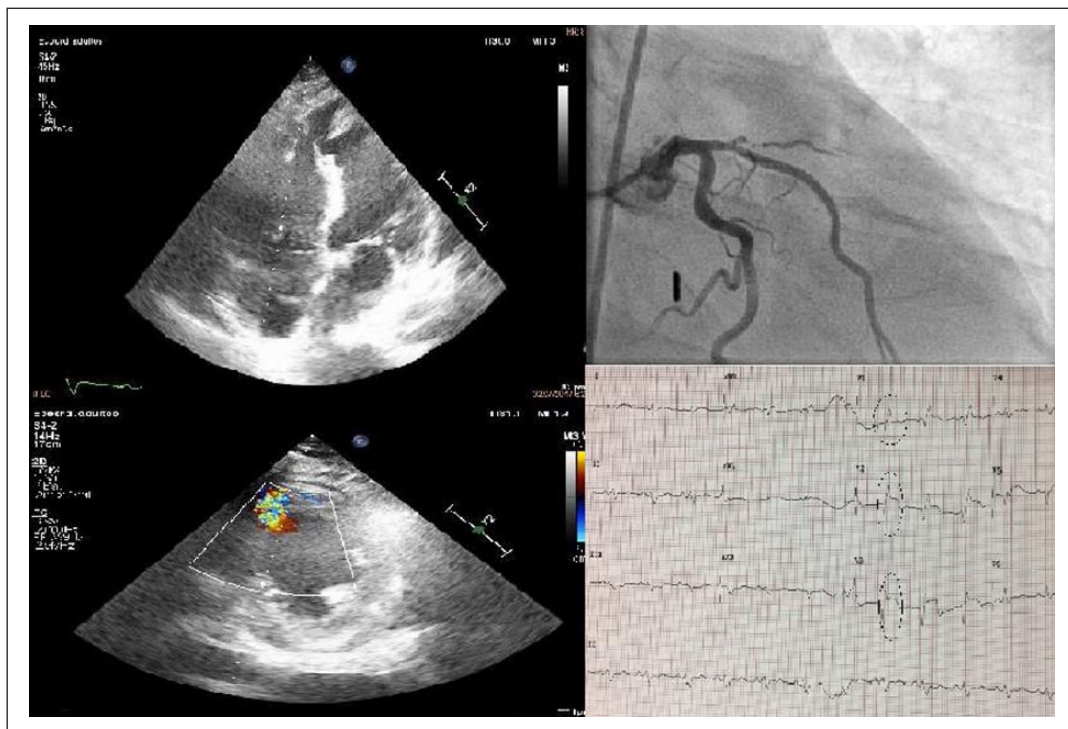
P405

Ventricular septal rupture in inferior transmural myocardial infarction: a dramatic mechanical complication with fatal outcome

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Introduction: Ventricular septal rupture (VSR) occurs in 1-3% of non-reperfused transmural myocardial infarction (MI). We describe a case of VSR resulting from inferior transmural MI with fatal outcome.

Case description: An 86-year-old frail woman is brought to the emergency department complaining about recurrent chest pain. She had chronic kidney disease and incipient dementia. She was disoriented, blood pressure was 90/50

mmHg, heart rate 55 bpm, SpO2 90% on room air, and respiratory rate was 20/min. Cardiac auscultation was remarkable for a systolic murmur and thrill along the left lower sternal border.

ECG showed pathologic Q waves and ST-elevation in inferior and precordial leads (figure A). Bedside echocardiography revealed incomplete VSR (figure B), with back-and-forward shunt on colour Doppler imaging (figure C). In the cardiac catheterization laboratory, intra-aortic balloon pump (IABP) conterpulsation was initiated. Emergent coronary angiography depicted a dominant occluded right middle coronary artery, and severe ostial stenosis of the left circumflex coronary artery. Surgical treatment was deemed futile owing to frailty and comorbidities. Severe hypotension and shock supervened, and frank left-to-right shunt across the defect was seen on Doppler imaging thereafter. The patient ultimately died from multiorgan dysfunction three days later.

Discussion: VSR resulting from an inferior MI tends to be basally located and has a worse prognosis than those resulting from an anterior MI, which are associated with perforation of the apical septum. Our patient also had some risk features for VSR, such as advanced age, female sex, and chronic kidney disease.

Immediate echocardiographic assessment is needed when VSR is suspected. Echocardiographic findings include direct visualization of VSR, left-to-right shunt on colour flow Doppler echocardiography through the ventricular septum, and pattern of right ventricle (RV) overload. In incomplete rupture, flow along the ruptured septum, without reaching the RV cavity, may be seen.

For most patients with STEMI and VSR in circulatory collapse, IABP counterpulsation should be considered. Hypotension contraindicates institution of direct vasodilator therapy, such as nitroglycerin or nitroprusside.

Prompt surgical repair is necessary and involves closure of the defect, usually accompanied by coronary revascularization. VSR catheter-based repair may be appropriate in patients not candidates for early definitive surgical correction and without hemodynamically significant VSR, because complete closure of the defect requires time for the device to thrombose and endothelize.

Conclusions: VSR should be suspected in every patient with acute transmural MI and hypotension. Immediate echocardiographic assessment is essential. IABP should be considered. Without repair, death due to biventricular failure rapidly ensues. In hemodynamically significant VSR, surgical management is the best management option.
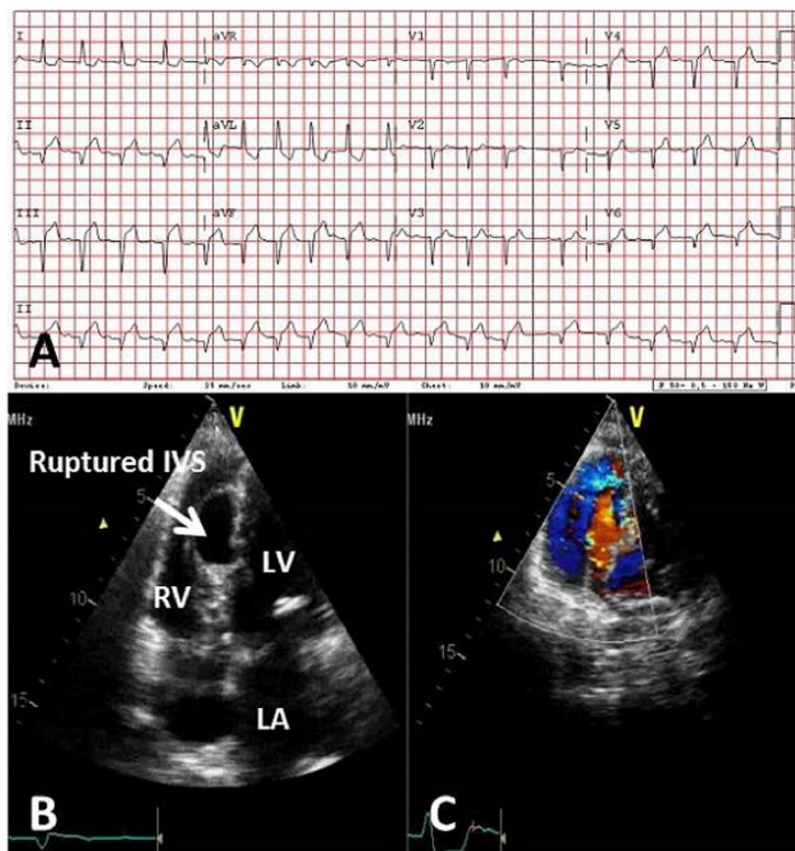
ECG and transthoracic echocardiogram

P406

A hole in the heart - how should I fix it ?

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A 72 years old female complaining of angina since the previous afternoon was admitted on April 1, 2017 with an acute inferior wall ST-elevation myocardial infarction (MI) complicated by right bundle branch block, intermittent 3-rd degree atrioventricular block with bradycardia and cardiogenic shock (shock). She had a medical history of hypertension, dyslipidemia and an episode of pulmonary tuberculosis 17 years ago.

On admission to CCU, bedside echocardiography (echo) revealed biventricular systolic dysfunction with left ventricular (LV) EF of 35-40%, an aneurysm in the basal inferior segment and akinesis in inferior and inferolateral walls of the LV myocardium. The culprit lesion, proximal occlusion of right coronary artery, was opened and TIMI-2 reperfusion accomplished by aspiration of thrombus and implanting two drug eluting stents in the proximal and middle segments. Persistent shock post-PCI and a faint murmur raised a suspicion of a mechanical complication and prompted a repeat bedside echo, which confirmed the finding of a ventricular septal rupture (VSR). A cardiothoracic surgeon on call deferred urgent operative management due to unexceptably high intraoperative risk. Shock was managed medically with high dose norepinephrine, dobutamine and furosemide. The patient remained on spontaneous ventilation. On April 3, echo showed a rupture in the mid segments of the inferior and inferoseptal wall of the LV with a diameter of 1.3 cm. Left-to-right shunt towards the RV apex and lateral wall had a peak pressure gradient of 73 mmHg. The LV was hyperkinetic, but forward stroke volume was severly depressed (19 ml). The right ventricle was dilated and hypokinetic.

Due to persistent shock the Heart Team decided to refer the patient to the university hospital for a percutaneous closure of the VSR. The transesophageal echo (TEE) guided procedure took place on April 4 with the patient under general anaesthesia. After intracardiac pressure gradients were measured, ventriculography revealed a 22mm septal defect. It was closed with a 24 mm closure device after a 20 mm device turned out to be undersized. There was residual turbulent leak through the disks of the closure device on repeat ventriculography, while in TEE it was less evident. LV function remained normal during the procedure and there was no pericardial effusion. Intracardiac pressure gradients remained unchanged. Despite an initially successful procedure, shock rapidly deteriorated thereafter in the CCU, and the patient died, probably due to inability to adapt to hemodynamic changes as bed-side echo revealed acute LV systolic dysfunction.

Conclusion: VSR is a rare, but usually fatal complication of MI. Surgical repair is considered as the "golden standard". If emergent surgical repair is deferred, percutaneous closure can be considered in anatomically suitable patients. Emergent veno-arterial extracorporeal membrane oxygenator could be used as a bridge to definite therapy.

P407

STEMI and Boerhaave Syndrome: two concomitant life threatening diseases

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A 67-year-old female with previous known history of hypothyroidism, HTN and smoker, is admitted in ED with an 8-hour evolution of precordial pain. EKG showed sinus rhythm with ST segment elevation in V1 to V3, with pathologic Q waves in those leads. She was hemodynamically stable (112/74mmHg, HR 114bpm), without any signs of hypoperfusion or respiratory distress, in GCS 15. She also had complaints of epigastric pain. A coronography was performed: LAD with a critical lesion (99%) in the medium segment, treated with a DES. Admitted to the Coronary Intensive Care 1.5h after arriving at the hospital, where she presents hypotensive (68/34mmHg), in sinus tachycardia (HR 132bpm), in respiratory distress (BR 30cpm). The TTE showed normal left ventricular systolic function with hypokinesia of the medium and apical segment of anterior wall and anterior IV septum, without any evidence of mechanical complications. The blood gas analysis showed metabolic acidemia (pH 7.24, HCO3- 18.6). At physical examination, she was obnubilate (GCS 10, E3VM59), with cold extremities (capillary time to reperfusion of 5s), in anuria since hospital admission. At pulmonary auscultation, there was globally reduced sounds; the chest X ray performed was evident for a pneumomediastinum. Noradrenaline was initiated. An emergent CT was ordered and showed bilateral pneumothorax, pneumomediastinum and pneumoperitoneum. A thoracic catheter was inserted and a small quantity of air was aspirated together with 500cc of a brownish liquid. The abdominal CT showed pneumoperitoneum, peritoneal free liquid and a pelvic tumor of considerable dimensions. Considering the diagnosis of ruptured abdominal viscera, we administered oral blue methylene and shortly after, the fluid draining through the thoracic catheter turned blue. She was rushed to surgery, 3h after a primary angioplasty. In the OR an endoscopic study showed necrosis of the distal half of the

esophagus, with an extensive perforation of the lumen and mediastinum visualized. The surgeons also demonstrated a perforation of a duodenal ulcer with peritonitis and a 30cm ovary cyst. The option was to keep the double antiplatelet therapy, and the patient had a favorable outcome, without hemorrhagic complications.

Discussion: There are a wide range of diagnosis to be considered in patients presenting with thoracic pain. However, when a patient has risk factors, an apparently typical chest pain, and EKG with ST segment elevation, STEMI is on the top. However, in some rare cases the patients have more than one problem, and in those cases, it is important to search for other alternative explanations. When this patient arrived at the intensive care unit she was in shock. Excluded cardiogenic shock, the septic or hypovolemic shock should be considered and readily approached.

Conclusion: In the great majority of patients one disease can explain all the problems. In this case, several life threatening conditions ocorred almost simultaneously.

P408

Thrombus aspiration in primary percutaneous coronary intervention. The experience of critical care department over five years

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Background: Thrombus aspiration for STEMI may improve myocardial perfusion. However, these favorable results called into a question by data indicating not only lack of efficacy, but a risk of potentially deleterious complications.

Aim: To assess the effect of thrombus aspiration during primary percutaneous coronary intervention (PPCI) on myocardial perfusion, procedural angiographic results and major adverse cardiac and cerebrovascular events (MACCE).

Methodology: All consecutive STEMI patients candidate for PPCI and admitted from beginning of January 2010 until the end of December 2015, managed either by thrombectomy before PPCI or conventional PPCI "upon operator discretion" were enrolled in the study. 607 subjects "440 subjects (72.5%) retrospectively and 167 subjects (27.5%) prospectively" within 12 hours of symptoms divided into Group with thrombectomy before PPCI (N 107) 18%, Group with Conventional PPCI (N 500) 82%. ST segment resolution, peak CK-MB, TIMI score,

and MBG were assessed, SYNTAX score calculated, stent number, diameter, and length were reported and follow up MACCE in hospital for "all the study group 607 subjects" and 1 year for "prospective group 167 subjects" were reported.

Results: Mean values for peak CK-MB were 228±174 vs 269±186 I/U p 0.04, ST segment resolution >70% occurred in 63 (58.9%) vs 233 patients (46.6%) p 0.001 in thrombectomy vs conventional group respectively. Mean values for TIMI score pre procedure were (0±0.2 vs 0.4±0.8 p 0.001), while TIMI post were 2.9±0.1 vs 2.8±0.2 p 0.06, MBG mean values were (2.4±0.6 vs 2.0±1 p 0.001), mean values for thrombus score were 4.6±0.4 vs 0.8±1.7 p 0.001 in thrombectomy vs conventional group respectively. Mean values for SYNTAX score pre procedure were (16±6 vs 17±7p 0.2) while post were (14±6 vs 15±7 p 0.3) in thrombectomy vs conventional group respectively. Direct stenting was more frequent in thrombectomy group {34 (31%) vs 102 patients (20%) p 0.05}, mean stent diameter (2.7±1.3 vs 3.5±1.3 mm p 0.3), mean stent length was shorter in thrombectomy group (19.9±10 versus 22.7 mm±8 in p 0.01). mean stent number was (1.0±0.5 vs 1.2±0.6 p 0.001), mean stented segment was (22.5±13.5 vs 28.5±15.2 mm p 0.001) in thrombectomy vs conventional group respectively. Complications occurred in 12 (11.2%) vs 74 patients (14.8%) p 0.3 in thrombectomy vs conventional group respectively. In hospital MACCE reported in 9 (8.4%) vs 70 patients(14%) p 0.07). While , Follow up MACCE after 1 year reported in 26 subjects (17.8%) of prospective group {4(13.3%) vs 22 subjects (18.9%) p 0.4} in thrombectomy vs conventional prospective group respectively.

Conclusion: Thrombus aspiration before PPCI improves myocardial perfusion, suggested by better ST segment resolution, TIMI flow, less peak CK-MB and MBG ,associated with higher rate of direct stenting, shorter stent length,stented segments and less number of stents, However, this was not translated into improvement in MACCE.

P409

ST-segment elevation: not always a myocardial infarction

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We report the case of a 16 years old girl with no previous medical history and no CV risk factors, who accessed the ER for oppressive chest pain (CP) at rest associated with

vomiting, no fever. She was admitted to our intensive care unit while still symptomatic for CP. Vital signs upon presentation: BP 104/74 mmHg, HR 52/min, O2sat 98% on room air. Physical examination: mild underweight (43Kg), regular HR and rhythm and normal pulmonary findings. No evidence of peripheral oedema and rush. ECG: SR 49/min, ST segment elevation in lead II-III-aVF-V5-V6, with specularity. First echocardiogram showed akinesia of the posterior and lateral walls, with mild reduction of the LV function (EF=50%), no further wall motion abnormalities (WMA). Given the symptoms, the peculiar ECG and the regional WMA, despite the young age, we decided to proceed with urgent catheterization which showed normal coronary arteries and anatomy. Laboratory tests: dramatically elevated markers of myocardial necrosis (at peak TnI>78ng/ml and CKMb>307ng/ml), but normal inflammation markers (PCR 0.03mg/dL). Clinical evolution was carefully observed also with serial ECGs and echocardiograms: day 3 echo showed diffusely hypokinetic, thickened and edematous septum and mid-basal segments of the infero-posterior walls, with a further reduction of the LV function (EF=40%); a new mild pericardial effusion was seen, localized at the posterior interventricular sulcus and along the infero-posterior wall. In order to better characterize the nature of this clinical scenario a CMR was performed, showing diffuse oedema associated with subepicardial delayed enhancement (DE) for ~80% of the wall thickness (WT), extended in almost all segments of the LV (EF=35-40%): findings consistent with the suspect of severe acute myocarditis. Microbiological analysis were performed: an antibody positivity (IgM) for Coxackie B was detected. Remaining immunological and microbiological analysis were negative or not relevant (HIV negative). The girl remained asymptomatic throughout the hospital stay, with no signs and symptoms of HF. No arrhythmias were recorded. A low dose beta-blocker was started. We observed ECG changes with progressive resolution of the ST segment elevation and with the appearing of negative T waves in infero-lateral leads. Control echo 2 weeks after admission did not show any more WMA; the global function recovered within normal limits. Given the progressive recover of the LV function and the absence of HF, we decided to defer an endomyocardial biopsy. The girl was discharged at home and she remained well and asymptomatic. CMR after 1 month showed no more oedema and reduced DE for ~50% of the WT, with preserved EF. This case represents a severe acute form of myocarditis, probably viral, with uncommon clinical presentation. Such a case impose to make further efforts to reach the etiological diagnosis of myocarditis and, more importantly, to follow the patient with a close and long term follow-up.
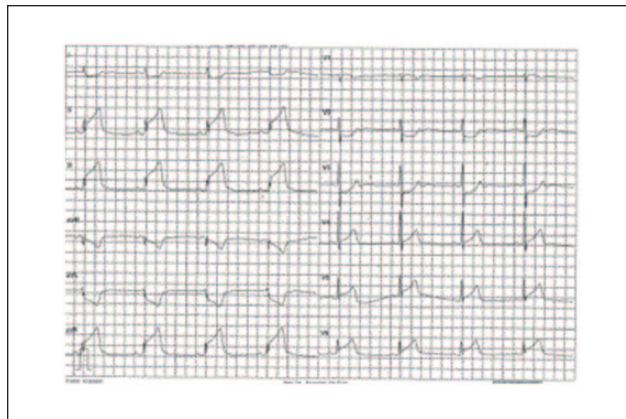
General Acute Coronary Syndromes

P410

Association between central venous pressure, left ventricular function and acute cardiorenal syndrome in ST segment elevation myocardial infarction patients

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Background: Recent reports have demonstrated the adverse effects of venous congestion on renal function in patients having heart failure. None of the above trials however evaluated the effect on acute kidney injury (AKI) occurrence in patients with acute ischemia.

Methods: We conducted a retrospective study of 1336 consecutive STEMI patients between June 2012 and June 2016 and had a comprehensive echocardiographic examination performed within 72 hours of hospital admission. Patients were stratified according to left ventricular (LV) ejection fraction and central venous pressure (CVP) and assessed for AKI.

Results: Intermediate-high CVP ($\geq$ 10 mm/Hg) was independently associated with AKI regardless of LV systolic function. Patients having both LV ejection fraction $\leq$45 and intermediate-high CVP had a 10-fold increase in the incidence of AKI compared to patients with LV>45 and normal CVP (39% vs. 4%). In multivariate logistic regression model for the entire cohort intermediate-high CVP was independently associated with AKI (OR= 3.69, 95% CI 2.34-5.84; P<0.001), while every 1% decrease in LV ejection fraction increased the Odd ratio for AKI by 7% (OR

1.07, 95% CI 1.04-1.10; P<0.001). Other variables associated with AKI included hypertension and chronic kidney disease.

Conclusion: Among STEMI patients undergoing primary PCI intermediate –high CVP and reduced LV ejection fraction were strongly associated with AKI.

AKI incidence according to echocardiography parameters
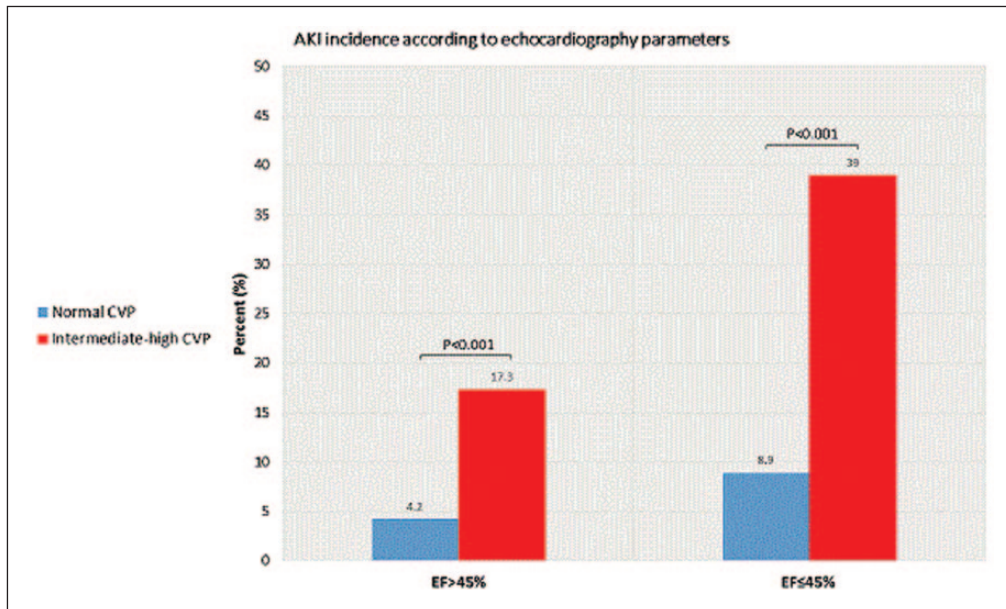
P411

Right atrial pressure predicts worsening renal function in patients with acute right ventricular myocardial infarction

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Background: Right ventricular myocardial infarction (RVMI) is associated with serious complications in the short-term. Worsening renal function (WRF) is a frequent and dangerous complication.

Purpose: To determine if right atrial pressure (RAP) predicts WRF in patients with RVMI.

Methods: We prospectively studied patients with RVMI. RAP was obtained invasively at admission to coronary care unit. Blood samples were extracted from patients at baseline and every twenty-four hours for creatinine measurements for seven days. We defined WRF as an absolute increase of 25% or 0.5 mg/dl in serum creatinine during the first seven days compared to baseline creatinine.

Results: We included forty-five patients (age 68±10 years, male 71%). WRF occurred in 51%. The bust cut-off value for WRF prediction was 11 mmHg. RAP ≥ 11 mmHg was associated with WRF at univariate analysis (OR 5.5, 95% CI 1.27 – 24.3, p=0.023) and multivariate analysis (OR 6.1, 95% CI 1.07 – 35.4, p=0.042). Patients with RAP ≥ 11 mmHg had a lower WRF-free survival rate compared to patients with RAP < 11 mmHg (33±8% vs 76±12%, p=0.015).

Conclusion: In patients with RVMI, RAP ≥ 11 mmHg predicts WRF.
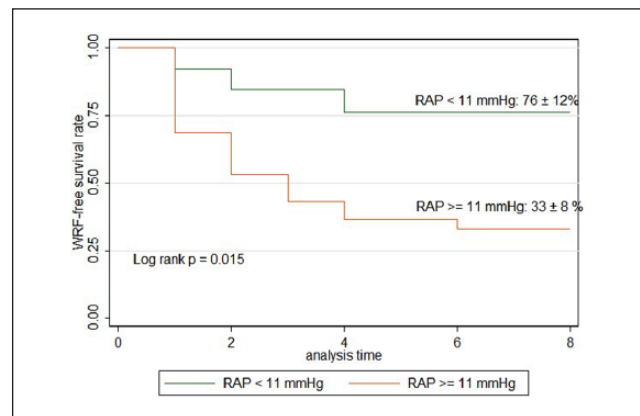
KM RAP

P412

Causes, outcomes and factors predicting mortality in non-reperfused STEMI patients in the contemporary era

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Background: lack of reperfusion therapy in STEMI remains a common problem in developing countries. However, the underlying causes, clinical outcomes and factors that predict mortality in these patients are largely unknown in contemporary era.

Purpose: to describe causes, cardiovascular outcomes and factors that predict mortality among patients with STEMI who did not received reperfusion therapy.

Methods: a single center, retrospective study of patients diagnosed with STEMI that did not received reperfusion and were admitted to a tertiary care centre from October 2005 to December 2015. Clinical characteristics, in-hospital mortality and reasons behind no-reperfusion were evaluated. Patients were separated in two groups: group 1 (survivors) and group 2 (no survivors).

Results: a total of 4,316 patients with the diagnosis of STEMI were found. Among them, 38.3% (1,653) lacked reperfusion therapy. Mean age was 60(±7) years; 79.8% were male. Diabetes (43.6%), hypertension (50.2%) and smoking were common (32.8%). Reasons behind no-reperfusion are shown in Table 1; the most common cause was late presentation (93.2%). In-hospital mortality of the cohort was 12.0%. When comparing groups, group 2 (no survivors) were older (65 vs. 60 years, p = 0.001), had a higher prevalence of diabetes (59.3 vs. 41.4,% p = 0.001), atrial fibrillation (4% vs 1.2% p = 0.003), lower systolic BP (105 [90 -118] vs. 125 [110 -140] mmHg), a higher Killip Kimbal (≥2) (81.9% vs 37%), lower ejection fraction (35% [25-45] vs. 50% [40 -55]), and higher prevalence of right bundle branch block (13.1% vs. 5.9%).

Conclusions: non-reperfusion remains a common problem in developing countries, and it is associated with a higher mortality. Delayed patient presentation is the most common cause of no-reperfusion. Factors associated with in-hospital mortality included older age, diabetes, atrial fibrillation, lower systolic blood pressure, a higher Killip-Kimball class, lower ejection fraction and right bundle branch block.

Table 1. Causes behind the lack of reperfusion therapy.

Reason behind the lack of reperfusion therapy	Number / percentage (%)
Symptom onset > 12h	1530 / 93.23
Severe comorbidities	59 / 3.6
Wrong Diagnosis	29 / 1.8
Active bleeding	9 / 0.54
On Anticoagulants	5 / 0.3
Recent surgery	5 / 0.3

P413

Vasoprotective effect of high doses of atorvastatin in patients with STEMI

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Aim: to study the effect of 24-week therapy with various doses of atorvastatin on the structural and functional properties of common carotid arteries (CCA) in patients with STEMI.

Methods: 85 STEMI patients were included in the study in the first 24-96 hours from the disease onset. The diagnosis was confirmed by markers of myocardial necrosis, ECG, coronaroangiography. Patients were randomized into two groups. The comparison group (C) included 46 patients receiving atorvastatin 20 mg/day. The main group (A) consisted of 39 people taking atorvastatin 80 mg/day. Comparable subjects were matched by age, sex, height, BMI, level of office BP. On 7-9 days from the disease onset and 24 weeks later, patients had undergone an ultrasound of the common carotid arteries (CCA) with RF high-frequency signal technology on the MyLab 90 device (Esaote, Italy). The folllowing parameters were recorded: intima-media thickness complex (IMT), stiffness indices α and β, coefficient of transverse compliance (CC).

Results: on the long-term therapy with atorvastatin 20 mg, CCA IMT did not undergo any significant dynamics: initially - 702.8±154.0 μm, follow-up- 707.2±166.1 μm. In patients who received atorvastatin 80 mg/day, regression of this parameter was detected from 756.6±134.2 μm to 670.9±128.9 μm (p<0.001). In group C there were no changes in the stiffness indices α and β: at baseline the index α was 4.3 (3.5, 5.7), the index β was 8.8 (7.3, 11.2); follow-up - 3.8 (3.3, 4.6) and 7.8 (6.0, 9.3), respectively. In group A a positive effect of atorvastatin on these parameters have been revealed. On 7-9th day, the index α was 4.5 (3.7, 6.2), the β index was 9.3 (7.5, 12.5); after 24 weeks of therapy - 4.0 (3.0, 5.1) and 8.1 (6.0, 10.4), respectively (p<0.01). In group C, the CC index initially was 0.89±0.3 mm2/kPa, follow-up - 0.95 (0.78, 1.15) mm2/kPa (ns). In group A, there was a significant increase in the CC parameter from 0.85 (0.63, 1.12) mm2/kPa to 0.94 (0.79, 1.13) mm2/kPa (p = 0.03).

Conclusion: Intensive 24-week therapy with atorvastatin 80 mg in STEMI patients has shown a decrease of IMT and an improvement of arterial stiffness parameters based on data of CCA ultrasound using RF high-frequency signal technology.

P414

Comparative characteristic of deformation parameters in patients with anterior and posterior myocardial infarction

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Purpose: to determine the dependence of the left ventricle (LV) global strain parameters on the myocardial infarction location and the affected coronary arteries (CA) in patients at the 7th day of STEMI by the two-dimensional strain method.

Methods: 120 patients were enrolled in the study - 109 men and 11 women. Inclusion criteria: age 35 to 65 years, absence of concomitant cardiovascular pathology, stenosis of one infarct-related artery by CAG data, which underwent revascularization in the first hours of the pain attack onset, stenosis of other arteries less than 50%, the LCA trunk - less than 30%. Echocardiography was performed by the ultrasound scanner MyLab90 (Esaote, Italy) at the 6-7th day of the disease onset. The LV myocardial deformation was assessed by X-Strain™ software. The following peak global strain parameters were determined: longitudinal (GLS), circumferential (GCS) and radial (GRS) strain, as an arithmetic mean of 18 LV segments. The normality hypothesis of each sample distribution is verified using the non-parametric Kolmogorov-Smirnov criterion. The mean values for each distribution and corresponding to 95% CI. The difference between the sample proportions and means is denoted by Δ.

Results: the subjects were divided into 2 groups: 1st group - 74 patients (61.7%) with LV anterior wall lesion (thrombosis of the LAD and its branches), in the 2nd group - 46 patients (38.3%) with a posterior wall infarction (lesion of RA and CA). In group 1, the number of affected segments was 38.8%, in group 2 - 14.4% (difference between the fractions 0.244 (95% CI (0.205, 0.283), p<0.001). In groups 1 and 2 the following parameters had statistically significantly difference: GLS with mean values of 14.54 (13.14; 15.94) and 19.35% (18.20; 20.50)%, respectively. The variance analysis: Δ=4.81; 95% CI (2.84, 6.79); t=4.82; df=118; p<0.001. GLSR with average values of 1.39 (1.28, 1.50) sec-1 and 1.70 (1.59, 1.82) sec-1, respectively. The data of the variance analysis: Δ=0.31; 95% CI (0.15; 0.48); t=0.53; df=118; p<0.001. No differences between groups were detected on GCS (19.18 (17.46, 20.9)% in group 1, and 19.9 (17.85, 21.94)% in group 2), and GCSR (1.81 (1.67, 1.94) sec-1 in group 1, and 1.93 (1.75, 2.1) sec-1 in group 2). The comparison results: Δ=0.72; t=0.53; df=118; p=0.6; and Δ=0.12; t=1.1; df=118; p=0.27, respectively. GRS values (31,9 (28,51; 35,29)% in group 1 and 33.06 (30.71; 35.41)% in group 2) and GRSR (2,71 (2,52; 2.89) sec-1 in group 1 and 2.92 (2.76, 3.08) sec-1 in group 2) also had no differences. The comparison results: Δ=1,15; t=0.49; df=118; p=0.62 and Δ=0.21; t=0.1.63; df=118; p=0.11, respectively.

Conclusions: At the 7th day of STEMI, a clear quantitative dependence of the myocardial strain characteristics on the specific CA lesion was revealed. In patients with anterior myocardial infarction there was a more pronounced decrease in global longitudinal strain and strain rate, in contrast to patients with posterior infarction.

P415

NO Reflow Phenomenon and comparison to the normal flow population post primary percutaneous coronary intervention for ST elevation myocardial infarction

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Background: No reflow phenomenon (NR) is characterised by the failure of myocardial reperfusion despite the absence of coronary arterial mechanical obstruction. NR negatively affects patient outcome, therefore it is important to be able to predict and manage NR effectively.

Purpose: The primary objective of the study was to evaluate the contemporary incidence of NR in consecutive patients presenting with STEMI; with secondary outcomes of identifying independent predictors of NR to be considered in a risk model and clinical outcomes of our population.

Methods: This was a single centre prospective case-control study in a STEMI population. Cases were subjects who suffered NR and the control comparators were those who did not. Clinical outcomes were documented. Salient variables relating to the patient and their presentation, history and angiographic findings, were compared using one-way ANOVA or chi-squared test. Significance guided further analysis with logistic regression, and a multiple regression model evaluated independent predictors. A risk score was established based on the β-coefficient output.

Results: 24 patients (13.9%, n=173) suffered NR with 46% occurring post stent implantation. NR patients were at significantly increased risk of in-hospital death (odds ratio 7.0 (95% confidence interval: 1.3-36.7) p=0.022). The independent predictors of NR available prior to PCI are presented in the table. Continuous data was transformed into best fit binary variables through ROC curve analysis and a risk score defined.

A significant difference between risk score values of NR patients (4.1±1) compared to the controls (2.6±1) (p<0.001) was demonstrated, and the risk score was considered a good test. (Figure) A score of 4 or above had 75% sensitivity and 76.5% specificity (5/24 (17.2% of NR group)) and 5 or above had a 50% sensitivity and 94.1% specificity (10/18 (55%)).

Conclusions: NR patients have a higher rate of mortality. Predictors of NR were increased lesion complexity, systolic hypertension on admission, weight <78kg, and previous history of hypertension. Further validation of this risk model is required.

Table 1. Pre-interventional risk score.

	Odd Ratio	95% Confidence Interval	β Coefficient	p value	Risk Score
Lesion classification				0.005	
B2	10.5	1.3-88.8	2.35	0.03	2
C	37.7	3.9-369.2	3.63	0.002	3
SBP ≥ 138mmHg	4.2	1.3-13.8	1.43	0.019	1
Weight < 78kg	3.3	1.1-9.8	1.20	0.03	1
History of Hypertension	3.2	1.1-9.1	1.15	0.034	1
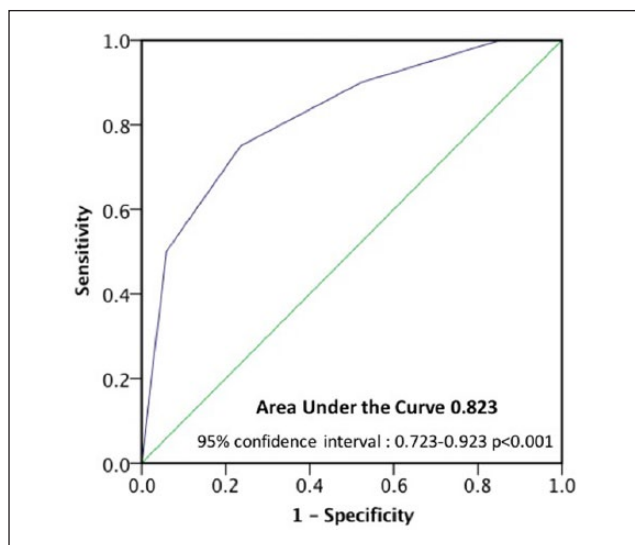
ROC curve analysis of prediction model

P416

Complete atrioventricular block as a complication of ST-elevation myocardial infarction: prognostic impact in-hospital and at 1-year follow-up

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Introduction: Electric complications of myocardial infarction remain an object of interest and study, being particularly well-known. The overall prevalence of significant bradiarrhytmias in inferior location STEMI may reach 20% and despite the advances in this field, complete atrioventricular block remains a potentially fatal complication.

Methods: Prospective registry of 641 consecutive patients with mean age 63.62±13.96 years-old presenting at our unit with STEMI, between October 2009 and September 2015, divided into 2 groups: A) without complete atrioventricular block (n=611; 72.3% in the male category), B) with complete atrioventricular block (n=30; 66.7% in the male category). A comparison was made between these groups regarding a primary composite endpoint - PCE (consisting of reinfarction, stroke and cardiovascular death) and secondary objectives (reinfarction, stroke and cardiovascular death alone) on admission level and after 1-year of follow-up.

Results: Complete atrioventricular block was a complication present in 4.7% of STEMI admissions in our unit. There were no statistically significant differences between the 2 groups regarding basal characteristics and negative chronotropic drugs on usual medication history. There was a notorious association with inferior location STEMIs (A=44%, B=90%, p < 0.01). At an in-hospital setting, patients presenting with complete atrioventricular block experienced more cardiogenic shock (A=9.3%, B=43.3%, p < 0.01), cardiac arrest (A=8%, B=30%, p < 0.01) and greater need for inotropic support (A=11.5%, B=50%, p < 0.01) and transvenous pacing (A=1.1%, B=40%, p < 0.01). Patients from group B were less likely to be submitted to an invasive stratification strategy (A=94.1%, B=83.3%, p < 0.05), although no significant differences were found regarding angioplasty (p>0.05). Physicians were less inclined to prescribe beta-blockers in these patients, either during admission or at the time of discharge (p < 0.01). Group B was more likely to to experience a primary composite outcome, either at an in-hospital setting (A=8.3%, B=26.7%, p < 0.01) or at 1-year follow-up (A=14.2%, B=33.3%, p < 0.01), overall mortality (A=7.4%, B=26.7%, p < 0.01) and overall mortality at 1-year follow-up (A=12.3%, B=26.7%, p < 0.05). No significant differences between the 2 groups were found at 1-year follow-up regarding the following events: stroke, reinfarction, re-catheterization (PTCA), readmission or evolving into NYHA class>1 or CCS class>1 (p>0.05)

Conclusion: Complete atrioventricular block in patients presenting with STEMI remains a potentially fatal complication, traditionally linked to a worst prognosis, either at an in-hospital or at 1-year follow-up setting, even in the modern era of reperfusion therapy.

P417

Vegetative regulation of heart activity in STEMI patients and the terms of revascularization

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Aim: to assess the impact of the timing of percutaneous coronary intervention (PCI) in patients with myocardial infarction with ST segment elevation (STEMI) on vegetative regulation of cardiac activity.

Methods: 90 STEMI patients were included (mean age 56.3±10.2 years). The time from the disease onset to the PCI was 6.15 (3.9, 12.3) h. Holter ECG monitoring was performed using the Astrocard (Medetik system), Russia) on the 7-9th day and at 24 weeks after STEMI. Spectral parameters of HRV were analyzed: TotP, ULF, VLF, LF, HF, LF / HF. To assess the impact of the PCI timing on the dynamics of the cardiac activity vegetative regulation parameters, the patients were divided into groups: the early revascularization group (the first 6 hours from the STEMI) "ER" comprised 40 people, the group of late revascularization "LR" (more than 6 hours) from the disease onset) - 50 patients. The groups compared were matched by age, sex, anthropomentric data and localization of myocardial infarction.

Results: in the "ER" group by the 24th week, a marked increase in the power of all frequency spectra (p < 0.001). The TotP parameter increased by 91% from 10068 (5734, 17673) ms2 to 19220 (14426, 23661) ms2; HF - by 119%: from 71 (35; 148) ms2 to 156 (88; 335). The growth of HRV low-frequency components has been observed: an increase in ULF by 101% from 8150 (4573, 15861) ms2 to 16359 (12334, 20307) ms2, VLF by 38% from 1190 (680, 1597) ms2 to 1648 (1018, 2398) ms2, LF - by 62% from 444 (281, 798) ms2 to 719 (453, 1358) ms2. However, despite the increase in all frequency spectrum parameters, there was a decrease in the level of the LF/HF sympathetic balance from 5.2 (4.3, 8.6) to 4.1 (3.6; 6.2) (p=0.0004).

When analyzing the dynamics of HRV indices in the "LR" group, the increase in power was revealed only for two - TotP and ULF (p < 0.001). By the 24th week there was an increase in the total spectrum power by 48% from 10286 (7651, 15319) ms2 to 15204 (11155, 25033) ms2, and the ultra-low frequency component by 61% from 7946 (6052, 2877) ms2 to 12821 (9257; 21040) ms2. Against the background of this parameter evolution, the level of LF / HF did not change significantly.

Conclusion: performing of life-saving PCI in patients with STEMI in the first 6 hours from the disease onset contributes to a favorable dynamics of the heart rhythm vegetative regulation parameters in the postinfarction period, an increase in the proportion of the parasympathetic component.

P418

Interrelation of different left ventricular myocardial deformation types in patients with myocardial infarction with ST segment elevation

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Aim: to determine the correlation between individual types of global strain in STEMI patients with anterior and posterior localization of left ventricular (LV) lesion on the 7th day after revascularization.

Methods: The study included 120 patients - 109 men and 11 women. Inclusion criteria: age from 35 to 65 years, absence of previous infarctions and other concomitant cardiovascular pathology, significant stenosis of one infarct-related artery by CAG data, which underwent revascularization in the first hours of the pain attack onset, stenosis of other arteries less than 50%, the trunk of LCA - less than 30%. The myocardial infarction was confirmed based on ECG data, cardiospecific markers (troponin T, CK-MB, echocardiography was performed by the ultrasound scanner MyLab90 (Esaote, Italy) on the 6-7th day of the disease onset. The LV myocardial deformation was assessed by X-Strain™ software. The following peak global strain parameters were determined: longitudinal (GLS), circumferential (GCS) and radial (GRS) strain, as an arithmetic mean of 18 LV segments. The normality hypothesis of each sample distribution is verified using the non-parametric Kolmogorov-Smirnov criterion. The tightness of the coupling is expressed by the Pearson coefficient (r), for which the two-way significance (p) and 95% CI were calculated. The statistical significance of the difference in fractions was verified using the Z-criterion and characterized by the two-sided significance of p.

Results: according to the MI localization the subjects were divided into 2 groups: 1st group consisted of 74 patients (61.7%) with LV anterior wall lesion (thrombosis of the LAD and its branches), in the 2nd group - 46 patients (38.3 %) with a posterior wall infarction (lesion of RA and CA). In group 1, the number of affected segments was 38.8%, in the group 2 - 14.4% (difference between the fractions 0.244 (95% CI (0.205, 0.283), p < 0.001). Pairwise correlation coefficients were calculated: in group 1 between GLS and GCS (r=0.802, 95% CI (0.702, 0.871), p < 0.001), between GCS and GRS (r=0.733, 95% CI (0.606, 0.824), p < 0.001), between GLS and GRS (r=0.686, 95% CI (0.542, 0.791), p < 0.001.) In group 2, there was a direct moderate correlation between GLS and GCS (r=0.467, 95% CI (0.204, 0.667), p=0.012).

Conclusions: Thus, a more pronounced disturbance of the contraction biomechanics is observed with anterior

myocardial infarction (thrombosis of the LAD and its branches), which is caused by the lesion area and functional insufficiency of all muscle layers responsible for different types of deformation.

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Duration of revascularization and parameters of chronotropic load in patients with myocardial infarction

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Aim: to study the influence of the blood flow restoration time in the infarct-related coronary artery on the chronotropic load indices and their dynamics according to the Holter ECG monitoring.

Methods: 78 patients of both sexes aged 35 to 65 years with ST segment elevation (STEMI) myocardial infarction became the subject of the study. 37% of patients had undergone primary percutaneous coronary intervention (PCI), 63% underwent pharmaco-invasive reperfusion. The median time "pain-needle" was 2.2 (1.3, 6.1), "pain-PCI" - 6.4 (3.9, 14.8). On the 7-9th day, 6 and 12 months after STEMI, patients underwent an ECG Holter monitoring by Astrocard complex with an additional option for analyzing the chronotropic load indices: the percentage of time (Ta) during which the heart rate exceeded the threshold level, the normalized area index (Sa) - parameter of the area figure, limited by the heart rate trend and the direct threshold level. Patients were divided into groups: early revascularization "ER" - 36 patients who received PCI in the first 6 hours from the disease onset, and a group of late revascularization "LR" - 42 patients with delayed invasive reperfusion.

Results: according to the daily monitoring data on the 7-9th day of STEMI, the initial values of the Ta and Sa parameters in both groups had not differ. By the 6th month in the "LR" group, a decrease in the chronotropic load was obtained only in the night hours: Ta from 87.7 (10, 99.9)% to 50.1 (9, 82.2)% (p=0.009), and the Sa index decreased from 4.5 (0.7, 11.1) to 1.9 (0.51, 5.4) (p=0.009). However, with further observation by 12 months, the dynamics of the abovementioned parameters became unreliable. In the compared group "ER", a more intense dynamics of tachycardia load indices was registered, so that by the 6th month of observation a decrease in Ta and Sa was obtained for all time intervals: within a day Ta and Sa decreased from 62.7 (31.5 ; 91.8)% to 28.1 (10.1, 51.3)% (p=0.0001) and 5.5 (2; 11.4) to 2.2 (0.7, 4) (p=0.002), respectively; During the daytime, a decrease in the Ta value from 58 (23.4, 91.4)% to 30.5 (12.1, 49.4)% (p=0.003) was obtained, and Sa - from 5.1 (1; 10,7) to 2.5 (0.7, 4.4) (p=0.006); At night,

a similar tendency was also obtained: a decrease in Ta from 85.2 (27.6, 100)% to 27.9 (3.9, 66.4)% (p=0.00007), Sa - from 6,2 (1,3 to 11) to 1.2 (0.1 to 3) (p=0.00008). At a second examination in 12 months, significant differences in the "ER" group were recorded only at night: Ta 26 (3.6, 67.3)% and Sa 1.1 (0.2, 6.4) (p=0.006). According to the intergroup comparison, in the "ER" group, the values of the Ta and Sa parameters were convincingly lower for both 6 (p=0.02) and 12 months (p=0.03).

Conclusions: a higher level of chronotropic load in patients with STEMI and delayed terms of PCI reflects the adverse effect on the sympathovagal balance of cardiac activity autonomic regulation and indicates an increase of its sympathetic component activity.

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Paroxysmal atrial fibrillation in ST-segment elevation myocardial infarction

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Introduction: Atrial fibrillation may appear in the acute phase of myocardial infarction, causing a greater affection of the coronary circulation and deterioration of the ventricular function, worsening the evolution of the patient. Its management, is not clarified fundamentally the need for anticoagulation and maintained antiarrhythmic therapy.

Purpose: To study the incidence of paroxysmal atrial fibrillation in the acute phase of ST-segment elevation myocardial infarction (STEMI) in our setting, the management, the recurrence of it and the prognosis of the patients who develop it.

Methods: Prospective observational study, including consecutively all patients admitted to the intensive cardiac care unit of our center from January 2012 to March 2017 with STEMI and no previous history of atrial fibrillation assessing the epidemiological and clinical differences in prognosis and treatment according to whether or not they develop paroxystic atrial fibrillation.

Results: We included a total of 1221 patients with STEMI, 124 of whom developed paroxysmal atrial fibrillation in the acute phase (Group A, 10.15%) and 1097 patients who did not develop it (Group B, 89.84%). Group A were more elderly (71.38 vs 63.86). The percentage of diabetes and dyslipidemia was similar in both groups. Both infarct size and ventricular dysfunction were higher in the group that developed atrial fibrillation (ultrasensitive troponin 4928.12 vs 4106.41, CK 2261.32 vs. 2121.76, LVEF 42% vs 47%). Clopidogrel was more likely to be prescribed

in group A (73.2% vs 58.6%), because it was associated with high anticoagulation rate (36.5%) in these of patients (Acenocumarol 31.7%, Dabigatran 1.6%, Apixaban 2.4% and Ribaroxaban 0.8%). Although the recurrence of atrial fibrillation was low (10% recurrence during admission and 2.4% AF at discharge), treatment with Amiodarone was maintained at discharge in 50% of patients. Patients in group A required greater hemodynamic support (Dopamine 14.5% vs 4.8%, Dobutamine 33.9% vs 10.9%, Noradrenaline 38.7% vs 12.9%) and had more respiratory failure due to greater clinical severity: (group A: Killip III 7.3%, Killip IV 28.2%, group B: 3.8% and 7.7% respectively). The percentage of exitus during admission was higher in group A (4.8% vs 2.7%) as well as cardiovascular exitus during follow-up (21.4% vs 10.4%).

Conclusions: The development of paroxysmal atrial fibrillation is low in patients with STEMI (10%),being older subjects. Although recurrence and persistence at discharge was low, antiarrhythmic and /or anticoagulation therapy was maintained at discharge in a significant percentage of patients. The clinical course was worse in the subjects who presented this arrhythmia and the rate of exitus was superior.

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Predicting the site of the right coronary artery occlusion in patients with acute inferior myocardial infarction based on the intensity of the st- segment elevations

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The aim: To evaluate the association between the severity of ST-segment elevations in the inferior limb leads and the proximity of the Right Coronary Artery (RCA) occlusion in patients with acute inferior myocardial infarction.

Methods: The study involved 54 patients admitted to the cardiac intensive care unit (CICU) with inferior myocardial infarction, presenting within 12 hours from the onset of symptoms. There were 10 patients in which the culprit artery was not the right coronary artery (RCA) that were excluded from the study. We divided right coronary artery in proximal, medial and distal segments. All patients underwent Primary Percutaneous Coronary Intervention (PCI). For each patients we obtained the sum of ST-segment elevations in inferior limb leads (II, III, aVF), measured from the admission electrocardiogram (ECG).

Results: Out of 54 patients, 42 (77.8%) were male, mean age 61.2 years old ± 10.8 with a minimum of 36 years old and maximal 84 years old ; 12 patients (22.2%)

were female , mean age 66.8 ± 8.6 with a minimum 47 years old and maximal 81 years old. 21 (38%) patients had the culprit lesion in the proximal, 27 (50%) in the medial and 6 (12%) of them in the distal part of the right coronary artery. The cases with proximal occlusion of the RCA showed a mean value of the ST-segment elevations sum in inferior leads of 8.52 ±5.24 mm; 3.9 ±2.05 mm for the medial RCA and 5.05 ±3.05 mm for the distal RCA. These difference of ST-segment elevations mean values in RCA (Proximal, Medial, Distal) are significant : One way anova df= 2, F = 8.98, Sign p= 0.00 We found a significant positive correlation between the severity of ST-segment elevations in inferior limb leads (II, III, aVF) and the proximity of the RCA occlusion in patients presenting with acute inferior myocardial infarction (ISTEMI): Spearman Coeffic of correlation= 0.42 , sign. two tiled p= 0.002. In the area of 77% of proximal RCA we found a youden index for ST 5.2 mm, which has a sensitivity =0.67 and specificity= 0.66.

Conclusions: This study demonstrated that the severity of ST segment elevations was correlated with the proximity of right coronary artery (RCA) occlusion. For high values of ST segment elevations sum (>5.2 mm) the RCA lesion means to be proximal, indicating the informative feature of ST segment elevations in the prediction of culprit lesion location.

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Association of cyp11b2 gene polymorphism of aldosterone-synthase with the relative risk of st segment elevation myocardial infarction

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Background: The pathway of tissue aldosterone production may exist in the heart and may be an important contributory factor to myocardial fibrosis and cardiac remodeling in the failing heart. CYP11B2 (aldosterone synthase) catalases is the final step of aldosterone production.

Purpose: to determine the link between CYP11B2 - 344TC gene polymorphism and risk factors, course of ST segment elevation myocardial infarction (STEMI) with considering of genetic inheritance models.

Methods: 85 patients with STEMI were examined, from them, 68 (80%) male and 17 (20%) female, mean age was (58,94±10,16) years. Allele polymorphism -T344C of CYP11B2 gene by polymerase chain reaction in real time was determined. All analyses were performed with statistics software package Statistica 8.0 (Stat SoftInc, USA), Microsoft Office Excel 2003. For a deeper understanding of association of CYP11B2-gene polymorphism, codominant

allele, dominant and recessive models of inheritance were used. Research was planned as a case-only design.

Results: Due to odds ratio the relative risk of STEMI occurrence in investigated patients with TT-genotype rises with the presence of arterial hypertension (AH) OR=8,89; 95% CI [1,41-36,57], PTT-CC=0,02 (codominant allele model of inheritance). In the group of patients with TT-genotype compared to TC+CC anxiety-depressive conditions were more common (P=0,02), AH tendency also occurs more often (p=0,06) (dominant inheritance model). Due to odds ratio, relative risk of STEMI occurrence in the examined patients with TC+TT-genotype becomes higher in the presence of AH, OR=3,27; 95% CI [1,05-9,86], P=0,037 (recessive inheritance model).

Conclusions: TC+TT-genotype compared to CC represents 3,27-fold has a higher relative risk of STEMI in the patients with arterial hypertension (P=0,037). Arterial hypertension leads to 8,89-fold increase of relative risk of STEMI in patients with TT-genotype compared to CC (P=0,02). Anxiety-depressive conditions in patients with STEMI occur more often in TT-genotype compared to CC, TC+CC polymorphism, TC+TT compared -344CC.

P423

Current status and issues of treatment for ST-elevation myocardial infarction in regional city of Japan

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Background: There is little clinical data about the treatment of ST elevation myocardial infarction (STEMI), and no regional systems for treating STEMI have been established in regional city of Japan.

Purpose: To improve the quality of treatment for STEMI and establish a medical system for providing care for STEMI, we collected and analyzed medical data obtained in Toyama, Japan.

Subjects and Methods: The subjects were patients with STEMI who underwent primary percutaneous coronary interventions (p-PCI) in Toyama and were discharged between October 1, 2013, and September 30, 2015. The Toyama Disease Control Working Group Secretariat collected the medical data. The data were reviewed and compared among each 6-month period by representatives of each participating medical institution.

Results: Six hundred and seven patients (454 males, 153 females, age: 69 ± 12 (mean $\pm$ SD)) underwent p-PCI. The methods of transport employed in these cases were as follows: ambulance transport, 74%; non-ambulance transport, 26%. The door-to-balloon (D2B) time fell significantly from 103 to 87 minutes (p<0.01). The door-to-catheterization laboratory (Cath Lab) time fell significantly from 67 to 52 minutes (p<0.01). The difference between the Cath Lab time of the patients that underwent direct ambulance transport (66 minutes) and that of the patients that underwent ambulance transport based on a referral from clinic (62 minutes) was significant (p<0.01). Among the patients that underwent non-ambulance transport based on a referral, the percentage of patients whose electrocardiograms were recorded at clinics was 61%. Concerning the patients' outcomes after discharge, 46.1% of the subjects were treated at the outpatient department of the same p-PCI capable hospital, 49.2% were referred to clinics, and 4.3% died.

Conclusion: We investigated the current status of STEMI care in Toyama, Japan. The number of patients brought to p-PCI capable hospitals by ambulance was low. The D2B and Cath Lab time fell significantly during the study period. The number of referrals from p-PCI capable hospitals to clinics was low. Patient education might be necessary to promote the ambulance-based transportation of patients with STEMI. It is imperative for p-PCI capable hospitals and clinics to achieve much closer cooperation in STEMI care in regional city of Japan. Such study that the representatives of each participating medical institution review medical data will help to improve the quality of treatment for AMI.

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Acute kidney injury in patients with ST-segment elevation myocardial infarction of the electrocardiogram

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Background: The development of acute kidney injury (AKI) appears to be an important predictor of death and cardiovascular complications in patients with ST-segment elevation myocardial infarction (STEMI). Aim. To estimate the prognostic value of AKI in patients with STEMI in prospective follow-up study.

Materials and methods: A prospective follow-up of 6 months included 241 patients with STEMI. The frequency of development of AKI, the effect of AKI on the outcomes of STEMI in the observed period was traced.

Result: In 96.7% of cases were PCI, frequency PCI decreased with decreased GFR (p<0.001). Among patients with GFR>60 ml/min PCI unsettled 1.6% of cases, while with GFR<60 ml/min in 8.9% of cases (p=0.013) in group patients with GFR<30 ml/min PCI unsettled 30% of patients (p<0.001). The main causes of failure PCI was the presence of severe comorbid disease, patient refusal from performance of PCI, the extremely high risk of hemorrhagic

complications. AKI was registered in 23.2% of patients including 19.1% of the AKI grade 1, 3.3% of the grade 2, and 0.8% of the grade 3. The incidence of AKI of different stages in GFR from 45 to 59 ml/min reached 34.4%, with GFR from 30 to 44 ml/min - 42.9%, with GFR from 15 to 29 ml / min - 60.0% (p=0.003). In-hospital mortality in the AKI grade 1 was 26.2%, AKI grade 2 - 42.9%, AKI grade 3 - 100% (p<0.001). GFR of 45 to 59 ml/min at admission increases the OR of AKI 3 times (OR 95% 2.925 (1.127-7.590), p=0.027), GFR 30 to 44 ml/min - 4 times (OR 95% 4.189 (1.231-14.239), p=0.022), GFR 15 to 29 ml/min – 8 times (OR 95% of 8.375 (2.052-34.182), p=0.003). The incidence of AKI was also associated with the stage of acute heart failure (AHF) Killip class on admission, AKI is more often met with higher degrees of AHF (p<0.001). Killip III increase OR AKI 3 times (OR 95% 3.369 (1.077-10.540), p=0.037), Killip IV – 20 times (OR 95% 19.651 (2.237-172.623), p=0.007). AKI increases the risk of death from cardiovascular causes within 6 months of observation in 6 times (OR 95% 6.327 (2.729-14.672), p<0.001).

Conclusion: Kidney damage as a target organ is common in patients with STEMI and is associated with an unfavorable prognosis. The probability of the absence of reperfusion therapy for one reason or another in patients with low GFR is high, which in turn can lead to the appearance or progression of AKI, as a manifestation of acute cardio-renal syndrome. In the case of percutaneous coronary intervention low GFR is associated with an increased risk of developing contrast-induced nephropathy.

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Early noninvasive diagnostics of infarct-related coronary artery retrombosis after effective thrombolysis in STEMI

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Aim: To study the diagnostic significance of ST segment re-elevation episodes recorded after effective TLT during telemetric monitoring of ECG in patients with STEMI.

Methods: The study included 117 patients with STEMI. An effective TLT (by ECG standarts) was performed to all patients at the prehospital stage after 150 (105, 240) minutes from the time of disease onset. The coronaryangiography was conducted within 3-24 hours after the end of TLT. The efficacy of coronary blood flow restoration was assessed by the classification of Thrombolysis in Miocardial Infarction (TIMI). Prior to the PCI, telemetric ECG recording was performed using the Astrocard®-Telemetry complex. The dynamics of the ST segment was assessed by 12 leads in the automatic mode with subsequent manual verification. The episode of ST segment re-elevation was considered as

a transient elevation of the ST segment in leads reflecting the myocardium damage zone with an amplitude of 0.1 mV or more, lasting not less than 1 minute.

Results: Patients were divided into 2 groups by the presence or absence of the ST segment re-elevation episodes. Group 1 included 85 patients (72.6%) without new ST segment abnormalities. In this group, in 77 patients (90.6%) a significant stenosis of the infarct-related CA with no signs of thrombosis was visualized according to the CAG results, the distal blood flow was restored to the TIMI 2 level. In 8 patients (9.4%), thrombotic occlusion of CA was diagnosed, the distal blood flow is TIMI 1-0. Group 2 included 32 patients (27.4%) who had the ST segment re-elevation episodes after an effective TLT. In most cases (71.9%), they were asymptomatic, in 9 patients (28.1%) STsegment re-elevation was accompanied by an anginal attack (p < 0.01). In group 2, 25 patients (78.1%) have shown the signs of the infarct-related CA thrombosis (p < 0.01), TIMI 1-0 distal blood flow based on CAG findings. Thus, the frequency of rethrombosis in group 2 significantly exceeded this index in group 1 (p<0.01).

Conclusions: ST segment re-elevation episodes are a diagnostic criterion for the development of the CA rethrombosis and allow identifing a group of patients with the extremely high risk of need for the rescue PCI. Timely detection of transient ST re-elevation, which is proceeding asymptomatically in most cases, is possible only using the telemetric ECG monitoring.

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Left ventricle remodeling and asynchrony in patients with left and right ventricles myocardial infarction, complicated by hypotension

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Purpose: To research the left ventricle(LV) remodeling, interventricular and intraventricular asynchrony in combined inferior myocardial infarction (MI) and right ventricle (RV) MI with stable and unstable hemodynamics.

Methods: The 56 patients with the primary inferior MI of LV combined with RV MI prospectively researched. ECG, Echocardiography, Doppler Echocardiography were assessed on the 3rd and 30th day of the disease. Patients were divided into 2 groups depending on the presence of arterial hypotension: 1st group- MI of the inferior wall of the LV and RV without arterial hypotension (n=29), 2nd group- MI of the inferior wall of the LV and RV complicated by arterial hypotension(n=27).

Results: Analysis of the results of ECHO on the 3rd day of the disease showed that patients with MI of both ventricles in combination with arterial hypotension had more pronounced signs of systolic and diastolic dysfunctions of LV and RV. The end diastolic volume of the LV(EDV LV) was 134.8±3,0ml3 in the 1st and 152.5±2.27ml3 the 2nd group(p<0.0001), end systolic volume of the LV(ESV LV) was 68.3±4.3ml3 in the 1st and 79.73±4.02ml3 the 2nd group(p<0.0001). The RV end systolic area(RV ESA) in the 1st group was 29.21±1.6sm2 and 33.44±1.32sm2 in the 2nd group(p<0.05). The RV end diastolic area(RV EDA) of the 1st group was 18.6±1.2sm2 and 23.1±1.6sm2 in the 2nd group(p<0.05). On the 30th day from the onset of the disease a significant increase in LV volume indicators in the 2nd group were detected(p<0.016). We found increasing in diastolic and systolic sphericity index(SI) in patients with MI with hypotension on day 30 of the disease. Systolic SI in patients 1st group was 0.52±0.04 against 0.54±0.04 in patients 2nd group(p<0.05), Diastolic SI was in patients 1st group 0.57±0.04 versus 0.61±0.04(p<0 ,05). Diastolic LV function worsens in patients of both groups, but was a greater in patients of 2nd group, 0.67±0.03 versus 0.65±0.03 (p<0.05). RV EDA in the 1st group was 25.1±2.2sm2 and 31.4±2.0sm2 in the 2nd group(p<0.05), RV EDA of the 1st group was 14.4±1.9sm2 and 19.8±2.0sm2 in the 2nd group(p<0.05). In the beginning of the disease, there was a significant increase in global intraventricular asynchrony (GIA) and interventricular asynchrony (IA) in patients in 2nd group. IA in patients in 1st group was 37.4±4.2ms versus 46.1±13.7ms in patients in 2nd group (p<0.0001), GIA 98.55±12.4ms versus 142.6±12.4ms (p<0.015). By 30 days from the onset of the disease an increase in GIA in both patients was recorded but it was more in patients in 2nd group (p<0.05). There were no changes of the IA for 30 days.

Conclusion: In the early period from the onset of the disease there were a significant systolic and diastolic dysfunctions of both ventricles. These dysfunctions were more pronounced in patients with hypotension in the early period. The recovery of the RV (systolic and diastolic functions) in patients of both groups has been recorded by 30 days of the disease.

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Dynamics of ST segment in telemetric ECG monitoring in STEMI patients after stenting of infarct-related artery

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Aim: To study the association of ST-segment re-elevation episodes in patients with ST-segment elevation myocardial infarction(STEMI) with the stenting timing.

Methods: 36 STEMI patients of both sexes were included, mostly men (83.3%); the average age is 58±10,8 years old. The pain-balloon time was 5.8±4.0 hours. Although 21 patients (58.3%) had systemic thrombolytic therapy (TLT) at the prehospital stage (PHS), all patients had undergone coronary angiography with revealed thrombotic occlusion of the infarct-related artery and its stenting was performed, accompanied by the regular dynamics of the ST segment on a discrete ECG. On the 1st day after stenting, telemetric ECG recording was conducted using the AstroCard®-Telemetry complex with analysis of the ST segment dynamics on 12-leads in automatic mode followed by manual verification. Diagnostically significant was the ST segment elevation on1 mm or more, lasting more than 1 min.

Results: According to the presence or absence of diagnostically significant of ST segment re-elevation episodes, patients were divided into 2 groups. 1st group included 28 patients (77.8%) who did not have the ST segment re-elevation episodes. In this group, the postoperative period was regarded as safe and stenting as effective. In 17 patients (60.7%) at PHS the TLT was performed. Time "pain-balloon" in group 1 was from 90 to 900 min (312±222 min).

Group 2 consisted of 8 patients (22.2%) who experienced of the ST segment re-elevation episodes of 11.5±9.7min during telemetric ECG monitoring. The time "pain-balloon" was 408±318 min, which is significantly more than in group 1 (p<0.05). In group 2, TLT at PHS was performed in 4 patients (50%), and they had 5.75±6.9 episodes of ST segment re-elevation, which significantly exceeds their number in patients who did not undergo TLT (3±3.3 vs 5,75±6.9, p<0.05).

When analyzing the clinical picture accompanying transient ST segment elevation, it was established that irrespective of the TLT after stenting, painless episodes of ST re-elevation predominated (62.5% vs 37.5%, p<0.05). On average, there were 3 episodes of ST re-elevation in patients with TLT, and 2 episodes - in patients without TLT.

When comparing the groups, it was found that in patients with ST segment re-elevation the stenting was performed later than in patients with stable ECG dynamics (5.2 h vs 6.8 h, p<0.05).

Conclusion: The presence of ST segment re-elevation episodes after stenting the infarct-related artery in patients with STEMI probably indicates a poor post-operative period. The longer the period from the disease onset to the stenting, the greater the probability of having the ST segment re-elevation episodes. The number of ST segment re-elevation episodes after stenting in patients

who underwent TLT significantly exceeds this value in patients without TLT.

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Dynamics of applanation tonometry indicators on treatment with various doses of atorvastatin in patients with STEMI

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Aim: To study the effect of 48-week therapy with various doses of atorvastatin on the appllanation tonometry parameters in patients with acute myocardial infarction with ST segment elevation (STEMI).

Methods: 83 patients with STEMI aged 35 to 65 years were enrolled in the study at the first 24 to 96 hours from the disease onset. Patients were randomized into two groups. The comparison group (C) included 44 subjects who received atorvastatin 20 mg/day. The main group (A) consisted of 39 people taking atorvastatin 80 mg/day. The groups were matched by age, sex, height, BMI, level of office blood pressure (BP). At 7-9 days from the disease onset and after 48 weeks, patients had undergone the applanation tonometry using Sphygmocor device ("AtCor Medical", Australia).The following parameters were analyzed: central (aortic) systolic (SBPao), diastolic (DBPao) and pulse pressure (PPao), carotid-femoral pulse wave velocity (cfPWV).

Results: in patients of group C after 48 weeks of treatment, a significant increase of the applanation tonometry parameters was revealed: SBPao from 101.3 ± 9.5 to 107.7 ± 12.9 mm Hg. ($p < 0.05$), DBPao from 71 (66.5, 80) to 81 (71; 81) mmHg ($p < 0.05$). The values of PPao were initially 29.5 ± 6.3; at the repeated measurement - 31.4 ± 7.7 mm Hg. The aortic pressure values in the main group on the 7-9 day from the disease onset were as follows: SBPao - 104.1 ± 9.8 mm Hg, DBPao - 76 (66; 82) mmHg, PPao - 27 24; 31) mm Hg; after 48 weeks of therapy - 109.4 ± 9.4 mm Hg ($p < 0.05$), 77 (71; 81) mm Hg, and 32.9 ± 7.1 mm Hg. A more detailed analysis of the central pressure indices revealed that in the patients of group C, the initially lowered values of SBPao were found in 45%, normal ones - in 55%, there were no parameters above the threshold level (more than 100%); at 48 weeks, respectively, 36%, 55%, 9%. At 7-9 days, a reduced level of PPao was detected in 30% of patients, normal - 70%, no elevated values were noted; at 48 weeks, respectively, 27%, 68%, 5%. While in group A initially lowered values of SBPao were found in 46% of cases, normal - 51%, increased rates in 3%; after 48 weeks, respectively, in 23% ($p < 0.05$), 74% ($p < 0.05$) and 3% of cases. On the 7-9th day, the frequency of decreased

PPao was 51%, normal - 46%, increased - 3%; at 48 weeks, respectively, 20% ($p < 0.05$), 77% ($p < 0.05$), and 3%. The baseline values of cfPWV in patients of group C were 7.7 (6.4, 9.6) m/s, follow-up - 7.6 ± 2.1 m/s; in group A - 8.5 ± 1.7 and 7.7 ± 1.5 m/s, respectively ($p < 0.05$).

Conclusion: in patients of group C taking atorvastatin 20 mg/day, an increase in systolic aoric pressure is associated with the normalization of parameters and the appearance of subjects with pathological values of these parameters. While with intensive statinotherapy, the augmentation in central SBP and PP was due to their normalization. A significant decrease in cfPWV in the main group indicates a decrease in the arteries resistance of the elastic and muscular-elastic type.

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Emergent aortocoronary bypass at patients with ST-elevated myocardial infarction: clinical outcomes and prognostic survival model

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Notoriously, coronary stenting is the main method of the treatment of patients with STEMI due to admission to the hospital before 12 hours of the development of event. But the presence of cardiogenic shock in STEMI is the absolute contraindication for this intervention. In such cases, the possible alternative is to prefer coronary revascularization procedure as aortocoronary bypass.

Material and methods: The study includes 339 patients with STEMI, which was complicated by cardiogenic shock. Emergent aortocoronary bypass used in the whole group of patients, among them 188 patients underwent this intervention in the conditions of artificial fibrillation and mild (moderate) cardiac hypothermia (28 C) and the "off-pump" method used in 151 patients. Clinical outcomes learnt in early (5th day) and late (15th day) postoperative period. The risk-model of postsurgical lethality was created using binary logistic regression.

Results: In our study after aortocoronary bypass in STEMI patients the level of postsurgical lethality was set at 12,4%. Other non-lethal outcomes after this intervention were acute heart failure with IABC (27,2%), acute respiratory failure (5,4%) and acute renal failure (7,0%).

The decreased ejection fraction (EF) less than 25% ($\chi^2 = 8,56$, p=0,014), male sex ($\chi^2 = 5,37$, p=0,013), pulmonary artery wedge pressure (PAWP) more than 55 mmHg ($\chi^2 = 9,660$, p=0,006) and acute renal dysfunction ($\chi^2 = 9,48$, p=0,012) were set as the main preoperative predictors of lethality after emergent aortocoronary bypass in STEMI.

Postsurgical mortality after bypass was associated with such intraoperative risk factors as incomplete revascularization (χ^2 = 44,66, p < 0,001) and using the "off-pump" method (χ^2 = 12,1, p < 0,01). The use of intracoronary bypasses associated with better survival after procedure (p < 0,01).

Based on these data the prognostic survival model of post-surgical period after emergent aortocoronary bypass in STEMI created. The equation is:

S (survival) = 1/(1+2,718^-([GFR*0,307] + [EF*(-0,160)] + [PAWP *(-0,251)] + [Type of intervention (1;0)*1,653]), where "1" is off-pump"-type bypass" and "0" is bypass with artificial fibrillation and hypothermic cardioplegia.

Conclusion: Male sex, systolic dysfunction, renal failure, pulmonary hypertension, "off-pump" cardioplegia associated with the worse prognosis of the survival of patients with STEMI, who undergo emergent vascularization. Positive survival prognosis concatenate with the use of intracoronary bypass complete vascularization.

P430

Redox regulation-modulation by polarizing solution (high dose Glucose-Insuline-Potassium) in acute myocardial infarction

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Our purpose was to study impact of polarizing solution - high dose glucose-insuline-potassium(GIP) on redox regulation–modulation effecting on functional condition of heart during first hours of acute myocardial infarction(AMI).

We studied 50 patients with AMI with STsegment elevation (STEMI) who did not undergo reperfusion therapy because of different reasons. Among them 20 compiled control group treated routinely, 30 additionally were treated with GIP. Patients with diabetes mellitus and heart failure (Killip class 3-4) were not included in study. GIP(25% glucose 1000ml, 50IU insulin, 4%KCL 144ml) was infused during first 24 hours after admission.

Functional condition of heart was evaluated by ECG and echocardiography before and after a week of treatment. ST elevation normalized in 5-6 days in GIP group and 7-8 days in control group. Ejection fraction in GIP group increased by 2,6% while in control by 1,1%.

Redox regulation–modulation by GIP is based on fact that glucose increases anaerobic glycolysis while insulin increases consumption of glucose, that evolves augmentation of ATP and in the presence of potassium corrects electrolyte disbalance resulting in normalization of STsegment elevation.

High dose GIP during first hours of STEMI significantly improved heart electrical function and contraction, as compared to control group.

P431

Clinical characteristics, management and evolution of STEMI in cocaine users

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Introduction: Myocardial infarction in young patients with few classic cardiovascular risk factors should make us think that it is secondary to toxic habits. Although cocaine use is rare, it is still a relevant problem due to the morbidity and mortality generated.

Purpose: To know the prevalence of STEMI secondary to recent cocaine use, define the clinical characteristics, treatment and evolution in our cardiology intensive care unit.

Method: Observational prospective registry including all patients admitted by SCACEST in our unit between January 2012 and March 2017. We analyzed the prevalence of cocaine users, clinical profile, management and treatment in this subgroup of patients.

Results: A total of 1356 patients were analyzed, 31 of them (2.28%) were cocaine users. In this group 90% were males, with a mean age of 43.74 years ± 9.18. The LVEF at admission was 47.5% ± 14 and the clinical presentation according to the KILLIP classification was 74.2% KILLIP I, 19.4% in stage II and 6.4% for group III-IV. Amines required 16.2% of patients and orotracheal intubation 6.5%. In most patients, a reperfusion strategy with urgent coronary angiography was used, and only in 3,2% thrombolysis was used. The location of the infarction was mainly anterior (38.8%) of the cases, with monovasal disease in 64.5% of the patients. The majority of patients undergoing PCI had a drug-eluting stent (60%). During admission, 3.2% of patients had AF, 12.9% of primary VF, and no exitus was recorded. At discharge, they received antiaggregation with ASA 100% of patients, 35.5% clopidogrel, 48.4% prasugrel and 16.1% ticagrelor.

Conclusions: STEMI in cocaine users is currently infrequent, affecting mainly young males. In most cases with anterior infarcts and monovasal disease, with percutaneous revascularization as the most frequently used treatment strategy. The incidence of acute cardiologic complications is low probably because they are young patients with mild infarctions and preserved LVEF. Chronic antiplatelet therapy should be emphasized as well as cessation of toxic use in a profile of patients with low disease awareness.

P432

Prolonged enoxaparin in primary percutaneous coronary intervention (PENNY PCI)

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Background: Onset of action of oral P2Y12 inhibitors in ST-elevation myocardial infarction (STEMI) patients can be delayed, particularly in those receiving opiates, and this may increase the risk of acute stent thrombosis. Available parenteral antithrombotic strategies, to deal with this issue, are limited by added cost and increased risk of bleeding.

Purpose: We aimed to investigate the pharmacodynamic effects of a novel regimen of enoxaparin in patients undergoing primary percutaneous coronary intervention (PPCI).

Methods: In this single-centre study, 20 STEMI patients were recruited to receive 0.75 mg/kg intra-arterial bolus of enoxaparin (pre-PPCI) followed by a 6-hour intravenous infusion of enoxaparin 0.75 mg/kg/6hours. Pharmacodynamic measurements were undertaken at four time points (pre-anticoagulation, end of PPCI, 2-3 hours into infusion and at the end of infusion). Anti-Xa levels were determined using chromogenic assays, fibrin clots were assessed by turbidimetric analysis, and platelet P2Y12 inhibition was determined using the VerifyNow analyser. Clinical outcomes were determined 14-24 hours after initiation of enoxaparin infusion.

Results: 19/20 patients completed the enoxaparin regimen; one patient (no reflow) was switched to tirofiban after the enoxaparin bolus. Median age was 68 yrs, 80% were males, 50% had anterior STEMI and all were loaded with ticagrelor 180 mg on arrival. 17/19 patients were pre-treated with opiates and, in those, platelet P2Y12 inhibition was absent (0% inhibition) in 16/17 after 2-3 hours E infusion and 8/17 at the end of infusion. Anti-Xa levels peaked at the end of PPCI and were subsequently sustained up to the end of infusion resulting in prolonged fibrin clot lag time and increased lysis potential throughout the infusion. None of the patients had thrombotic or bleeding complications.

Conclusion: A regimen consisting of enoxaparin 0.75 mg/kg bolus followed by a 6-hour infusion of 0.75mg/kg provides sustained anti-Xa levels in PPCI patients. This may offer sufficient protection from the risk of acute stent thrombosis in opiate-treated PPCI patients who frequently have delayed onset of action of oral P2Y12 inhibitors.

P433

Use of glycoprotein IIb/IIIa inhibitors in ST segment elevation myocardial infarction in real life. are we being effective?

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On behalf of: Em nome dos Investigadores do Registo Nacional de Síndromes Coronárias Agudas

Introduction: The role of glycoprotein (GP) IIb/IIIa inhibitors in patients with ST segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PCI) is not fully understood. The aim of this study was to evaluate the clinical impact of the use of GP IIb/IIIa inhibitors in these patients.

Methods: We included all patients from a Registry of Acute Coronary Syndromes with STEMI undergoing PCI. Patients were divided into 2 groups: patients who did not receive GP IIb/IIIa inhibitors during primary PCI and patients (P) who received GP IIb/IIIa inhibitors during primary PCI. The groups were compared and the occurrence of the primary in-hospital endpoint [composite of in-hospital mortality (HM), re-myocardial infarction (MI) and stroke] and secondary endpoints (each factor separately) was evaluated. The occurrence of major bleeding was also analysed.

Results: We included 4177 P, 2690 P were not given inhibitor and 1487 received inhibitor.

In the inhibitor group, there were more men (80.5% vs 74.7%, p < 0.001) and younger P (61 ± 13 years vs 64 ± 14 years, p < 0.001).

As for the risk factors, in the inhibitor group there were less hypertensive P (57% vs 62%, p = 0.001), more smokers (43% vs 36%, p < 0.001) and less diabetics (21% vs 25%, p = 0.014).

As for the personal history, in the group with inhibitor there was more P with prior MI (13% vs 9%, p < 0.001) and more P with a history of PCI (11% vs 7%, p < 0.001). Regarding the clinical data, there were no differences in Killip-Kimball class ≥ 2, nor in the location of MI.

Regarding coronary angiography, in the inhibitor group there was less P with multivessel disease (40% vs 44%, p = 0.01). In the group with inhibitor there was less P with LVEF <50% (35% vs 47%, p < 0.001), less P who received anticoagulation (56% vs 91%, p < 0.001), more P who received dual antiplatelet therapy (99% Vs 96%, p < 0.001) and more P with a lower TIMI score (p < 0.001).

Regarding the occurrence of endpoints, there were no significant differences in the primary end point (5.4% vs 5.4%, p = 1.00), HM rate (4% vs 4.4%, p = 0.59) or stroke rate (0.7% vs 0.9%, p = 0.52). There was a tendency for an increased rate of re-MI in the P who performed inhibitor

(1% vs. 0.5%, p = 0.069). The major bleeding rate was not significantly different between the 2 groups (2.4% vs 1.6%, p = 0.085).

In the multivariate analysis, GP IIb/IIIa inhibitor was an independent predictor of re-MI (p = 0.002; OR 3.7).

Conclusion: In this study, administering an GP IIb /IIIa inhibitor in P with STEMI undergoing primary PCI does not appear to reduce the risk of thrombotic complications. Inhibitor administration was an independent predictor of re-MI during hospital admission. It is necessary to carry out randomized studies to clarify the possible benefit of GP IIb/IIIa inhibitors in the STEMI undergoing PCI.

P434

Clinical study of recombinant non-immunogenic staphylokinase

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Background: Profibrinolytic properties of staphylokinase has been known for more than 40 years. There were number of trials which presented high efficacy of staphylokinase in different doses and low-level hemorrhagic complications in patients with myocardial infarction with ST-segment elevation (STEMI). One of advantages of this drug is the highest fibrin-selectivity among all thrombolytics. But the main limit of staphylokinase administration is production of anti-staphylokinase antibodies. In 2012 a new thrombolytic was developed. It was recombinant non-immunogenic staphylokinase. Three aminoacids in immunodominate epitope of native staphylokinase were replaced to develop a non-immunogenic variant. In previous clinical trials recommended dose and the way of administration (bolus injection/infusion/bolus-infusion) have not been determined.

The purpose: To assess the efficacy and safety of different recombinant non-immunogenic staphylokinase doses and ways of administration of in patients with STEMI.

Materials and methods: The study included 68 patients with STEMI in the first 6 hours after the onset of disease. The patients were divided into 3 groups. The first group (n=27) was treated by intravenous administration of 15 mg recombinant non-immunogenic staphylokinase given as a single bolus. The second group (n=20) was treated with a double bolus of 10 mg and 5 mg given 30 minutes apart. And the third group (n=21) received 15 mg recombinant non-immunogenic staphylokinase given as a 10 mg bolus and infusion of 5 mg over 30 minutes. All patients received aspirin, P2Y12 inhibitor and heparin infusion. After the thrombolysis all the patients were undergone

coronary angiography (CAG) with percutaneous coronary intervention (PCI). The main evaluated indicants were frequency of the coronary artery reperfusion by ECG over 90 minutes after thrombolytic therapy, coronary blood flow according to the CAG (TIMI), the frequency of bleeding complications (TIMI classification), mortality.

Results: We observed comparable results between groups. There was not difference between frequency of coronary artery reperfusion on ECG and CAG. TIMI-3 reperfusion grade was achieved in 62,9% of a single bolus recombinant non-immunogenic staphylokinase patients versus 50% of double bolus patients and versus 57% of a 10 mg bolus and infusion of 5 mg over 30 minutes (p < 0,05). Complications (predominantly microhematuria) were occurred in both groups in equal frequency. We did not observe fatal cases and allergic reactions in groups. Plasma fibrinogen levels were unaffected in all groups.

Conclusion: Recombinant non-immunogenic staphylokinase showed efficacy and safety as a thrombolytic agent in different doses and ways of administration. Simultaneously further randomized or large non-randomized studies investigating the way and dosage of recombinant staphylokinase administration are required.

P435

Fibrinolysis versus primary angioplasty in patients with st-elevation myocardial infarction and isolated coronary artery ectasia

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Background: coronary artery ectasia (CAE) constitutes a relatively common cause of ST elevation myocardial infarction (STEMI). No study has reported the outcomes of systemic fibrinolysis vs. primary percutaneous coronary intervention (PCI) in this subgroup of patients.

Purpose: to compare results of fibrinolysis vs. PCI in patients with isolated CAE presenting with STEMI.

Methods: a single center, retrospective study of patients with STEMI that received reperfusion treatment with either fibrinolysis or primary PCI, and in whom isolated CAE of the culprit infarction artery was found during coronary angiography. Patients with both coronary stenosis and CAE were excluded of the analysis. Primary outcome was angiographic success (defined as a final TIMI grade flow = 3). Secondary outcome was the need for any percutaneous procedural intervention (balloon angioplasty, stent placement, thrombus aspiration).

Results: from January 2014 to October 2016, a total of 47 patients with STEMI and isolated CAE of the culprit artery

were found: 28 (59.5%) undergo fibrinolysis and later coronary angiography and 19 (40.5%) underwent primary PCI. Baseline characteristics of both groups were similar. Initial TIMI grade flow ≥2 was more common (18/28 – 64.2%) in patients undergoing fibrinolysis than in those undergoing PCI (4/19 – 21.0%) (p = 0.01). Angiographic success was similar in both groups: 42.8% (12/28) in the fibrinolysis group and 36.8% (7/19) in the PCI group (p = 0.76). Patients undergoing primary PCI were more likely to receive any kind of procedural intervention (16/19 – 84.2%) than those undergoing fibrinolysis and later coronary angiography (7/28 – 25.0%) (p = 0.02).

Conclusions: In patients with CAE presenting with STEMI, systemic thrombolysis is associated with similar rates of angiographic success and lesser requirements for interventional procedures compared to primary PCI.

Table 1. Initial and final TIMI flow grades and frequency and type of interventional procedure(s) performed in both fibrinolysis and primary PCI groups.

	Fibrinolysis and later angiography (n = 28)	Primary PCI (n = 19)	p value
Initial TIMI grade flow ≥2	18 (64.2)	4 (21.0)	0.01
Final TIMI grade flow = 3	12 (42.8)	7 (36.8)	0.76
Any intervention: n (%)	7 (25.0)	16 (84.2)	0.02
Balloon angioplasty: n (%)	5 (17.8)	14 (73.6)	0.01
Stent placement: n (%)	3 (10.7)	6 (31.5)	0.17
Thrombus aspiration: n (%)	1 (3.5)	9 (47.3)	0.001

P436

Does previous use of acetilsalicilic acid for primary prevention of cardiovascular disease have a prognostic impact in patients with acute coronary syndrome?

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Introduction: The use of acetilsalicilic acid (ASA) for the primary prevention of cardiovascular diseases (CVD) is controversial. Similarly, the impact of previous use of ASA in the prognostic of patients with acute coronary syndrome (ACS) hasn't been constant throughout the studies, which have demonstrated both benefit and harm, with higher mortality and recurrence of events. With this study, we intend to characterize the population and access the impact of the previous use of ASA for primary prevention on the prognosis of patients with ACS.

Methods: We conducted a retrospective, descriptive and correlational study of all patients admitted with ACS in a Cardiology ward, without known CVD (ACS, unstable angina, previous revascularization, stroke of peripheral artery disease), spanning from October 2015 until August 2015. We defined two groups: patients previously medicated with ASA, and patients who were never medicated with ASA. We accessed baseline characteristics and data during admission, hospital stay and at discharge. Follow-up was performed via phone contact by a cardiologist. We then performed an uni and multivariate statistical analysis of mortality and re-admissions during 1-year follow-up.

Results: A total of 1536 patients without previously known CVD, 1140 (74,2%) were male, and 78 (5,1%) were previously medicated with ASA. Patients previously medicated with ASA were older (71,6 ± 11,55 vs 62,7 ± 13,4 years, p < 0,01), less likely to be smokers, had higher incidence of arterial hypertension, diabetes mellitus, dyslipidemia, vascular disease, heart failure, dementia and cancer.

During hospital stay, previous ASA use was associated with higher incidence of heart failure (17,9% vs 8,2%, p < 0,01), lower left ventricle ejection fraction (54,2% vs 58,6%, p=0,02), higher use of diuretics (29% vs 15%, p<0,01), atrial fibrillation (11,7% vs 4,6%, p<0,01). These patients were less likely to undergo coronary angiography (63% vs 84%, p<0,01) and angioplasty (47,4% vs 68,3%, p<0,01). There was no significant difference in intra-hospital mortality (5,1% vs 3,2%, p=0,3) or type of ACS.

During 1-year follow-up, previous use of ASA was associated with higher mortality rate (15,4% vs 4,3%, p<0,01), but no significant difference in in hospital re-admission (21,2% vs 15,8%, p=0,3). After multivariate analysis, previous use of ASA had no impact on mortality or hospital re-admissions.

Conclusion: In patients with no previously known CVD, patients with previous use of ASA for primary prevention were older and with more co-morbidities, had higher rate of heart failure and atrial fibrillation during hospital stay, and were less likely to be treated invasively, showing a higher

mortality rate at 1-year follow-up by univariate analysis. However, multivariate analysis showed no impact on mortality and hospital admissions.

P437

STEMI and multivessel disease: what do we do with non-culprit lesions?

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Introduction: Fifty percent of patients with acute myocardial infarction with ST elevation (STEMI) have multivessel disease. These patients have higher rates of cardiovascular events (CVE) in the long term. The approach to non-culprit lesions post STEMI is controversial with the studies performed to date showing conflicting results.

The objective of our study was to evaluate the impact of the treatment strategy in non-culprit lesions, in patients who presented with a de novo STEMI and underwent primary angioplasty of the culprit lesion, on mortality and CVE.

Methods: From January 2013 to November 2014, 217 consecutive patients with a de novo STEMI undergoing primary angioplasty, with at least one moderate non-culprit lesion (>50%), were included. Patients were followed for a period of 2 years after the initial event. Patients were classified into three groups, according to the treatment strategy of the non-culprit lesions: Group 1, patients in whom medical management was chosen; Group 2, patients who underwent staged angiography guided angioplasty; Group 3, patients who underwent ischaemia driven revascularisation. 38 patients who either underwent surgical revascularization or had any acute periprocedural event requiring immediate treatment were excluded.

Results: The mean age was 66 years and 77% were male. There were no significant differences in age and CV risk factors between groups (Table).

At 2 year follow-up there were no significant differences in mortality and CVE (angina, nonfatal infarction and death) related to the treatment strategy of non-culprit lesions (Figure). There was a trend towards a higher proportion of CVE in Group 1 (37.8% vs 22.8% vs 21.4%,p=0.09).

Conclusions: In de novo STEMI patients, undergoing primary angioplasty, with non-culprit disease mortality and 2-year CVE does not differ according to the treatment strategy adopted for non-culprit lesions. However, there is a trend towards more CVE in the medically treated group.

Table 1. Baseline characteristics.

	Group 1 (n=87)	Group 2 (n= 64)	Group 3 (n=28)	
Age	66,6 (13,0)	66,4 (12,0)	63,2 (12,1)	0,91
Sex (Male)	65 (74,7%)	47 (73,4%)	25 (89,3%)	0,34
Hypertension	46 (52,9%)	34 (53,1%)	12 (42,9%)	0,56
Hyperlipidemia	34 (39,1%)	24(37,5%)	12 (42,9%)	0,83
Diabetes	22 (25,3%)	13 (20,3%)	6 (21,4%)	0,28
Smokers	48 (55,2%)	33 (51,6%)	17 (63,0%)	0,52
Obesity	17 (19,5%)	12 (18,8%)	6 (21,4%)	0,95
Previous AMI	11 (12,6%)	7 (10,9%)	4 (14,3%)	0,94

Baseline characteristics. AMI: Acute myocardial infarction.
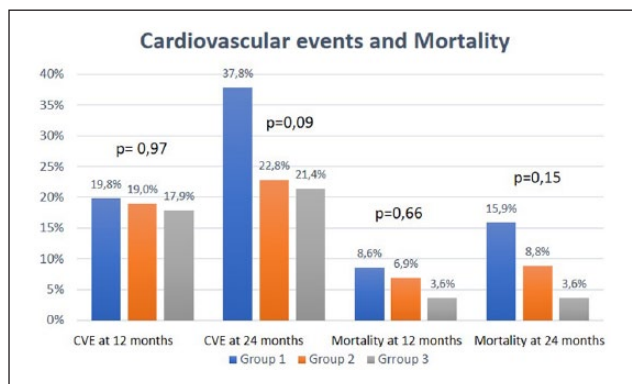
Results

P438

Time of revascularization and dynamics of myocardial electric instability parameters

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Aim: To evaluate the dynamics of the cardiac rhythm turbulence (CRT) and late ventricular potentials (LVP) in STEMI, depending on the timing of revascularization.

Methods: 90 patients with STEMI were included in the study. The average age of the patients was 52 (45, 58) years,

male - 90%. Inclusion criteria: age from 35 to 65 years, STEMI confirmed by ECG data, troponin I level, CK-MB, coronary angiography wth hemodynamically significant stenosis of the infarct-related artery assuming the occlusion of other coronary arteries less than 50%, left coronary artery - less than 30%. Exclusion criteria: history of myocardial infarction, CHF III-IV by NYHA FC, His bundle block, atrial fibrillation, artificial pacemaker, severe chronic diseases. All patients underwent percutaneous coronary intervention (PCI), which in 58% of cases was preceded by systemic thrombolytic therapy. Th "pain-needle" time was 2 (1.3, 5) hours, "pain-balloon" - 6.2 (3.7, 13.8) hours. All patients had undergone the 24-hour ECG monitoring in 12 leads using Holter Analysis-Astrocard device with analysis of myocardial electrical instability parameters: CRT and LVP on 7-9 day, at 24th and 48th weeks of follow-up. In the CRT analysis, the turbulence onset (TO) greater than 0% and turbulence slop (TS) less than 2.5 ms/RR were taken for pathological values. The detection of LVP was based on at least two indicators values change: QRSf more than 120 ms, HFLA more than 39 ms, RMS less than 25 µV. Depending on the timing of the infarct-related coronary artery reperfusion, all patients were divided into 2 groups: 1st - 40 patients (44%) with PCI performed in the first 6 hours from the onset of the pain syndrome, 2nd - 50 people (56%) with invasive revascularization after 6 hours. The comparison groups were matched by sex, age, a number of anthropometric indicators and myocardial infarction localization.

Results: pathological values of CRT were recorded in 25.6% of patients, with a deviation from the normal range of one or both CRT parameters more often observed in group 1 - 35%, compared with group 2 - 28% (p=0.02). However, in patients with early reperfusion, by the 48th week of treatment a positive dynamics of the TO index was obtained, which decreased from 0.05±3.3 to -1.8±2% (p=0.01). In group 2, there was no such change in the parameters of the CRT. The LVP were found in 10% of cases. In both groups, a decrease in the HFLA was revealed: in group 1 - from 28.1±9 to 24.9±9 ms (p=0.01), in group 2 - from 28 (22; 32) to 25 (18; 32) ms (p=0.005). Patients with early PCI also experienced a significant increase in the RMS score from 38.6 (23; 68) to 59.4±34 µV (p=0.02).

Conclusions: In the STEMI group with early PCI, a more favorable dynamics of the CRT was obtained, which indicates the baroreflex sensitivity restoration in these patients. The positive dynamics of the LVP parameters in this group is associated with the stabilization of electrophysiological processes in the myocardium.

P439

Review of manual thrombus aspiration system in a cath lab through a period of 9 years

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Introduction: Routine use of manual thrombus aspiration (MTA) during primary angioplasty in patients with ST-segment elevation myocardial infarction (STEMI) has been the focus of several studies in the past few years, who suggested an absence of benefit in terms of reducing cardiovascular events and a greater risk of acute ischemic cerebral events. In agreement with this findings, the most recent STEMI guidelines of the ESC downgraded its routine use to class III.

Purpose: To perform an analysis of a population of STEMI patients treated with primary angioplasty and routine MTA in a cath lab, during the previous 9 years.

Methods: Retrospective study performed through the analysis of hospital clinical files of patients treated with primary angioplasty (PA) and MTA between 2008 and 2016, including their clinical characteristics, the coronary intervention itself and follow-up.

Results: We included 518 patients, mean age 58.9 ± 13.5 years, 75.8% male. We found the following distribution for cardiovascular risk factos: DM 15.3%, hyperlipidemia 38.5%, HTN 56.7%, smoker 44.5%. In terms of previous history: MI 12.6%, PCI 13.2% and CABG 1%. FUP was possible in 262 patients (50.6%), with an average time of 12.7 [13.7] months. In terms of the procedure itself we found that 69.7% of the patients had a TIMI flow 0 and 23% TIMI flow 1; there were a thrombus visible in 40.4% of the patients; and that 7.9% of the patients when arriving at the cath lab were in Cardiogenic Shock. 2.5% of the patients had a peri-procedural VT/VF and also 2.5% had a formal indication for CABG surgery. In this population, we found an in-hospital mortality of 6.2% (32 patients) and an out-of-hospital mortality of 0.8% (4 patients at follow-up). We identified as predictors of in-hospital mortality in univariable analysis: age (68.3±15.1 vs 58.3±13.2, p < 0.001), Diabetes Mellitus (12.0 vs 4.8%, OR 2.7, p=0.018) and Killip class IV (34.1 vs 3.8%, OR 13.2, p < 0.001). 1.7% (n=9) of the patients had an ischemic cerebral event at the index hospitalization, none of them during or in the 24 hours after the primary angioplasty. Of the patients in follow-up, 7.6% developed heart failure and 26% recurrent angina.

Conclusion: In the present study of a population of STEMI patients in the "real world", treated with PA and MTA, the authors conclude for an in-hospital mortality slightly above the one described in previous studies with MTA systems, in possible relation with a larger prevalence of patients in KK IV. Despite the documentation of in-hospital ischemic cerebral events, none of them took place in the first 24 hours.

P440

Coronary angioplasty using new generation covered coronary stents: experience of a center

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Background: The occurrence of coronary perforations or the need for aneurysm exclusion occasionally prompts the use of covered stents. New generation covered stents with a thinner single layer of polyurethane have recently been available, theoretically with a higher flexibility profile than the previous generation, in order to allow their use in technically more difficult lesions. There are still very few published data on the efficacy and safety profile of these new stents.

Purpose: To evaluate the efficacy and safety of the use of the new Papyrus® covered stents in the context of coronary perforation or exclusion of coronary aneurysms.

Methods: Longitudinal observational study of consecutive patients with stable coronary artery disease or acute coronary syndrome (ACS) who underwent percutaneous coronary revascularization in which polyurethane (Papyrus®) coated stents were used. Demographic, clinical, and hospitalization data were collected from all patients in which this type of stent was used. Telephone follow-up was also carried out in order to assess the efficacy and mid-term safety results.

Results: Until December 2016, these new stents were used in eight patients (63% male, 74 ± 10 years), 75% (N = 6) with previous history of stable coronary disease, 63% (N = 5) with previous ACS, 88% with hypertension, 25% (N = 2) with smoking habits, 25% (N = 2) with diabetes and 38% (N = 3) with dyslipidemia. The indication for coronary angiography was stable angina in 2 patients, unstable angina in 1 case, 3 cases of acute myocardial infarction (AMI) with ST segment elevation, 1 case of undetermined AMI and 1 case of cardiac arrest of indeterminate cause. There were 7 cases of coronary perforation in proximal or medium segments, with the need for implantation of covered stents: 4 in the left anterior descending, 2 in the right coronary and 1 in the left circumflex artery. In all cases the lesions were strongly calcified. There was a good immediate result in all cases, with recurrence of early coronary perforation (<24 hours) just in 1 case, which culminated in cardiac tamponade and consequently death. In the remaining cases, a definitive haemostasis was achieved. During an average follow-up of 185 days, there were no cases of death, AMI or stent thrombosis. Only one patient is awaiting an ischemic test due to chest pain (Canadian score class 2, 60 days post-implantation). A coronary aneurysm was excluded from the left anterior descending artery in 1 case, and the patient was free of symptoms or events at 179 days post-implantation.

Conclusion: Covered stents of the new generation (Papyrus) were effective and safe. Treatment of coronary perforations in technically complex lesions was possible in the overwhelming majority of cases, with good results on a short and mid-term basis.

P441

Efficacy of coronary angioplasty and stenting for the patients over 80 years old with acute coronary syndrome

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Purpose: To evaluate efficacy and substantiate expediency of early coronary angioplasty and stenting in patients over 80 years old with acute coronary syndrome.

Methods: The analysis of treatment outcome in 144 patients over the age of 80 with acute coronary syndrome (ACS) was carried out in the period from 2014 to 2016. The average age of the patients was 83,68 ± 3,48. In the studied group women accounted for 63.9% (92), men - 36.1% (52 patients). On admission to the hospital 56.3% (81 patients) had non-ST elevation ACS (NSTE-ACS), 43.7% (63 patients) had ST - segment elevation (STE-ACS). According to coronarography, 61.8% (89 patients) had three-vessel damage, 25.0% (36 patients) - two-vessel damage, 13.2% (19 patients) - single-vessel damage. Damage of the LMCA was revealed in 3 (2.1%) patients. Symptom-dependent arteries were detected as follows: in 74 (51.4%) patients - LAD, 32 (22.2%) patients - RCA, 19 (13.2%) patients - circumflex artery, 18 (12.4%) patients - other coronary arteries. LMCA (left main coronary artery) was detected as symptom-dependent in 1 patient (0.7%). 125 (86.8%) patients of the examined group were subjected to coronary angioplasty and stenting in the acute stage of ACS. 57 (45.6%) of them had STEMI, 68 (54.4%) patients – NonSTEMI. 97 (77.6%) patients were subjected to single-vessel stenting, 25 (20.0%) patients underwent two-vessel stenting, 2 (1.6%) patients - three-vessel stenting. Stenting of the LMA was performed on 1 patient (0.8%).

Results: In patients subjected to coronary stenting and angioplasty, angiographic success was achieved in 122 (97.6%) patients, clinical success - in 115 (92.0%) patients. Peak troponin I value at time of hospital discharge amounted to 189.87 ± 76.13ng/ml. According to echocardiographic test, left ventricular ejection fraction at time of hospital discharge was 45.70 ± 8.43%. Left ventricular end diastolic volume amounted to 108.38 ± 29.37 ml.

The overall hospital mortality in the group of patients with ACS who were subjected to coronary angioplasty and

stenting was 8.0% (10 patients). Mortality level in the group of patients who underwent intervention with STEMI was 14.0% (8 patients), in the group with NonSTEMI - 2.9% (2 patients). High mortality in the group of patients with STE-ACS is significantly associated with late admission to hospital, severity of acute myocardial infarction (Killip class III-IV) and comorbidity.

Conclusions: The obtained data allows for the conclusion that coronary angioplasty and stenting are effective treatment methods for acute coronary syndrome in patients over 80 years old. The advisability of implementing an early invasive strategy is confirmed by clinical outcomes, laboratory tests and myocardial functional status indicators based on echocardiographic values.

P442

Manual thromboaspiration and in-hospital assessment of systolic function and class of heart failure in patients with myocardial infarction

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Since the publications on manual thromboaspiration (MT) in ST-elevation myocardial infarction (STEMI) are controversial, it is of interest to assess the severity of heart failure (HF) in such patients during hospitalization.

Materials and Methods: A retrospective analysis of 146 cases of STEMI treated by percutaneous coronary intervention (PCI) was performed. The average age of patients was 60.8±1.3 years, 97 men (66%) and 49 women (34%). In 78% of patients, STEMI was a debut of coronary artery disease. All patients were discharged alive.

Results: Patients were divided into 2 groups: 80 patients treated by PCI only and 66 patients treated by PCI plus MT. Patients of both group were similar by gender, age, localization of MI (anterior MI (55% without MT and 53% with MT). The majority of patients in both group (95,9%) had TIMI 3 coronary blood flow. While the degree of myocardial perfusion less than 3 on the MBG scale was 8.2% in the group without MT and 4.1% in patients with MT (p<0.05). The debris was obtained in 88.4% of cases of thromboaspiration.

The majority of patients, both in the group without MT and with MT had a preserved systolic function at the time of discharge (73,3% vs 85,7% p<0.05). The mild systolic dysfunction of the left ventricle (ejection fraction up to 40%) was observed in 23.3% of patients in the group without MT and 10.9% with MT (p<0.05); moderate systolic dysfunction (ejection fraction 40-30%) - 3.4% vs. 1.4%, respectively (p<0.05). Severe systolic dysfunction (ejection fraction less than 30%) was not observed in both group.

Mild mitral regurgitation was present in 39% of patients without MT and 33% after thrombaspiration (p<0,05); moderate and severe mitral regurgitation - 14.4% and 9.6% (p<0,05), tricuspid regurgitation of 2-3 degrees-4.8% versus 0.68%, respectively (p<0,05). 20% of examined patients had pulmonary hypertension. Pulmonary hypertension was observed in 11.6% of patients without thrombospiration and in 2.7% of patients after thromboaspiration (p<0,05). At discharge 46% patients without MT and 56.32% with MT had no symptoms of HF. The I functional class of HF by NYHA was almost the same in both groups - 21.2% versus 18.5% (p>0.05). However, II and III functional classes HF were more often observed in the group without thromboaspiration - II functional class - 30.1% without MT and 24.5% with MT (p<0,05); III functional class - 2.7% against 0.68% respectively (p<0,05).

Conclusions: Performing of manual thromboaspiration could prevent the formation of systolic dysfunction in patients with severe thrombotic lesion of the coronary artery, which provides a lower functional class of heart failure at discharge and improves short-term prognosis in patients with myocardial infarction.

P443

Evolution of clinical characteristics and procedures in patients admitted to a coronary care unit: impact of a STEMI network

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Introduction: Since the appearance of the first Coronary Care Unit (CCU) the landscape of acute cardiovascular care has evolved. Besides demographic changes, the introduction of primary percutaneous intervention (PPCI) and STEMI networks have played a major role in these changes. In our region, the accessibility of PPCI has increased over the past decade.

Purpose: To describe temporal trends in clinical characteristics and procedures in patients admitted to our CCU and its relation with PPCI availability in the context of a STEMI network. We hypothesised an increase in the admission rate, elderly patients, severity illness and complex resource utilization.

Methods: We performed a retrospective analysis of all patients admitted to our CCU from May 2008 to June 2017. Procedure registries and clinical data were obtained from our CCU database. We analysed the temporal evolution of these variables and the impact of a PPCI/STEMI network implementation (October 2012). Comparisons between period-B (post-PPCI/STEMI network) versus period-A (pre-PPCI/STEMI network) were performed.

Results: A total of 5031 consecutive patients were admitted, 2031 in period-A and 3000 in period-B. The mean age was 65.1±13.1. 26.1% were female. Admission diagnoses were: ischemic heart disease 70.4%, arrhythmias 13.2%, heart failure 6.7%, other 9.7%.

No differences were observed between periods in sex and mean age, although the proportion of patients >80 years old increased significantly over time (15.0% vs 11.8%, odds ratio [OR] 1.32, 95% confidence interval [CI] 1.11-1.58, p < 0.002). As expected, we notice a significant increase in number of admissions by year (period-A 438±36; period-B 649±41; p < 0.005), PPCI procedures (40.7% vs 9.5%, OR 6.55, 95%CI 5.55-7.72, p < 0.000) and diagnostic coronary angiography (63.5% vs 53.2%, OR 1.53, 95%CI 1.37-1.72, p < 0.000). On the other side, significant decrease of fibrinolysis (1.3% vs 8.7%, OR 0.14, 95%CI 0.09-0.19, p < 0.000), rescue PCI (0.6% vs 1.2%, OR 0.53, 95%CI 0.29-0.97, p < 0.038), and use of abciximab (5.4% vs 9.1% OR 0.57, 95%CI 0.46-0.71, p < 0.000) was observed.

Moreover, significant increase of critical patients in period-B was recognized by higher use of vasoactive agents (12.1% vs 7.5%, OR 1.69, 95%CI 1.39-2.07, p < 0.000), mechanical ventilation (9.8% vs 4.1%, OR 2.51, 95%CI 1.96-3.22, p < 0.000), intra-aortic balloon pump (2.1% vs 1.1%, OR 1.96, 95%CI 1.21-3.18, p < 0.006) and the increase of out-of-hospital cardiac arrest admission (5.5% vs 2.1%, OR 2.76, 95%CI 1.96-3.88, p < 0.000). The average length of stay was 4.1 days in period-B versus 2.8 days in period-A (p=0.000). Not adjusted mortality was higher in period-B (4.8% vs 3.4%, OR 1.43, 95%CI 1.07-1.92, p < 0.015).

Conclusions: The implementation of PPCI/STEMI network has played an important role on the changing profile of patients admitted to our CCU, who are now older and more critical (especially post-cardiac arrest patients) requiring more invasive procedures.

P444

Assessment of stent expansion after direct stenting compared to conventional stenting

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Introduction: stent underexpansion is a major risk factor for in-stent restenosis and acute in-stent thrombosis. Direct coronary stenting has been shown to be safe and feasible, with a demonstrable reduction in cost, procedural time and radiation exposure.

Aim of work: comparison of direct stenting versus predilatation and stenting regarding adequate stent expansion assessed by Intravascular Ultrasound (IVUS), Stentboost (SB) enhancement and Quantitative coronary angiography(QCA).

Methodology: Thirty three elective percutaneous coronary procedures and stenting were evaluated using IVUS, SB enhancement and QCA. We compared measurements of mean ±standard deviations of (Max SD, Min SD ,Mean SD, stent symmetry index) after stent deployment. Balloon dilatation was done before stenting in 21 lesions while direct stenting was done in 12 lesions.

Results: the coronary lesions were class A (50% vs 14.29%,p0.04), class B1/B2 (41.67% vs 47.61%,p: 0.23) and class C (8.33% vs 38.1%,p0.01) in the direct stenting and predilatation groups respectively.The Max SD was(3.46 ± 0.45vs 3.37 ± 0.6, p 0.67) by IVUS , and(3.44 ± 0.30vs 3.59 ± 0.58 , p0.32) by SB enhancement and (3.19 ± 0.46 vs3 ± 0.46 , p0.25) by QCA in direct stenting and predilatation groups respectively. The Min SD was(2.85 ± 0.37vs2.72 ± 0.6 , p0.46)by IVUS , (2.61 ± 0.37vs 2.52 ± 0.47 , p0.56) by SB enhancement and was(2.22 ± 0.52vs 1.88 ± 0.38 , p0.051) by QCA in direct stenting and predilatation groups respectively the mean Max SD was (3.45 ± 0.62vs3.55 ± 0.56vs 2.97 ± 0.59) by IVUS vs SB vs QCA respectively. Max SD was significantly higher by IVUS vs QCA(p 0.009) and between SB vs QCA (p 0.001) while there was nonsignificant difference between IVUS vs SB (p 0.53).The mean Min SD was(2.77 ± 0.53vs2.58 ± 0.56vs1.88 ± 0.60) by IVUS vs SB vs QCA respectively. Min SD was significantly higher by IVUS vsQCA(p 0.001) and between SB vs QCA (p 0.001) while there was nonsignificant difference between IVUS vs SB (p 0.07)

Conclusion: direct stenting is associated with adequate stent expansion, compared to stenting after predilatation, as assessed with IVUS , SB enhancement.StentBoost enhancement has superior correlations for stent expansion measured by IVUS when compared with QCA.

P445

Clinical results at a 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 cases. Continuous improvement of devices and the emergence of drug-eluting stents (DES) has increased indications of percutaneous treatment in these 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 a 10 year follow-up.

Materials and methods: We prospectively included 372 patients (69.7 ± 13.1 years, 73.4% male) with severe LMCA disease undergoing PCI from June 2006 to April 2016. We evaluated major cardiovascular events defined as cardiac death, nonfatal myocardial infarction, target lesion revascularization (RLT) and stent thrombosis after long-term clinical follow-up (median 41.5 months).

Results: 52.2% of patients had stable coronary disease and 47.9% had acute coronary syndrome (8.9% with STEMI and 39% with NSTEMI). 41.1% of patients were diabetics, 41.8% had moderate-severe left ventricular systolic dysfunction and 16.1% had Killip class 3-4. Mean Logistic EuroSCORE was 6.3% and SYNTAX score was ≥ 23 in 69.8% of the patients. An intra-aortic balloon pump was used in 6.5% of patients. The most frequent bifurcation technique employed was "provisional stenting" (66.3%) and zotarolimus-eluting stent was implanted in 76.9%, achieving a procedure success of rate of 99.2%. Complication rate was 5.4% with one intra-operative death.

During follow-up, MACE rate at 10 years was 17.1% (12 % cardiovascular mortality, 5.2% of RLT, 2% of nonfatal myocardial infarction and 0.3% of stent thrombosis). Kidney failure (OR = 4.8 CI95%1.4-15.9, p=0.01) and Killip 3-4 (OR = 4.7 CI95% 1.9-11.9, p = 0,001) were predictive factors of MACE. Th use of second generation DES was protector factor (OR = 0.2 IC 95% 0.1-0.5, p= 0,002).

Conclusions: The percutaneous treatment of LMCA disease with DES has high effectiveness and safety with a low rate of complications and major cardiovascular events at long-term follow-up.

P446

Stent boost enhancement compared to intravascular ultrasound in the evaluation of stent expansion in elective percutaneous coronary interventions

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Background: stent underexpansion is a major risk factor for in-stent restenosis and acute in-stent thrombosis. Intravascular ultrasound (IVUS) is one of the standards for detection of stent underexpansion. StentBoost (SB) enhancementallows an improved angiographic visualization of the stent.

Aim of work: comparison of stent expansion by IVUS and SB enhancement and detection of value of SB to guide dilatation post stent deployment.

Methodology: 33 elective stenting procedures were evaluated using IVUS , SB enhancement and QCA. We compared measurements of mean ±standard deviations of (Max SD, Min SD ,Mean SD, stent symmetry index) using IVUS , SB and QCA after stent deployment and after postdilatation whenever necessary to optimize stent deployment.

Results: The Max SD was (3.45 ± 0.62vs3.55 ± 0.56vs 2.97 ± 0.59) by IVUS vs SB vs QCA respectively. Max SD was significantly higher by IVUS vs QCA(p: 0.009) and between SB vs QCA (p: 0.001) while there was nonsignificant difference between IVUS vs SB (p: 0.53).The Min SD was(2.77 ± 0.53vs2.58 ± 0.56vs1.88 ± 0.60) by IVUS vs SB vs QCA respectively. Min SD was significantly higher by IVUS vs QCA(p: 0.001) and between SB vs QCA (p: 0.001) while there was nonsignificant difference between IVUS vs SB (p 0.07).The stent symmetry index was (0.24 ±0.09vs0.34 ± 0.09 vs0.14 ±0.27) by IVUS vs SB vs QCA respectively. It was significantly higher by IVUS vsQCA(p 0.001) and between SB vs QCA (p 0.001) while there was nonsignificant difference between IVUS vs SB (p 0.32).SB was positively correlated with IVUS measurements of Max SD(p < 0.0001 & r 0.74)and Min SD(p < 0.0001 & r 0.68). QCA was positively correlated with IVUS measurements of Max SD correlation (p < 0.0001 & r 0.69)and Min SD (p < 0.0001 & r 0.63). QCA was positively correlated with SB measurements of Max SD(p < 0.0001& r 0.61) and Min SD(p 0.003 & r 0.49).

Conclusions: StentBoost enhancement has superior correlations for stent expansion measured by IVUS when compared with QCA. SB enhancement improved stent visualization and identification of stent underexpansion to guide stent postdilatation.

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Ten years follow-up results of left main percutaneous coronary intervention in young patients

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Introduction: Surgical treatment has been the classic therapeutic modality for left main coronary artery (LMCA) disease in young, low surgical risk and diabetic patients. However, in recent years, the appearance of second

generation drug-eluting stents (DES) has made it possible for percutaneous revascularization to be an option in these patients.

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 patients (<60 years).

Methods: We prospectively included 89 consecutive patients (51.9 ± 9.8 years, 78.8% male) with LMCA disease treated with PCI between June 2006 and April 2016. 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 58 months).

Results: 43.8% of patients had stable coronary disease and 51.7% acute coronary syndrome (41.6% Non-STEMI and 10.1% STEMI). 31.5% were diabetic patients and 31.6% presented moderate-severe left ventricular systolic dysfunction.

Mean logistic EuroSCORE was 2.51% and 73.5% Syntax score < 32.

The most frequently bifurcation technique employed was "provisional stenting" in 61.9% of cases, and second generation DES was used in 84.3% of cases. The complication rate intra-procedure was 2.2% and intraoperative mortality and stroke rate post-PCI was 0%.

During follow-up, MACE rate at 10 years was 11.6% (6% cardiac death, 4.2% non-fatal myocardial infarction, 3.8% TLR and thrombosis rate 0%). 22.5% of patients had an angiographic follow-up.

Conclusions: In young patients (< 60 years) with low surgical risk, left main PCI provide very favourable results with a low rate of complications in the procedure and low rate of cardiac adverse events at a very long-term follow-up.

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Clinical results at a 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 involved in the 18% of 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 these high-risk lesions.

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

Methods: We prospectively included 38 consecutive patients (71.9 ± 11.5 years, 71.1% male) with ostial LMCA disease treated with PCI between June 2006 and April 2016. 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 a 10 year clinical follow-up (median 39.6 months).

Results: 39.5% had stable coronary disease and 60.5% had acute coronary syndrome (51.8% Non-STEMI and 8.7% STEMI). 47.4% were diabetic patients and 51.7% presented moderate-severe left ventricular systolic dysfunction. The mean logistic EuroSCORE was 8.8 % and SYNTAX score was ≥ 23 in 44.4% of the patients.

We implanted second generation DES in the 78.8% of patients (67.6% zotarolimus-eluting stent) and post-dilatation was performed in the 47.7%. The angiographic success rate was 100%. Complication rate in the procedure was 2.6% without death intra-procedure. During follow-up, MACE rate at 10 years was 10% (3.8% of cardiac death, 0.6% of nonfatal myocardial infarction, 6.1% of TLR and thrombosis rate of 0%). 26.3% of patients had an angiographic follow-up.

Conclusions: In spite of high surgical risk, complex coronary anatomy and older aged patients, PCI in ostial LMCA disease is safe and effective with a low rate of major long-term cardiovascular events.

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Results of percutaneous coronary intervention with crush stenting technique in left main coronary artery disease at a long-term follow-up

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Percutaneous coronary intervention (PCI) for coronary bifurcation lesions is complex, especially when it affects the left main coronary artery (LMCA). The most commonly used technique is "provisional stenting". Sometimes, if the side branch is large and has disease extended beyond the ostium vessel it may be necessary to use double stent techniques such as "crush stenting".

Purpose: The main objective of this study was to evaluate the efficacy and safety of "crush stenting" technique in LMCA disease at a 10-year follow-up.

Methods: We prospectively included 40 consecutive patients (68,5 ± 13,9 years, 72,5% male) with distal LMCA disease treated with "crush stenting" bifurcation technique between June 2006 and April 2016. 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 a 10-year clinical follow-up (median 56.7 months).

Results: 57.5% of patients had stable coronary disease and 43.5% acute coronary syndrome. 32.5% were diabetics, 45.9% had moderate-severe left ventricular systolic dysfunction and 11.1% had Killip class 3-4 at presentation. Mean EuroSCORE was 5.6% and Syntax score was ≥ 23 in 56,4% of patients. 92.5% was unprotected LMCA.

We implanted zotarolimus-eluting stent in the 95% of cases and final "kissing-balloon" was performed in 97.5%. Angiographic success was 100% with a complication procedure rate of 2.5%.

During follow-up, MACE rate at 10 years was 20% (10% cardiac death, 7.5% nonfatal myocardial infarction, 10% TLR and thrombosis rate 0%). MACE rate was greater in patients with high Syntax score, acute coronary syndrome and patients treated with first generation drug eluting stent.

Conclusions: Percutaneous treatment of distal LMCA lesions with "crush stenting"is safe and effective with a low rate of long-term cardiac events

P450

Acetylsalicylic acid in primary prevention has no impact on the prognosis of patients with an acute coronary syndrome

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Introduction: The routine use of acetylsalicylic acid (ASA) in primary prevention of cardiovascular diseases (CVD) is controversial. The impact of previous ASA use on the prognosis of patients with an acute coronary syndrome (ACS) has not been consistent among different studies. Some studies reported that previous ASA was beneficial, while others stated that there was an association with higher mortality.

Purpose: Characterize the population and assess the impact of ASA use as primary prevention on the prognosis of patients with an ACS.

Methods: Retrospective, descriptive and correlation study with all patients admitted to a Cardiology department with an ACS without previous CVD (ACS, stable ischemic heart disease, previous coronary revascularization, stroke or peripheral artery disease) between the 1st of October 2010 and 31st of August 2015. Patients with previous ASA use were compared with those without ASA. The 1-year follow-up was made through phone call by a Cardiologist. The primary outcome was 1-year mortality and re-hospitalization rate. SPSS was used for statistical analysis.

Results: 1536 patients were included, 1140 (74.2%) were male and 78 (5.1%) were previously medicated with ASA. Previous ASA was significantly associated (p < 0.05) with age (71,6 ± 11,55 vs 62,7 ± 13,4 years, p < 0,01), non-smoking, hypertension, diabetes mellitus, dyslipidaemia, valvular heart disease, heart failure (HF), cancer and dementia.

During hospitalization, previous ASA use was associated with HF (17,9% vs 8,2%, p < 0,01) and lower left ventricular ejection fraction (54,2% vs 58,6%, p = 0,02), need for diuretic therapy (29% vs 15%, p < 0,01), non-invasive mechanical ventilation (2,6% vs 0,4%, p = 0,01) and atrial fibrillation (AF) (11,7% vs 4,6%, p < 0,01). These patients were less frequently submitted to coronary catheterization (63% vs 84%, p < 0,01) and percutaneous coronary intervention (47,4% vs 68,3%, p < 0,01). There was no difference in in-hospital mortality between the groups (5,1% vs 3,2%, p = 0,3) or type of ACS.

On 1-year follow-up, the previous use of ASA was associated with a higher mortality rate (15,4% vs 4,3%, p < 0,01) but not hospitalization during follow-up (21,2% vs 15,8%, p = 0,3). On multivariate statistical analysis, the previous use of ASA had no impact on mortality or re-hospitalization.

Conclusion: In patients without previous CVD, ASA use as a primary prevention strategy was more frequent in older patients and those with more co-morbidities. The higher rates of HF and AF, as well as a less frequent use of an invasive strategy probably contributed to the higher mortality rate on 1-year follow-up on univariate statistical analysis. However, in multivariate analysis, the previous use of ASA had no impact on mortality and re-hospitalization.

Prognosis and Biomarkers

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Hospital outcomes in STEMI patients after the introduction of a regional STEMI network in the metropolitan area of a developing country

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Aim: ST-segment elevation myocardial infarction (STEMI) networks have been shown to reduce mortality rates. Data on long-term outcomes of STEMI patients treated via such a network in developing countries are very limited. We evaluated the characteristics and outcomes of STEMI patients at two different periods, before and 5 years after the establishment of a regional STEMI network.

Methods and Results: The medical records of 86 489 patients admitted to the emergency department of an academic tertiary care cardiac hospital providing primary PCI from January 2008 to January 2016 were recorded. The PCI hospital has initiated the regional STEMI network in 2010. We compared the baseline characteristics and outcomes of STEMI patients from two different periods:

January 2008 to July 2009 (before installment of the STEMI network, N=624); and from January 2015 to January 2016 (5 years after start of the network, N= 1052). Logistic regression was used to determine the adjusted association between treatment in the latter period and mortality.

Compared with data from 2008/2009, in the 2015/2016 period more primary PCI procedures were performed [N=589; (56%) vs. N=176; (28%), p < 0.001], fewer patients did not receive reperfusion therapy (37% vs. 59%, p < 0.001), and median door-to-device (DTD) times were shorter (82 vs. 94 minute, p < 0.001). Overall in-hospital mortality has decreased from 9.6% to 7.1% (adjusted odds ratio 0.72, 95% CI 0.50 to 1.03, p=0.07).

Conclusion: The STEMI network implemented 5 years ago in Jakarta, Indonesia resulted in better and faster care of patients with STEMI, and was associated with lower in-hospital mortality.

Table 1. Characteristics of STEMI patients between the two periods (N=1676).

	Year 2008/2009 (N=624)	Year 2015/2016 (N=1052)	P-Value
Age >65 years, N (%)	104 (16.6%)	169 (16%)	0.74
Male, N (%)	532 (85%)	895 (85%)	0.92
Off-hours admission, N (%)	466 (74%)	820 (78%)	0.12
Anterior MI, N (%)	377 (60%)	579 (55%)	0.03
Symptom onset >12 h, N (%)	232 (37%)	306 (29%)	<0.01
Inter-hospital referral, N (%)	343 (55%)	715 (68%)	<0.001
Primary PCI, N (%)	176 (28%)	589 (56%)	<0.001
Fibrinolytic therapy, N (%)	75 (12%)	69 (6.5%)	<0.001
Non-reperfusion therapy, N (%)	373 (59%)	389 (37%)	<0.001
Door-to-device time, minutes	94 (72-122)	82 (67-103)	<0.001
In-hospital mortality, N (%)	60 (9.6%)	75 (7.1%)	0.07

P452

Female sex is an independent predictor of short term mortality in STEMI patients treated by primary PCI

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Background: Female sex, even in the era of modern reperfusion with primary PCI (pPCI), is still associated with worse prognosis in patients with ST elevation myocardial infarction (STEMI). However, it is still matter of debate whether the worse outcome in women is due to confounders or sex has an independent prognostic role.

Purpose: The aim of the present study was to investigate sex-related differences focusing on short- and long-term mortality in a large population of STEMI patients undergoing pPCI.

Methods: Our registry included all prospectively enrolled consecutive STEMI patients undergoing pPCI in two Italian tertiary Hospitals in 2005-2017 (n= 4363). Differences among variables were evaluated by Chi-square tests for categorical variables and Student t-test for comparison of means of continuous variables. Univariate and multivariate mortality analyses were performed respectively by Kaplan-Meier curves (with log-rank test) and by Cox regressions. For all mortality analyses a landmark was set at 30 days.

Results: Women were 24.1% of all patients, and compared to men were older (70 ± 12 vs 66 ± 12 years old, p<0.001), presented a lower incidence of type II diabetes (18.5% vs 21.9%, p<0.001) and lower CK-peak values (1755 ± 1638 vs 2083 ± 2109 UI/l, p=0.965). There were no differences in left-ventricular ejection fraction (47.72 ± 11 vs 47.38 ± 10, p=0.87). Thirty-day mortality was 9 % vs 3.5% (p<0.001)

and 1-year mortality was 12.1% vs 5.6% (p<0.001) respectively in women and men. At landmark analysis from 30 days to 1 year, mortality was 3.4% vs 2.1 (p=0.104). At multivariable analysis, female sex was an independent predictor of 30-day mortality (HR= 1.9 [5%-95% CI 1.1-3.4, p=0.020]) and 1-year mortality (HR= 1.5 [5%-95% CI 1-2.3, p=0.046]), but not when a landmark was set at 30 days (HR= 1.1 [5%-95% CI 0.5-2.1, p=0.839]). The other covariates in the models were left ventricular ejection fraction, CK peak, anterior AMI, age, basal creatinine, basal hemoglobin, Killip class ≥2 and diabetes.

Conclusions: Our data showed that, after primary PCI for STEMI, female sex was an independent predictor of short-term mortality, with a two-fold increased mortality risk in the first month. The landmark analysis showed that its prognostic role is lost over the long-term.

P453

Can the shock index predict in-hospital mortality of patients with STEMI?

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Introduction: The shock index (SI=HR/SBP) has been used in the prognostic assessment of patients with different types of shock. There are studies that suggest some role in predicting mortality in patients with STEMI.

Materials and Methods: Observational, cohort and prospective study of patients admitted to our center with a diagnosis of STEMI treated with primary PCI from April 2015 to November 2016. Our objective is to analyze the relationship between shock index (SI) and in-hospital mortality.

Results: We included 296 patients (age: 61.64 ± 12.57 years, 20.9% women). The in-hospital mortality rate was 3.7%. The shock index was higher in patients with intrahospital exitus (0.80 vs 0.59, p = 0.003). The optimal cutoff point for predicting in-hospital mortality was 0.8 (AUC = 0.72, 95% CI [0.53-0.93], p = 0.017). The 13.5% of the patients had an SI≥0.8, and these patients had a greater initial Killip (p < 0.001), more depressed LVEF (p = 0.001), and higher TIMI, GRACE and CRUSADE scores (p < 0.001) with no differences in age, sex, cardiovascular risk factors, comorbidities or reperfusion time. An SI ≥ 0.8 was significantly associated with a higher in-hospital mortality adjusted for sex and age (16.7% vs. 1.9%, Odds ratio: 6.44, 95% CI [1.63-25.33], p < 0.001). The predictive model was internally validated by bootstrapping of 200 replications (C-statistic corrected for bias = 0.83, 95% CI [0.69-0.96], Hosmer-Lemeshow x2 = 3.8, p = 0.872)

Conclusions: In patients with STEMI, an SI ≥ 0.8 at admission was associated with higher in-hospital mortality. Although external validation is necessary, its use could improve the prognostic stratification of these patients.

P454

Express algorithm of the estimation of the risk of bleeding in patients with STEMI

Foundation of assistance to development of small forms of enterprises in scientific-technical sphere (FASIE)

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Purpose: To assess the prognostic value of the developed risk assessment scale for hemorrhagic complications "2STEPS" in acute myocardial infarction with ST segment elevation.

Methods: In a prospective study, 100 patients admitted to the hospital in 2017 with ST-segment elevation myocardial infarction (STEMI) were included to assess the prognostic value of the developed risk assessment scale. The mean age was 63 ± 11.71 years. A third of the patients (33%, n = 33) were represented by females. Myocardial infarction (MI) was transferred in a history of 15% of patients (n = 15), 73.3% (n = 11) of them underwent revascularization procedures prior to the moment of real hospitalization. At the time of admission, a third of patients (33%, n = 33) actively smoked. Diabetes mellitus type 2 had 21% (n = 21) patients, hypertension - 92% (n = 92). The mean fraction of the left ventricular ejection (LVEF) at admission was 52 ± 9.4%. The mean glomerular filtration rate (CKD-EPI) was 73.5 ± 22.39 ml / min / 1.72 m2. Acute heart failure class II and higher according to the Killip classification were registered in 13 (13%) patients. The frequency of occurrence of hemorrhagical complications in this sample was 10% (n = 10), 9 (90%) of patients developed local hematoma, 1 (10%) had gastrointestinal bleeding.

The original scale "2STEPS" (Certificate of State Registration of the computer program No. 20107618826, issued on August 10, 2017) is designed to assess the risk of bleeding in patients with STEMI and includes two indicators - female gender and severity of Class II and higher classifications of Killip.

The risk of hemorrhage is calculated as follows: a male without no signs of acute heart failure gets 0 points (low risk), a man with a Class II and higher Killip gets 1 point (average risk), a woman without signs of acute heart failure gets 2 points (high risk), and a woman with a class II or higher, Killip gets 3 points (very high risk).

All patients were divided into two groups, depending on the fact that they had hemorrhagic complications. Drug therapy

was not different in both groups. All patients were evaluated for possible bleeding risk according to the original "2STEPS" scale.

Results: In assessing the risk of hemorrhagic complications using the "2STEPS" scale, significant differences were obtained (1.7 ± 1.06 in the group of patients with bleeding vs 0.7 ± 0.97 in the group of patients without such, p = 0.0028).

Conclusion: The developed "2STEPS" scale is a simple and effective method for assessing the risk of bleeding in patients with STEMI.

P455

Do females really have a higher mortality rate after Primary PCI in STEMI?

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Background: Cardiovascular disease is the leading cause of death worldwide. The most important cardiac emergency is ST-Segment Elevation Myocardial Infarction due to its high mortality rates, and in which early reperfusion by Primary PCI is critical for patients' outcomes. There is evidence that females have a higher in-hospital mortality after Primary PCI in STEMI.

Objective: To evaluate whether female gender is really an independent risk factor for adverse outcomes after Primary PCI in STEMI or is the higher rate of comorbidities in females a bias.

Methods: We enrolled in this trial all the patients hospitalized in our Cardiac Intensive Care Unit from February 2012 to February 2016 who presented within 12 hours from the beginning of chest pain and who were treated with Primary PCI. We collected patients' baseline characteristics such as gender, age, ethnicity, smoking, familial history, hypertension, Diabetes Mellitus and admission glycemia, White Blood Cells and Myocardial Infarction Type. We then studied in-hospital outcomes, including mortality and adverse events (pulmonary edema, acute heart failure, cardiogenic shock, atrial fibrillation, Atrio-Ventricular Block) for both genders. Chi square and regression analysis were used and p≤0.05 was considered significant.

Results: We followed 471 patients, 71 (15.07%) of which were females. Females had a higher rate of hypertension (66.2% vs. 46.8%, p=0.002), higher glycemia at admission (197.27 ± 102.18 vs. 172.74 ± 87.78, p=0.037) and they were older (65.94 ± 9.24 vs. 61.06 ± 10.83, p=0.001). On the other hand females smoked less (11.3% vs. 40.5%, p < 0.001). There were no significant differences between genders as regards Diabetes Mellitus, ethnicity, familial history, Myocardial Infarction type and White Blood Cells at admission. Females had a higher in-hospital mortality rate (11.3% vs 3%, OR 4.09, CI 95% [2.71-4.99], p=0.003) and a higher complications rate (49.3% vs. 28.3%, p=0.02). Of note, when complications were evaluated separately, only acute heart failure (31.0% vs. 14.3%, p=0.001) had a significant difference between genders. After performing regression analysis, glycemia at admission (OR 0.996, CI 95% [0.991-1.000], p=0.04) and acute heart failure (OR 0.259, CI 95% [0.069-0.975], p=0.046) were the only independent mortality predictors, but not gender itself (OR 1.501, CI 95% [0.506-4.449], p=0.464).

Conclusion: Although females who present with STEMI within 12 hours of chest pain and undergo Primary PCI have a higher in-hospital mortality and acute heart failure rate than males, this is related to confounding comorbidities. The only independent predictors for in-hospital mortality were glycemia at admission and acute heart failure, but not gender itself.

P456

Predictors for development of in-hospital acute heart failure following primary percutaneous coronary intervention in STEMI patients - a retrospective analysis of a single center

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Background: Acute heart failure (AHF) frequently occurs during the acute and subacute phases following ST-elevation myocardial infarction (STEMI). AHF has a strong impact on mortality even in patients who underwent primary percutaneous coronary intervention (pPCI).

Purpose: To estimate the incidence of and predictors for developing in-hospital AHF in patients with STEMI following pPCI.

Methods: We performed a retrospective analysis of consecutive patients with STEMI who presented in less than 12 hours from symptom onset, without signs of AHF and who underwent emergency angiography with pPCI.

Results: In the analysis 233 patients (mean age 62.16±11.97 years) were included and 177 (76%) were men. During follow-up 37 (15.9%) patients developed AHF of which 12 (5.2%), 9 (3.9%) and 16 (6.9%) were in Killip II, III and IV class respectively. Patients who developed AHF were older (65.70±10.61 vs 61.49±12.12 years, p=0.05), more

frequently women (28.6% vs 11.9%, p=0.005), had lower admission hemoglobin (125.3±21.7 vs 143.0±14.8 g/L, p=0.008), elevated inflammatory biomarkers (white blood cells – 12.8±4.1 vs 10.6±3.4 x 10^9/L, p < 0.001 and C-reactive protein – 26.3±53.0 vs 9.7±18.9, p=0.002) and worse renal function (eGFR 64.0±20.0 vs 72.1±20.2 ml/min/1.73m^2, p=0.027). There was no significant difference in the pre-hospital and in-hospital delay to PCI in both groups. Patients who developed AHF had worse left ventricular function (LVEF – 46.3±9.5 vs 52.6±8.0%, p < 0.0001) and larger infarction size based on maximal values of high-sensitive troponin I (53.7±41.8 vs 34.3±34.0 ng/mL, p=0.002, 99th percentile: < 0.04 ng/mL). A negative correlation between LVEF and maximal troponin levels was observed (Pearson coefficient = −0.268, p < 0.0001 and Spearman's rho coefficient = −0.270, p < 0.0001). Significantly more patients in the AHF group had arrhythmias (37.8 vs 18.9%, p=0.016) or bleeding events (21.6 vs 6.6%, p=0.008). The in-hospital mortality rate in the AHF group was 16.2% (6 patients) compared to 0% in the non-AHF group (p < 0.0001). Multivariable logistic regression analysis including sex, inflammation biomarkers, hemoglobin, renal function, maximal troponin levels, LVEF, arrhythmias and bleeding events showed that the only independently associated factors with in-hospital development of AHF were female sex - OR 2.916 (95% CI 1.019-8.341, p=0.046), LV dysfunction (for every 5% decrease in LVEF) - OR 1.418 (95% CI 1.103-1.824, p=0.006) and maximal troponin levels – OR 1.014 (95%CI 1.002-1.027, p=0.027). A receiver operator curve (ROC) analysis for developing in-hospital AHF demonstrated a superior area under the curve (AUC) for LVEF (AUC 0.693, p < 0.0001) compared to maximal troponin levels (AUC 0.642, p=0.006).

Conclusion: Regardless of current guideline-recommended reperfusion therapy with pPCI, the infarction size and LV dysfunction remain independent predictors for in-hospital development of AHF in patients with STEMI.

P457

Acute STEMI in the very elderly patients. Results of the prospective ALKK-Registry

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Background: Due to demographic changes there is an increasing number of very elderly patients admitted with acute STEMI. Guidelines recommend primary PCI in all patients with STEMI. None the less there is limited data on the outcome of the very elderly patients (> 90 years) with acute STEMI. For that reason we evaluated the treatment and clinical outcome in a large number of patients undergoing PCI for acute STEMI in real life.

Methods: We used the data of the ongoing prospective German ALKK-PCI registry and included patients with PCI for STEMI < 24 h duration treated in 51 centers. Baseline variables, procedural features, antithrombotic therapies and in-hospital outcomes were centrally collected and analysed.

Results: Between 2009 and 2013 a total of 20208 patients with PCI for acute STEMI were included. Of these 190 (0.9 %) patients were ≥ 90 years old. Baseline characteristics, procedural features and in-hospital outcomes are given in the table.

Conclusion: In clinical practice very elderly patients with acute STEMI represented a very high-risk subgroup. The acute procedural success rate is reduced compared to younger patients. Accordingly the in-hospital mortality is high. More prospective data to guide decision making in this growing patient population is needed.

Table 1.

	Age ≥ 90 (n=190)	Age < 90 (n=20018)	p-value
Age (years)	91.7	63.8	< 0.01
Women	59.5 %	27.1 %	< 0.01
Renal insufficiency	32.7 %	13.3 %	< 0.01
Diabetes mellitus	24.1 %	21.4 %	0.4
Moderate and severly reduced LV-Function	36.1 %	27.2 %	0.05
Heart failure	25.3 %	13.9 %	< 0.01
Cardiogenic shock	10.0 %	7.2 %	0.14
Left-main coronary artery disease	11.2 %	5.7 %	< 0.01
3-vessle coronary artery disease	40.9 %	30.7 %	< 0.01
TIMI 3 flow after PCI	82.5 %	89.6 %	
Drug-eluting Stent implanted	24.6 %	50.3 %	
Non-fatal Stroke	0.5 %	0.1 %	0.18
Bleeding	2.6 %	2.1 %	
In-hospital mortality	23.7 %	7.3 %	< 0.01

P458

Impact of gender on prognosis in STEMI patients of a regional primary angioplasty network

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Background: women with acute myocardial infarction were classically thought to have worse prognosis than men and now we still have discrepant data about this issue

Purpose: analyse differences between genders in patients with STEMI regarding clinical profile, medical treatment and reperfusion, as well as in-hospital and long-term mortality, in CODI IAM network

Methods: single centre prospective registry of patients with STEMI between February 2011 and August 2015. We analyse differences in clinical profile, treatment, short-term and long-term prognosis.

Results: 1389 patients (22,1% women) were consecutively included. 2-year of mean following period. Women are older (67,6 vs 60,9 year-old, $p < 0.001$) and have more prevalence of hypertension (65.5% vs 53.7%, $p < 0.001$) and diabetes (29,6% vs 23,3%, p=0,002); they receive less reperfusion therapy (87,9% vs 91,5%, p=0,059), later (total ischaemic time 322 vs 273 min, p=0,003), and have worse Killip (Killip $\geq$II 27,7% vs 17,5%, $p < 0.001$). They also receive less P2Y12 inhibitors (82,7% vs 90,8%), beta-blockers (78,8% vs 86,3%), statins (85,7% vs 92,4%, $p < 0,001$) and ACEI (53,7% vs 61,5%, p=0,012). Women have worse in-hospital mortality (6,5% vs 3,6%, p=0,026) and 2-year mortality (14,7% vs 9,2%, p=0,017) than men. When adjusting by age, mortality differences disappear (at 2 years, HR:0,98; CI 95%: 0,65-1,48, p=0,92).

Conclusion: women admitted for STEMI are older and have more risk factors. They receive less and later reperfusion therapy as well as less medical treatments. The greater in-hospital and long-term mortality are influenced by age.

P459

STEMI prognosis in elderly patients: do reperfusion networks benefit them?

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Background: Reperfusion therapy contributes to the reduction of STEMI mortality, but long-term benefit in elderly patients is controverted.

Purpose: To analyze treatments, reperfusion therapy, inhospital outcome and long-term mortality of elderly STEMI patients in comparison to younger ones, within the Codi IAM context.

Method: We registered prospectively and consecutively all STEMI patients admitted to the Coronary Unit of our hospital from January 2010 to December 2015. We classified them into elderly or under 80-year-old, depending of their age. We analized baseline characteristics, inhospital outcome and long-term mortality.

Results: 1992 STEMI patients were admitted (<80-year-old: n=1754, elderly: n=238), with a 2-year following. Elderly patients had more comorbidities (HTA 75.2% vs. 51.5%, diabetes 34% vs. 23.3%, stroke 3.8% vs. 1.0%; p<0.05), more serious clinical presentation (Killip$\geq$II 33.5% vs. 17.6%, p<0.005) and later reperfusion (211 vs. 189 min, p=0.048). Paradoxically, we performed less procedures to the elderly (PPCI 85.7% vs. 91.9%, mechanical ventilation 2.5% vs. 6.2%, p<0.05) as well as pharmacological treatments (ASA 95.1% vs. 98.3%; betablockers 62.5% vs. 83%; ACE inhibitors / ARB 49.5% vs. 57.4%; p<0.005). Elderly patients had higher inhospital mortality (16.8% vs. 4.1%, p<0.001) and also higher 2-year mortality (14.1% vs. 3.6%, p<0.001; HR 4.26; CI 95%: 2.71-6.67) Multivariate analysis confirmed higher 2-year mortality in elderly STEMI patients (HR 3.44; 95% CI: 1.96-6.04, p<0.001).

Conclusions: Elderly STEMI patients have higher comorbidity at admission, they are reperfused later and they receive less therapies. Besides, inhospital and 2-year mortality in elderly STEMI patients is greater.

P460

Mid-term prognosis after an ST-segment elevation myocardial infarction (STEMI) according to its clinical presentation in an infarction network organization

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Background: The chest pain is a crucial symptom for the diagnosis of STEMI; however, not all the patients experience this at the time of presentation.

Purpose: The aim of our study was to analyze the prevalence of each of the symptoms which leads the patients to seek for health care and its relationship to the mid-term prognosis.

Methods: From February 2015 to September 2016, 342 consecutive patients were included, having the diagnosis of STEMI, time from symptoms onset less than 12 hours and

who underwent primary angioplasty. There were divided into two groups according to the symptoms experienced at presentation, group 1: chest pain; group 2: other symptoms (syncope or dyspnea. Mortality was analyzed at follow-up.

Results: From all of the patients, 311 (89, 9) had chest pain; 29 (8,5%) had a syncope and 2 (0,6%) patients had dyspnea. No differences were found with regard to the baseline characteristics (table 1). There were 46% anterior myocardial infarctions in group 1 vs 33,3% in group 2 (P=0,16). There were differences from the time since symptoms onset to the introduction to the guidewire in the coronary artery in both groups: 240 min(IQR25/75 140-360 min) in group 1 vs 145 min (IQR 25/75 120-210) in group 2, and door-to-ballon time 50 minutes (IQR 25/75 35-76) vs 45 min (IQR 25/75 30,5-62 minutes) respectively (p < 0.001). With respect to the TIMI pre-revascularization,

numerically, there were more cases with TIMI 0 flow in group 2, being this difference not statistically significant (61, 5% vs 47, 95%, p=0, 2). There were more patients having normal coronary arteries in group 1, not being this difference statistically significant (7,4% vs 3,2%, p=0,3). During a median follow-up of 152 days (IQR 25/75 83-273,5) 44 patients were deceased. The mortality was higher in group 2 (10,1% vs 41,9%) log Rank test p<0,001, particularly at early stages, but such mortality was stabilized through the time becoming similar to that in group 1.

Conclusions: STEMI patients who look for health care because of symptoms different from chest pain, have similar characteristics to those who do experience chest pain, they arrive at the hospital sooner, nonetheless, they have a worse prognosis, being the mortality higher in this group, particularly at early stages.

Table 1. Baseline characteristics.

	Age	Masculine sex	Hypertension	Diabetes	Smoking habit	Prior MI	Use of STEMI network
Group 1	66,4(14)	71%	50,2%	19%	39,2%	8,2%	98,4%
Group 2	68,6(12)	81%	58,1%	19,4%	35,5%	3,2%	100%
p	0,33	0,28	0,7	0,003	0,28	0,9	0,58

Picture 1. Survival curves.

ischemic time (mean 298 ± 11 min vs 414 ± 19 min; p < 0.01). At cardiac catheterization, syntax score was significantly higher in the older patients (mean: 21 vs 9; p<0.01)

In-hospital MACE's occurred in 28 patients (8%) of the younger group and in 57 (21%) of Over65 patients (logrank p<0.01).

In multivariate analysis by cox regression only age over 65yo (HR1.9 95%CI 1.1-3.2; p=0.018), syntax score (HR 1.02; 95%CI 1.004-1.04; p=0.018) and killip class at presentation (HR 8.6; 95%CI 5.2-14.7; p<0.01) were independently associated with in-hospital MACE's.

Conclusions: It's interesting to see that even in the "not so old" STEMI patients (over 65 yo) there's already evidence for increased risk for adverse outcomes. Age, Killip class and syntax score were the only independent predictors for in-hospital MACE's. Even though some of this variables are non-modifiable, there's still room for improvement particularly in raising public awareness for myocardial infarction symptoms and in reducing door-to-balloon time.

P462

In-hospital complications and mortality in ST-elevation myocardial infarction (STEMI) patients declined from 2008 to 2014

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Background: Primary percutaneous coronary intervention (PPCI) is the leading reperfusion strategy in our institution for more than a decade in patients with ST-elevation myocardial infarction on ECG (STEMI). Novel antithrombotic drugs within the last few years promised to improve prognosis of STEMI patients after PPCI even further.

Purpose: To compare clinical outcomes between STEMI patients, admitted in 2008 and 2014.

Methods: We retrospectively included 291 STEMI patients, admitted in 2008 and 274 STEMI patients, admitted in 2014. We compared their clinical data, the use of PPCI and novel antithrombotic drugs, in-hospital complications and in-hospital, 30-day and 6-month mortality. In-hospital complications were acute heart failure (classes II-IV by Killip-Kimbal classification), arrhythmias, bleedings, reinfarctions, in-stent thromboses and acute kidney injury.

Results: Between STEMI patients, admitted in 2008 and 2014, we observed nonsignificant differences in mean age (63.9±13.4 years vs 64.6±12.8 years), in the incidence of smoking (31.9% vs 28.1%) and of prior diabetes (21.6% vs 19.7%), but significantly increased incidence of arterial hypertension (49.6% vs 58.8%, p < 0.05) and of prior myocardial infarction (1.4% vs 12.4%, p < 0.05). The use

of PPCI increased only nonsignificantly from 2008 to 2014 (90% vs 90.9%), but the use of PPCI increased significantly within the first 3 hours of STEMI (23.4% vs 33.6%, p = 0.01), but nonsignificantly within the first 6 hours (50.8% vs 54%) and 12 hours (63.9% vs 66%) of chest pain.

From 2008 to 2014 the insertion of stents increased significantly (76.9% vs 84.3%, p < 0.05), the use of clopidogrel significantly decreased (91.4% vs 12.8%, p < 0.05), but the use of prasugrel (0.7% vs 29.9%, p < 0.001) and of ticagrelor (0 vs 51.5%, p < 0.001) significantly increased. From 2008 to 2014 the use of heparins (89% vs 75.2%, p < 0.001) and glycoprotein receptor inhibitors IIb/IIIa (90% vs 33.6%, p < 0.001) decreased significantly, the use of bivalirudin significantly increased (0% vs 22.3%, p < 0.001).

From 2008 to 2014 we observed a significant decrease of in-hospital heart failure (32.6% vs 18.9%, p < 0.05), bleedings (10.9% vs 4.3%, p < 0.001), acute kidney injury (9,6% vs 4,4%, p = 0,025), a nonsignificant decrease in infection (21.3% vs 17.5%), reinfarctions (2.4% vs 0.3%, p > 0.05) and in-stent thombosis (2% vs 0.6%, p > 0.05) and nonsignificant increase of arrhythmias (34% vs 38.3) in STEMI patients. Mortality data decreased nonsignificantly – in-hospital mortality from 9.6% to 6.6%, 30-day mortality from 11.7% to 9.1% and 6-month mortality from 15.1% to 9.5%.

Conclusions: From 2008 to 2014 we observed a significant increase in the use of novel antithrombotic drugs in STEMI patients, treated by PPCI and in paralell a significant decrease of in-hospital complications such as acute heart failure, bleedings and acute kidney injury, but nonsignificant decrease in mortality data.

P463

Early predictors of in-hospital mortality in high-risk ST-elevation myocardial infarction (STEMI) patients

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Background: ST-elevation myocardial infarction (STEMI) population is a heterogenous group of patients with a striking difference in the risk profile, in particular in high-volume centers. High-risk STEMI patients should benefit most from primary percutaneous coronary intervention (PPCI). However, their mortality is increased in spite of PPCI. High-risk in STEMI patients is attributed to older age, comorbidities, pulmonary edema or cadiogenic shock on admission, resuscitation before admission, delays in PPCI, complex coronary anatomy and interventions during PPCI,.

Purpose: To evaluate early predictors of in-hospital mortality of high-risk STEMI patients.

Methods: We retrospectively included 478 high-risk STEMI patients (66,9% men, mean age 63.9 ± 11.8 years), admitted in 2015 and 2016 to the medical ICU. PPCI was performed before or after admission. Age, gender, comorbidities, successful resuscitation before admission, admission pulmonary edema and cardiogenic shock, time to PPCI, the rate of PPCI, the use of P2Y12 receptor inhibitors, mechanical ventilation (MV) and ejection fraction (EF) measurements early after admission were registered and compared between in-hospital nonsurvivors and survivors.

Results: In-hospital mortality of our high-risk STEMI patients was 14% (67 patients). In-hospital nonsurvivors in comparison to survivors were significantly older (68.4±12.8 vs 63.2±11.5, p=0.001) with significantly increased admission Troponin I (34.9±57.7μg/l vs 12.1±26.2μg/l, p < 0.001), blood glucose (14.5±6 mmol/l vs 8.5±3.8 mmol/l, p < 0.001), significantly more likely with anterior STEMI (53.7 vs 46.2%, p=0.012), with presumably new left bundle branch block (LBBB) (19.4% vs 5.1%, p < 0.001), admission pulmonary edema (25.4% v 4.65, p < 0.001) and cardiogenic shock (40.3% vs 4% p < .001), more likely successfully resuscitated before admission (47.8% vs 10.9%, p < 0.001), mechanically ventilated (76.1% vs 11.7%, p < 0.001), but with significantly less likely performed PPCI (52.2% s 77.6%, p=0.001) and with significantly decreased EF (21.5±9.7, p < 0.001) early after admission. Nonsurvivors in comparison to survivors were significantly less likely treated by prasugrel (7.5% vs 25.5%, p=0.003) and significantly more likely by clopidogrel (23.9% vs 95, p < 0.001).

Logistic regression demonstrated that most significnat early independent predictors of in-hospital mortality were older age (OR 1.130, 95%CI 1.047 to 1.221, p=0.002), admission troponin 1 (OR 1.035, 95%CI 1.006 to 1.065, p=0.019), admission blood glucose (OR 1.43, 95%CI 1.015 to 1.288, p =0.028), MV (OR OR 0.97, 95% CI 0.017 to 0.559, p=0.009) and EF (OR 0.893, 95%CI 0.824 to 0.968, p=0.006).

Conclusion: In-hospital mortality of high-risk STEMI patients was significantly and independently predicted by older age, increased levels of admission Troponin I and blood glucose, by the need of MV and by systolic dysfunction as evaluated early by EF.

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Prognostic implications of influenza virus infection in a cardiac intensive care unit. Impact of a screening program

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Background: The real impact of influenza in intensive cardiac care units is not well known and more data are needed to determine the ideal approach to diagnosis.

Purpose: Our goal is to determine the incidence, presentation and prognosis of influenza in an intensive cardiac care unit and to analyse the impact of an active surveillance program in the diagnosis.

Methods: Prospective registry during the flu season. In the first phase, no screening was performed. Systematic detection was performed in a second phase by determination of influenza A and B viral PCR in nasopharyngeal exudate in all patients admitted.

Results: A total of 226 patients were analysed. Overall, we identified 17 patients with influenza. Influenza patients were more likely to have a non-ischemic cause as a diagnosis of admission (14 patients [82.4%] vs. 48 patients [40.3%], p=0.002). Clinical manifestations are shown in the table. Influenza infection was an independent predictor of mortality (OR 12.0 [confidence interval 95%: 1.9–13.6], p < 0.001). The incidence of influenza was 6.6% (6 patients) when no active screening was performed and 7.9% (11 patients) when systematic detection was performed (p=0.005). The time to diagnosis was shorter in the systematic screening phase (0.92±1.6 days vs. 5.2±3.8 days, p=0.01). Vaccination rate was low (54 patients [41.2%]).

Conclusions: Influenza affects approximately 8% of patients admitted to an intensive cardiac care unit during the flu season, with a high mortality rate. An active surveillance program improves the early detection and could improve its management.

Table 1. Clinical manifestations and complication.

Variables	Influenza infection (N=17)	No influenza infection (N=114)	p
Fever	8 (47.1)	3 (2.6)	<0.001
Cough	7 (41.2)	25 (21.9)	0.101
Runny nose	5 (29.4)	16 (14.0)	0.149
Headache	4 (23.5)	7 (6.1)	0.037
Myalgias	2 (11.8)	9 (7.9)	0.608
Dyspnea	8 (47.1)	31 (27.2)	0.106
Respiratory failure	7 (41.2)	8 (7.0)	0.001

Table 1. (Continued)

Variables	Influenza infection (N=17)	No influenza infection (N=114)	p
Mechanical ventilation	6 (35.3)	10 (8.8)	0.007
Inotropes/vasopressors	8 (47.1)	16 (14.0)	0.003
Renal replacement therapy	2 (11.8)	1 (0.9)	0.028
Death during hospitalization	3 (17.7)	2 (1.8)	0.011
Intensive cardiac care unit length of stay (days) mean ± sd	16.9 ± 5.3	4.2 ± 0.6	0.001
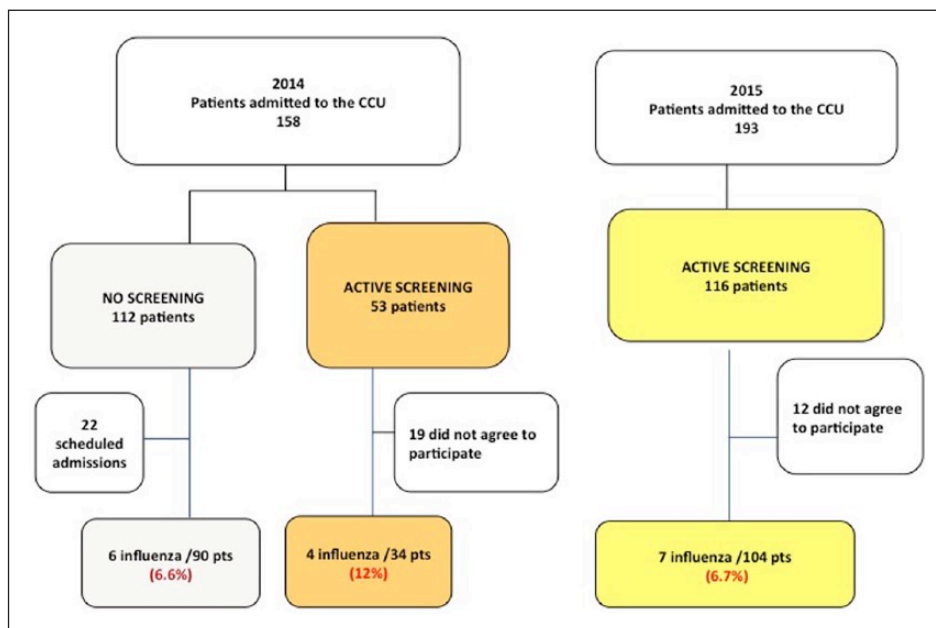
Patients recruitment

P465

Magnitude and prognostic utility of ventricular dysfunction in post-cardiac arrest syndrome

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Background: Ventricular dysfunction (VD) is directly related to post-cardiac arrest syndrome. Little is known about its physiopathology. We ought to quantify the magnitude of VD and its reversibility, the time frame of such reversibility and the clinical factors that may be related.

Methods: Retrospective cohort study, which included patients suffering a out-of-hospital cardiac arrest (OHCA), in whom a echocardiography in the acute phase and another in stable phase were performed.

The ejection fraction (EF above 50% is classified as preserved; EF between 45-50% as mild depressed; EF between 40-45% as moderately depressed; EF between 35-40% as moderately-severely depressed; EF between 30-35% as severely depressed; finally, EF less than 30% is classified as very severely depressed.

EF was analyzed at admission, to generate a reversibility or non-reversibility group. Reversibility in EF was defined as the difference of 1 or more categories according to the classification previously described.

Results: Data were collected from 207 patients between February / 2013 and July / 2017. Finally, 66 were included, because of the rest had no echocardiography recorded in the initial phase, in the stable phase or none of these. A 25.75% of the patients had reversibility in EF, while 74.25% had no change.

The mean EF was between 40-50% in the non-reversibility group, whereas the reversibility group presented an EF between 30-40% initial and> 50% at discharge (according to the classification described above). Comparing the EF on admission versus the discharge, 0% vs 64.70% presented preserved EF, 0% vs 11.76% with 45-50% EF; 23.52% vs 11.76% with 40-45% EF, 11.76% vs 5.88% with 35-39%, 41.17% vs 0% with 30-34% and 23-53% vs 0% presented <30% EF. In fact, only 5.8% of the patients with reversibility finished FE <40% compared to 27.24% of the

other group (OR 0.38, CI 0.17-0.59). No patient in the reversibility group finished FE <35%, compared to 16.16% of the non-reversibility group.

Only 5.8% of the patients with reversibility had pH <6.99, compared to 12.2% in the non-reversibility group (OR 0.47, CI 0.25-0.79). In our sample, 78.78% were men, with a mean age of the sample of 60-81 years. A 60.6% of the patients presented ventricular fibrillation. There were no significant differences in LUCAS use, presence of shock at admission, use of therapeutic hypothermia, ROSC, AMI as

the cause of the event, death or CPC at discharge; 84.84% presented CPC-1 at discharge.

Conclusions: Most patients with DV associated with OHCA did not present reversibility of their EF. The initial pH seems to be a determining factor in the improvement of EF. Patients who presented reversibility had higher preserved EF and lower severe VD at discharge. Further studies are needed to assess the variables related with this phenomenon and its implication in the survival at long term.
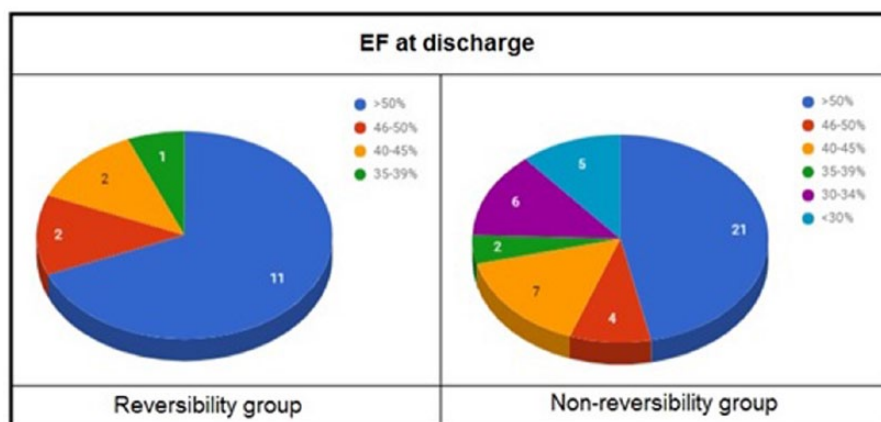
P466

Long-term outcome of patients with very long stents for treatment of diffuse coronary disease in current practice

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Introduction: Stent length has traditionally been considered a predictor of adverse events following percutaneous coronary intervention (PCI). This has motivated the tendency to cover severe lesions with the shortest stent length. However, the design of new large platforms may have reduced the importance of their length in predicting events.

Purpose: To evaluate the long-term results of the implantation of very long stents after PCI.

Methods: We included 296 patients treated with PCI and very long stent implantation (≥40 mm) in 276 consecutive patients [80.1% men, 67 years (29-92)]. We evaluated the occurrence of the major cardiovascular adverse events (MACE) [cardiac death, non-fatal myocardial infarction (MI), stent thrombosis (TS), need for new target lesion revascularization (TLR)] after a mean follow-up of 24 ± 5 months.

Results: 39.3% of patients presented as stable ischemic heart disease, 41.1% as NSTEMI and 19.6% as STEMI.

37% were diabetics. 15.6% of the very long stents were bare metal (BMS) and 84.4% drug-eluting stents (DES): everolimus 61.4%, sirolimus 22.8%. The treated vessel was: left main: 0.8%, left anterior descending: 41.8%, circumflex: 10.7%, right coronary artery: 46% and saphenous vein graft 0.8%. 26.9% of the lesions were bifurcations and 18.1% were chronic occlusions. The length of the stents was 40 mm in 104 cases, 48 mm in 192 patients and 60 mm in 4 patients. Stent diameter was ≤2,5 mm in 14.1% of the stents. Angiographic success was 99.1%. MACE rate at the end of follow-up was 4.8%: cardiac death 3.4% (90% during initial admission due to Killip IV MI), MI 1%, TLR 1% and ST 0.3%. This rate of events was similar to that of a cohort of similar stent characteristics <40 mm.

Conclusions: In the current clinical practice, new designs of long stents allow not only to treat increasingly complex and diffuse lesions, but also to reduce the number of stents by procedure, which results in substantial economic savings. With new designs and materials, stent length is not as important a predictor of events as in the past.

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The possibility of hemorrhagic risk prediction in the preoperative period of open myocardial revascularization

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Purpose: In the preoperative period of coronary artery bypass grafting (CABG) we aimed to determine a diagnostic value of platelet functional activity assessment using VerifyNow ARU® system in identifying the patients of high hemorrhagic risk while on prolonged aspirin therapy.

Material and methods: The study included 52 patients who were preparing for planned primary CABG. In the perioperative period all the patients were receiving aspirin in a dose of 75-100 mg daily. The function of platelets was estimated 1-2 days prior to surgical intervention using VerifyNow ARU® system and light transmission aggregometry. A transfusion of blood components in the early postoperative period was considered as the exclusion criterion.

Results: The mean value of VerifyNow test for the whole sampled patients (52 subjects) was 492.6±79.2. The studied patients were divided into 3 terciles: the first tercile included the patients with the results of VFN 450ARU and lower – 17 subjects (32.7%); the second tercile – the patients with VFN results higher than 450ARU and lower than 515ARU – 20 subjects (38.5%); the third tercile – the patients with VFN results higher than 515ARU – 15 subjects (28.8%). Thus, we formed the groups of patients who have the highest "sensitivity" to aspirin and the highest hemorrhagic risk (the lower tercile) correspondingly, as well as the group of patients with the highest risk of ischemic complications development in the perioperative period (the second and the third terciles).

The compared groups didn't differ in the indicators of intra-operative blood loss (509.1±30.2 ml in the first group vs 515.8±50.1 ml in the second group, p=0.30) and postoperative blood loss (the amount of drainage during 6 hours was 115.9±42.2 ml in the first group vs 111.8±38.5 ml in the second group, p=0.87; the amount of drainage during 12 hours was 188.6±83.9 ml in the first group vs 187.4±93.0 ml respectively, p=0.89; the amount of drainage during 24 hours – 218.2±110.2 ml vs 253.6±142.6 ml respectively, p=0.70). Subsequently, the significant relationships were identified in the calculation of correlations between the indicators of light transmission aggregometry, VerifyNow test (p=0.004) and the blood loss within the first six hours after surgery. Among a number of light transmission aggregometry indicators a significant correlation between the volume of drainage amount within the first 6 hours was revealed only with adrenaline-induced platelet aggregation (p=0.003).

Conclusions: The results of the performed analysis demonstrate that the assessment of platelet functional activity using VerifyNow system can be used as a laboratory criterion for prognosis of the volume of postoperative blood loss in CABG surgeries while prolonged aspirin therapy.

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Impact of inflammatory status at admission on early outcomes in patients with STEMI - a retrospective analysis from a single center

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Introduction: Inflammation is a well-established risk factor for the development of coronary artery disease (CAD) and acute coronary syndrome (ACS). However, less is known about its influence on the early outcomes in patients with ST-elevation myocardial infarction (STEMI) in the era of reperfusion therapy with primary percutaneous coronary intervention (pPCI).

Purpose: To establish the impact of baseline inflammatory status on the early in-hospital outcomes in patients with STEMI following pPCI.

Methods: We performed a retrospective analysis of consecutive patients with STEMI who presented in less than 12 hours from symptom onset and who underwent emergency angiography with pPCI.

Results: In the analysis 317 patients (mean age 63.79±11.9 years) were included and 91 (28.7%) were women. Patients were stratified according to baseline levels of high-sensitive C-reactive protein (hs-CRP) and white blood cells (WBC) and were divided into four groups using the 75th percentile of hs-CRP (12.7 ng/mL) and median of WBC (10.65×10^9/L): group 1 (hs-CRP < 12.7 ng/mL and WBC < 10.65×10^9/L), group 2 (hs-CRP < 12.7 ng/mL and WBC > 10.65×10^9/L), group 3 (hs-CRP > 12.7 ng/mL and WBC < 10.65×10^9/L) and group 4 (hs-CRP > 12.7 ng/mL and WBC > 10.65×10^9/L). Mean age in each group was 65.67±11.67, 61.50±12.03, 66.63±13.14 and 62.45±10.05 years respectively (between groups p=0.038). There was no difference in gender distribution and major risk factors for CAD, as well as incidence of arrhythmias, conduction disorders and bleeding events between the groups. The incidence of acute heart failure (23.3% vs 32.4% vs 50.0% vs 61.9% respectively, p < 0.0001) and in-hospital death (2.9% vs 4.8% vs 8.3% vs 19.0% respectively, p=0.004) were higher in the group with high-grade inflammation (group 4). In logistic regression analysis after adjusting for age, gender and left ventricular ejection fraction (LVEF) patients with the highest levels of hs-CRP were associated with more than 3-fold increased risk for acute heart failure despite WBC levels compared to patients with low-grade inflammation (group 1) – group 3 OR 3.521 (95% CI: 1.251-9.911, p=0.017) and group 4 OR 4.887 (95% CI: 2.010-11.880, p < 0.0001). Kaplan-Meier analysis showed significant difference of in-hospital death rates between the four groups (log rank p=0.033).

After adjusting for gender, age, smoking, patient delay and system delay Cox proportional hazards analysis showed that patients with high-grade inflammation had more than 5-fold increased risk of in-hospital death (HR 5.222, 95%CI: 1.242-21.947, p=0.024) compared to patients with low-grade inflammation (group 1).

Conclusion: Our results showed that in patients with STEMI treated with pPCI the degree of inflammation at admission was associated with early in-hospital outcomes as patients with high-grade inflammation had worse outcomes.

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Prognostic markers of myocardial remodeling in patients with ST segment elevation myocardial infarction

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Heart failure (HF) – one of the frequent important complications of myocardial infarction (MI), significantly impairing the quality of patients life, affect for the development of complications and outcomes. The possibility of early detection of myocardial remodeling and predicting the course of HF is important for timely and adequate treatment and improvement of the disease course.

The aim of study was to assess the different ventricular remodeling parameters dynamics in patients with ST segment elevation MI (STEMI) in an acute period to predict the formation of pathological postinfarction remodeling and further clinical prognosis.

Material and methods: 24 patients (mean age 61.4 ± 5.2 years, 75% men) with acute stage of STEMI and Class I acute CH according to the Killip classification (left ventricular ejection fraction (LVEF) - $54.2 \pm 3,4\%$) were consistently included in the study. In all aforementioned patients laboratory markers of myocardial dysfunction such as matrix metalloproteinase 1, 3 and 9 (MMP-1, MMP-3, MMP-9); tissue inhibitor of metalloproteinases-1 (TIMMP-1); galectin-3 (Gal-3); N-terminal segment of natriuretic propeptide (NT-proBNP) on the 1st and 10th day by quantitative immunoassay were studied. Transthoracic echocardiography (EchoCG) was performed according to the standard method with an assessment of left ventricular (LV) end-systolic (LVESV) and LV end-diastolic volume (LVEDV), LV end-systolic (LVECD) and end-diastolic dimension (LVEDD), LV , stroke volume (SV), LV ejection fraction (LVEF).

Results: In patients with STEMI during the acute period, were found a significant increase in the concentration of MMP-3 and MMP-9 (respectively, 1st and 10th day: MMP-3: 276.38 ± 16.04; 312.42 ± 22.06 pg / ml (p < 0.05);

MMP-9: 7.93 ± 0.68 and 11.24 ± 0.72 pg/ml (p < 0.05)). At the same time, the levels of TIMMP-1 and NT-proBNP significantly decreased (respectively, on the 1st and 10th day: TIMMP-1: 992.74 ± 28.25 and 874.31 ± 29.43 ng/ml (p < 0.05), NT-proBNP: 251.24 ± 21.08 and 196.27 ± 22.24 fmol/ml (p < 0.05)). There were no significant changes in the Gal-3 and MMP-1 levels during the follow-up period. There was a trend towards a decrease in Gal-3 and MMP-1 (respectively, 1st and 10th days: Gal-3: 11.08 ± 2.16 and 10.24 ± 1.62 ng/ml (p> 0.05), MMP-1: 3.98 ± 0.56 and 2.74 ± 0.49 pg/ml (p>0.05)). In the study of the relationship between EchoCG parameters and myocardial dysfunction markers, a positive correlation was established between LVESV, LVEDV and LVECD with Gal-3, MMP-3 and NT-proBNP levels (respectively, 1st and 10th day: Gal-3: r=0, 37 and r=0.42, MMP-3: r=0.45 and r=0.54, NT-proBNP-r=0.44 and r=0.59).

Conclusions: Significant increase of MMP-3 and MMP-9 values and significant decrease of TIMMP-1 and NT-proBNP, with the tendency to decrease Gal-3 and MMP-1 values were established in the patient with STEMI in acute period. Was established the correlation dependence between the markers of myocardial dysfunction and echocardiography.

Organisation of care

P470

Trends in pre-hospital delay in patients with acute ST elevation myocardial infarction in the primary coronary intervention era

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Background: Delay in seeking medical care following symptom onset in patients with acute ST elevation myocardial infarction (STEMI) is related to increased morbidity and mortality. Considerable effort is expended in order to decrease door-to-balloon time, but actual trends of pre-hospital delays in patients hospitalized with STEMI have not been well characterized. We evaluated trends in the length of time that had elapsed from symptom onset to hospital presentation among STEMI patients admitted to our hospital.

Methods: The study sample included 2281 consecutive patients hospitalized for acute STEMI who underwent primary percutaneous intervention between January 2008 and June 2016. Information on the delay in time from symptom onset to presentation at hospital was extracted from the patients' medical records.

Results: Participants' mean age was 61 ± 13 years, and 80% were males. Overall, 57 % of patients with STEMI presented within 2 hours of acute symptom onset, 17% between 2 and 6 hours, and 26% within 6 or more hours after the onset of symptoms.Throughout the 9 years of the study a significant increase was demonstrated in the proportion of patients with pre-hospital delay<2 hours, being maximal between the years 2011 and 2013 (64% vs.47% , p=0.001). A similar opposite trend was demonstrated for decrease in patients having pre-hospital delay>6 hours, being maximal between 2008 and 2015 (32% vs. 23%, p=0.001). A multivariate logistic regression model revealed that advanced age, diabetes, female gender and 1st STEMI were independently associated with pre-hospital delay >2 hours. **Conclusion:** Pre-hospital delay time of STEMI patients demonstrated variation over time. Greater efforts are needed to educate at-risk populations about seeking early medical assistance.
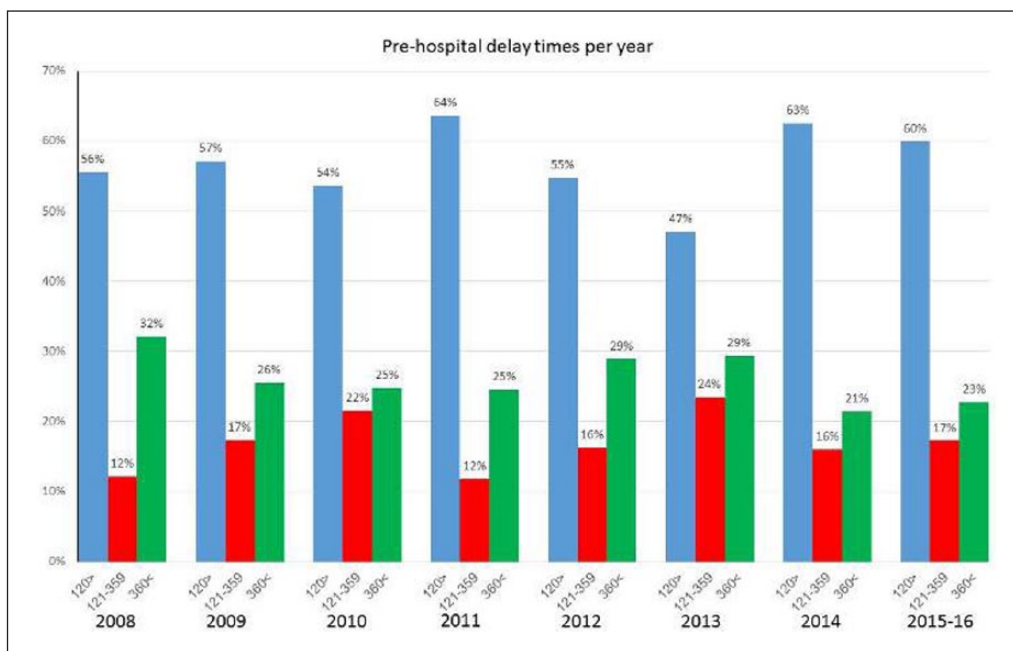
Pre-hospital delay times per year

P471

Management of STEMI, a clinical audit

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Background: According to the WHO, coronary heart disease is the leading cause of death for both men and women. Gaza is no exception with 44.5% of deaths caused by heart disease in 2015 (MOH reference).

Methods: In this clinical audit, medical records of patients who were diagnosed with ST Elevation Myocardial Infarction (STEMI) and archived as myocardial infarction in Al-Shifa Medical Complex during the year of 2015 were reviewed and evaluated according to hospital's Coronary Care Unit protocol.

Results: The study included 64 patients of which 79.9% were males (n=51). The mean time patients spent in the Emergency Room (ER) was 82 minutes, with a total of 91.5% spent more than 30 minutes. The time from First Medical Contact (FMC) to thrombolysis therapy was less than 30 min in only 10%, while FMC to Primary PCI was less than 90 min in 33.3%. On checking the prescribed drugs it was found that the overall adherence to the guideline essential drugs was 28% in the ER, 81% in CCU and 74% on discharge. In the ER, the most frequently given drug to manage chest pain was morphine with 56% which disagrees with the guideline as it states that Nitroglycerine is the primary medication for chest pain management. However, Nitroglycerine was given only to 30% of patients. On admission, 98% of patients have had an ECG, revealing ST elevation in 95%. A majority of the patients have had both Complete Blood Count (CBC) and Kidney Function Tests (KFTs) presenting 84%. Nobody had a lipid profile. In 86% of patients biomarkers were measured; the most ordered biomarker was creatinine kinase (CK) with 84% and the least ordered was Troponin with only 6%. As reperfusion method, only 10% of patients had a primary PCI, 20% had medical treatment only, 65%received thrombolysis therapy

(alone 31%, followed by PCI 28%, followed by referral 6%) and 3% of patients were referred immediately to a tertiary medical center.

Discussion: Sustained quality improvement in healthcare services can only be realized by systematic clinical audit. Thus this audit comes, as the first test of the use of local guidelines. As seen from the results above, doctors demonstrated poor adherence to local guidelines in some areas. Parts of this non-adherence can be explained by lots of causes such as bad economic situation, lack of experienced team to do a primaryintervention, shortage of materials (Stents, wires, contrast), lack of perceived cost effectiveness (such as for lipid profiles), poor documentation and non-availability (such as Troponin I testing). A notable defect was the delay in admitting the patients, which can be alleviated by an effective triage system or direct admission of patients to the CCU through emergency services.

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Assessment of hospital performance using quality of care indicators in patients with acute ST elevation myocardial infarction (AQcare-STEMI)

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Background: Ischemic Heart Disease (IHD) is currently the leading cause of death in industrialized countries, and ST-elevation Myocardial Infarction (STEMI) counts for 25-40% of total Myocardial Infarction (MI) presentations. Despite extensive scientific discoveries & clinical research which has created great potential for treating such patients, and lead marked decrease in mortality, global researchers have found a wide practice gap between optimal standard of care and the actual care that the patients receive in hospitals when experiencing acute MI. The main objective of the present study was to estimate the uptake to quality indicators that reflect the current evidence-based recommendations and guidelines in management of STEMI patients.

Methods: This descriptive study was carried out using data extracted from inpatient medical records of all the patients aged between 18-90 years admitted with diagnosis of acute STEMI at Critical Care Center, between April 1st 2015 to September 31st 2016. For the purpose of the analysis, and estimation of performance for each area of care, a set of highly predictive recommended quality indicators were selected and results depicted, in frequency or median, as appropriate. To analyse associations, chi-square tests & Student's t-tests were used, as appropriate.

Results: From 222 patients with acute STEMI (mean age 56.3±11.78 years, 79.7% male), 13.51% presented to hospital after 12 hours of symptoms onset. Primary

percutaneous coronary interventions (PCI) were applied on 81.1% cases (N=180) with median "door to balloon" time of 126.5 (mean 144.01±107.47, N = 120) minutes. In the first 24 hours, Aspirin, β-Blockers & Angiotensin Converting Enzyme Inhibitors (ACE-I) or AR-Blockers was administered in 100%, 38.92% & 63.01% of the total eligible cases respectively. Similarly, at discharge Aspirin, β-Blockers, ACE-I/ARBs, & statins were prescribed respectively in 100%, 80.71%, 86.01% & 99.01% of eligible patients. Poor compliance to recommendations were seen in prescription of β-Blockers & ACE-I/ARBs, both at admission & discharge especially in patients admitted with acute inferior wall MI. In this study, a relation between length of stay with gender, reperfusion with primary PCI, & in-hospital complications, was observed.

Conclusion: The results show that there is still substantial work that lies ahead on the way to improve the uptake to evidence-based processes of care. We found some disparities between guidelines and clinical practice for Acute STEMI patients and a significant association between process indicators and in-hospital outcomes. Our findings are potentially helpful for assessing and improving the quality of care for acute STEMI patients in Egypt.

P473

Early discharge from cardiac intensive care unit after STEMI

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Introduction: Advances in ST-Elevation Myocardial Infarction (STEMI) management have led to progressive reductions in hospital length of stay. The 2017 STEMI-ESC-Guidelines suggest early hospital discharge within 48-72h in low-risk patients, based on small trials and observational studies. There is no clear definition what patients can be early discharged safely.

Methods: Our objective was to analyze clinical characteristics and mortality of the patients discharged directly from our Cardiac Intensive Care Unit (CICU) after STEMI. 78 patients were retrospectively included between January-2014 and April-2017 and 6 and 12 months follow-up were analyzed.

Results: The mean hospital (CICU) length of stay was 3,55±1.22 days. The baseline characteristics are shown in Table 1. Within 6-months follow-up no death occurred, but in 1-year follow-up two dead occurred as neoplasic-consequence. Six patients were readmitted within 6 months, one for NSTEMI, one for noncardiac chest pain and 4 for

noncardiac causes. Five patients were readmitted in the first year, 2 for NSTEMI, 1 for noncardiac chest pain and 2 for noncardiac causes. 74 patients (94%) were in functional class I.

Conclusion: Our results suggests that direct discharge from the CICU within 2-4 days after PCI is safe, feasible and without an increased cardiovascular mortality or readmissions.

Table 1. Characteristics of Patients with Stemi.

Age < 65 years	54 (69%)
Male	55 (70%)
Smoke	51 (65%)
Hypertension	44 (56%)
Dyslipidaemia	45 (57%)
Diabetes	22 (28%)
Chronic Kidney Disease	19 (24%)
Previous Coronary Disease	9 (11%)
Killip I	76 (97%)
Infarct-related artery	
Anterior Descending Artery	26 (33%)
CircumflexArtery	9 (11%)
Right Coronary Artery	43 (55%)
LVEF	
> 55%	67 (86%)
35-55%	9 (11.5%)
< 35%	2 (2.5%)
Coronary Anatomy	
One-vessel	36 (46%)
Two-vessel	34 (43%)
Three-vessel	8 (10%)
Completed Revascularization	59 (75%)
Completed Rehabilitation Programme	23 (29%)

P474

Safety of early and late discharge in patients with ST elevation myocardial infarction after primary percutaneous coronary intervention

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Background: Primary percutaneous coronary intervention(PPCI) is now a favorite treatment for ST elevation myocardial infraction(STEMI) patients. Despite a large number of patients, there is a space constraint in coronary care unit. Can the patients be safely discharged earlier? Currently,there is no safety discharge guideline in these patients.

Methods: This is a retrospective study at the Hospital. We collected consecutive cases of STEMI patients who underwent PPCI and were discharged from January 1999 to December 2015. The patients were divided into two groups,Group1:early discharge within 3-day admission and Group2:late discharge more than 3-day admission. The mortality and readmission rates were collected at 30-day and 1-year after discharge.

Results: Out of 1,242 STEMI patients,691 patients(55.6%) were classified in group1 and 551 patients(44.4%) were in group2. The 30-day mortality was 0.4% in group1 and 1.3% in group2(HR=2.93,p=0.12) and 1-year mortality was 3.9% in group1 compared with 8.0% in group2 (HR=2.09,p=0.003).There was no difference in 30-day readmission between both groups(1.3%vs2.5%,p=0.113). There was a difference in 1-year readmission between group1 and group2(4.5%vs10.6%,OR=2.51,p<0.001). However, patients in group2 had higher Killip class and stage of chronic kidney disease(CKD) than group1.

In subgroup analysis of patients with Killip classI,544 patients(63%) were classified in group1 and 321 patients(37%) in group2.Group1 patients who presented with Killip classI had lower 1-year mortality than group2 (2.8%vs6.5%,HR=2.43,p=0.009),but no difference in 30-day mortality(0.2%vs1.3%,p=0.087). Group1 patient with Killip classI had lower 1-year readmission than group2(3.6%vs7.5%,OR=2.13,p=0.015).By using multivariate analysis,the predictive factors for early discharged STEMI patients in Killip classI were EF>40% ,CKD stage1,2.

Conclusion: Early discharge in STEMI patients within 3-day after PPCI is safe in terms of mortality and readmission especially in Killip classI. Especially, patient with EF>40% and CKD stage1,2 in Killip classI could be safely discharged within 3-day after PPCI.

Kaplan-Meier survival curves for cumulative post-discharge survival in the early and late discharged STEMI patients in Killip class I
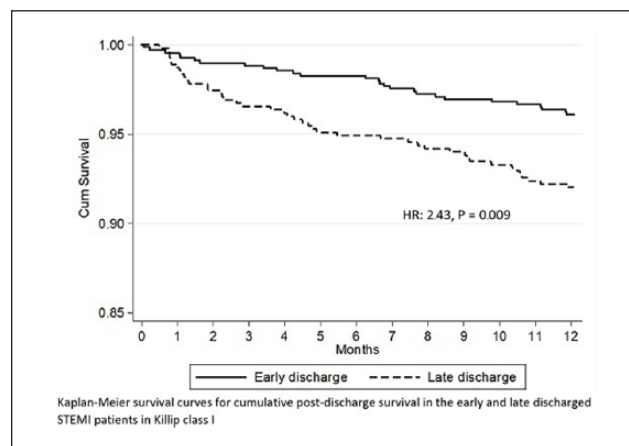
Kaplan-Meier survival curves

P475

A Physician coordinator reduces door to balloon time for STEMI patients in Emergency department

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Objectives: Acute ST elevation myocardial infarction (STEMI) is the life-threatening emergency condition. A patient whose STEMI is missed on evaluation has a ~25% likelihood of a very poor outcome, therefore immediate diagnosis and treatment of MI is one of the most important tasks of emergency medicine. Current guidelines for the treatment of STEMI recommend a door-to-balloon (D2B) time of 90 minutes or less for patients undergoing primary percutaneous coronary intervention (PCI).

Crowding in emergency departments is a worldwide problem. Studies have shown a significant association between the emergency room crowding and STEMI patient's adverse outcomes. The emergency department (ED) in Soroka University Medical Center is the busiest in Israel (230,000 visits annually, of which 54,000 are in the internal medicine ED). During May 2015 - May 2016 a novel work model was implemented in the internal medicine ED, in which a senior physician performs a medical triage (in parallel with a nursing triage), identifies emergency cases, especially STEMI, performs urgent procedures, allocates patients to physicians, and activates a cardiologist for immediate transfer of the STEMI patient to catheterization laboratory.

Methods: We compared the period prior to implementation of the process (June 2014 - May 2015, "Period A") to a parallel period following implementation (June 2016 - May 2017, "Period B"), for patients with diagnosis STEMI.

Results: In Periods A & B 151 and 146 STEMI cases, respectively, were diagnosed in the internal medicine ED. In order to produce comparison groups, cases of STEMI were taken during regular ED staff hours (Period A – 50 cases, and Period B – 49 cases). Median D2B time decreased from 97 minutes (Period A) to 82 minutes (Period B) (p = 0.033). The proportion of patients undergoing PCI < 90 minutes increased from 46% to 75.5% (p = 0.005), respectively.

Conclusion: Implementing a "Physician coordinator working model" in the internal medicine ED led to significant quality improvement - reduced D2B time, and increased a number of cases treated at the recommended time, for STEMI patients.

P476

Cardiac intensive care unit organization in economically less developed european country

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Introduction: Cardiac Intensive Care Units (CICU) are dedicated to critical medical cardiac care defined as the diagnosis and management of acute life-threatening cardiac conditions treated by specifically trained professionals. Economic indicators play important role in development of medical service. Croatian Gross Domestic Product (GDP) per capita is 35-40% of European (EU-28) average. Authors want to emphasize the need for the inclusion of the best possible acute cardiac care and intensive cardiovascular care in hospital and regional network in order to improve outcomes.

Purpose: To analyze organization of CICU on national level in economically less developed European country and its comparison with developed countries.

Methods: Thirty-four representatives from all Croatian hospitals (response rate of 100%) filled in web based questionnaire on CICU organization and competence. Two types of questionnaire depending on the type of ward (firstly for only cardiac or cardiac/internal medicine units, and secondly for combined cardiac/internal medicine/anesthesiology units) have been developed. Answers were collected and analyzed during September and October 2016.

Results: Croatia has 61.8% cardiac, 20.6% cardiac/internal medicine, and 17.6% combined cardiac/internal medicine/anesthesiology intensive units that provide intensive care for cardiac patients with 5 CICUs per one million inhabitants. More than a third of those ICUs have 5 or 6 cardiac beds, almost one fourth 7 or 8, and others range widely from 1 to 9 or more beds. Shift-wise, one nurse is responsible for a mean number of 2.7 patients (morning 1:2.3, afternoon 1:2.6, night 1:3.3 patients) with significant variation according to hospital size (smaller hospitals 1:2.9, university hospitals 1:2.1, p<0.001). Two third of here investigated ICU have less than 4 beds per one physician, cardiologists form the majority of physicians during working hours, but to the lesser extent during night shifts. In our investigation 76.5% of ICUs perform 24/7 transthoracic echocardiography, whilst only 26.5% of ICUs provide 24/7 transoesophageal echocardiography. One third of investigated centers did not implement therapeutic hypothermia, and 23.5% do not use ECMO and do not transfer patients for such treatment.

Conclusion: This national investigation comparing Croatian and foreign CICU network organization proved its dependence on country GDP, as well as hospital size and its financial issues. This kind of investigation revealed the space for improvement in proposing standards, quality assessment, and reimbursement master plan making on local and national level.

P477

Stockholm chest pain cohort- construction of a database for studies on chest pain patients

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Background: Chest pain is the second most common cause of visits to emergency departments (ED), both in Europe and the US. There is a lack of large well-defined unselected cohorts of chest pain patients to conduct epidemiological research.

Purpose: The overall purpose is to create a large cohort of chest pain patients using population-based registry data to conduct studies on the symptom of chest pain, and evaluate its impact on patients and on the health-care system. Specific purposes are: a) to describe the characteristics of patients with chest pain, and patterns in their healthcare seeking behaviour; b) to describe etiologies, and prognosis of the variety of chest pains; c) to investigate the association between signs and symptoms, together with "non-conventional" risk factors and the likelihood of ongoing myocardial ischemia; d) to investigate potential predictors for reinfarctions; e) to describe the importance of the early high-sensitivity cardiac troponin T test and the association between troponin levels and long-term prognosis; f) to investigate the impact of non-invasive stress testing on resource utilization and outcome; g) to investigate a potential imbalance in the care of chest pain patients between country of origin, sex, age, socioeconomic status, or comorbidities.

Methods: The study population will consist of all patient who presented to the ED with chest pain in any of the six emergency hospitals in Stockholm County Council during 2008 to 2016. Patients are identified from the administrative databases at these six hospitals from where data on vital signs, priority, duration of stay in the ED, laboratory values and demographics will be collected. The Swedish Board of Wealth and Healthcare will then link the chest pain cohort to add data on diagnoses, comorbidities and outcomes from the National Patient register, medication use from the Prescribed Drug register, cause of death from the Cause-of-Death register, information from primary health care visits from the VAL database, information about diabetes from the National Diabetes register, information about cardiac care from the SWEDEHEART register, and data on socio-economic status from Statistics Sweden. Data on sick leave will be added from the National Social Security office.

Results: Preliminary data indicate that there were approximately 3,700,000 emergency visits of which 7.3% (n=270,000) visits were for chest pain. Chest pain patients have a mean age of 55 years, and the prevalence of myocardial infarction is 5% in this cohort. The final, register linked database will be available in December 2017.

Conclusion: By using administrative hospital databases and national health-care registers a large cohort consisting of 270,000 patients with chest pain can be constructed. It will provide a strong foundation for research on various aspects of chest pain and its association wtih morbidity, mortality, and its consequences on health-care system in general.

Poster Session 4 - Acute Coronary Syndromes (Other) Sunday, 04 March 2018 - 14:00 - 17:30

Case reports

P478

Post MI apical VSR device closure thru Radio-Jugular A-V loop

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Patient details: A 50 year old diabetic elderly lady, was referred after 1 month with ECG showing Evolved ANTERIOR WALL ST elevation Myocardial infarction and pansystolic murmur between Left Lower sternal Border & apex.

- Vitals were within normal limits.
- Symptoms of fatigue , exertional dyspnoea NYHA II s/o of heart failure were present.
- ECHOCARDIOGRAM : showed RWMA in LAD TERRITORY, LVEF 48%, PASP 55 mmHg & APICAL VSR (L-->R)

Apical ventricular septal rupture (VSR) was diagnosed. Patient was in heart failure symptomatic with exertional dyspnoea.

Investiagtions: Echo showed 1.3 cm septal defect in the apical part of the septum shunting from left to right ventricle. So, Surgical opinion was obtained and surgical closure of the defect was planned after discussing with the heart team Pre operative CORONARY ANGIOGRAM showed Left Anterior descending artery to be totally occluded and a non dominant Right coronary artery.

Myocardial Perfusion Imaging showed infarcted LAD territory and hence , Coronary Revascularisation was deferred.

Blood investigations were within normal limits.

Caallenge: The real challenge arose when patient denied surgery.

The patient was not in acute heart failure. 3D echo was done to profile the defect and the margins of the defect were found to be adequate. Hence,it was decided to close the defect percutaneously.

Procedure details:

Since the attempt to cross the defect thru right IJV access failed, it was crossed thru radial route and RADIO JUGULAR ARTERIO VENOUS LOOP was formed and 18mm Muscular VSD occluder device was deployed across the defect successfully with 8F COOK'S sheath , Terumo wire, 5F Right JUDKINS catheter.

Follow up echo showed device in situ after 6 months and patient being asymptomatic and doing well.

Conclusion:

- Incidence of POST MI VSR - rare (3% to 0.3%)
- Dismal prognosis , if closed by either way in acute period (<3 weeks) and if patient is in HF & Shock.
- Trans Catheter Closure(TCC) of PMI VSR - points learnt :

Friable border : avoid balloon sizing , upsize device waist size by 4-8 mm, vigilant about device embolization

Choice of occluder: not restricted to muscular VSD / PMI VSD occluder , operator discretion needed in choosing the appropriate device alongwith appropriate imaging to profile the VSR.

Risk stratifiction: EURO SCORE / MELD XI score will help in acute settiings

TCC of PMI VSR is in the Upslope of learning curve, Inertia should be discouraged among cardiologists in such situations, and TCC should be encouraged whenever hemodynamic condition & morphology are suitable
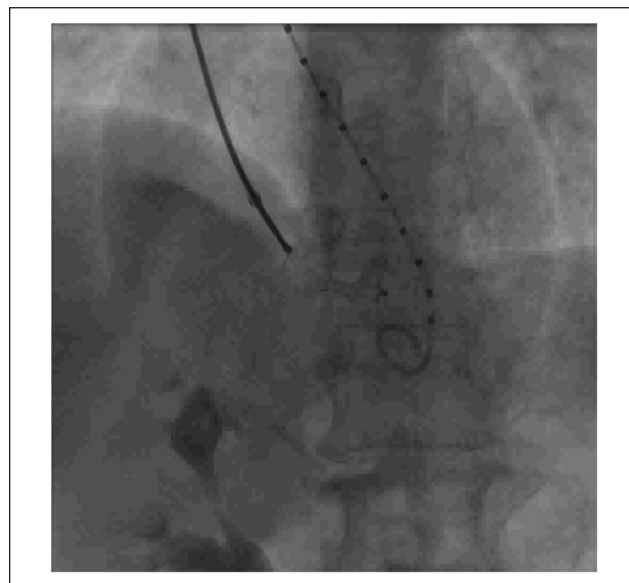
18mm VSD OCCLUDER DEPLOYED ACROSS VSR

P479

Myocardial infarction complicated by emphysematous cholecystitis

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Background: Emphysematous cholecystitis is a severe noncardiac illness with significant morbidity and mortality. We describe an unusual case of a patient with myocardial infarction complicated by emphysematous cholecystitis

Case report: A 72 years old woman with a history of diabetes and hypertension was admitted to cardiology department complaining of epigastric pain and dyspnea. ECG revealed ishcemic changes compatible with late admission inferior wall myocardial infarction(MI). Blood chemistry demonstrated positive troponin test. On physical examination and chest x-ray test there were signs of pulmonary congestion. Urgent cardiac catheterization showed borderline lesion in Left Main Coronary artery(LM), Obtuse Marginal(OM) branch stenosis of 99% with thrombus and 90% stenosis of mid Left Anterior Descendent Artery(LAD).

PCI and insertion of drug eluting stent to OM was performed successfully. While performing IVUS to evaluate the LM stenosis the patient complained of chest pain and hypotension was noticed on the monitor. IV amines were started immediately. Angiography showed Mid LAD total occlusion.

Emergency PCI and stent deployment to mid LAD was done successfully resulting in improvement in patient's condition and stabilization of blood pressure.

Follow-up echo examination showed mildly reduced LV systolic function with inferoposterior wall motion abnormalities. ECG tracing after catheterization didn't reveal any new ischemic changes.

Due to continued complaints of epigastric discomfort with loss of appetite an abdominal US and CT were performed. Both imaging studies demonstrated air in bile ducts and gallbladder, compatible with emphysematous acalculous cholecystitis. Broad spectrum antibiotic coverage including anaerobic flora was started and laparascopic cholecystectomy was performed without complication.

Summary: The differential diagnosis of recurrent epigastric pain in a patient with myocardial infarction is challenging. Although the pain could be as a result of the MI, in some patients other conditions can co-exist. As we have seen in this patient an unstable hemodynamic condition can result in a reduction of blood supply to major organs and thus leading to complications. In this patient the hypotension probably have resulted in poor blood supply to cystic artery and developing emphysematous cholecystitis.

P480

An uncommon cause of myocarditis in a young psychiatric patient

PM Mendoza Cuartero,[1] A Elorriaga Madariaga,[1] A Arregi Lopez,[1] C Asla Ormaza,[1] A Andres Morist,[1] G Ramirez-Escudero Ugalde,[1] R Martinez De Bourio Uriarte,[1] A Ullate De La Torre,[1] R Saez Moreno[1] and JM Aguirre Salcedo[1]

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We report the case of a clozapine induced myocarditis in a 40 year old male without known cardiovascular risk factors with paranoid schizophrenia diagnosed at the age of 29 as the only personal background of interest. Treatment with clozapine was recently added. On day 10 after having started clozapine (200 mg/24h), he develops asthenia, dyspnea and occasional chest pain by exertion. Six days later he presents with malaise and temperature of 38°C with no symptoms suggesting a focus of infection. He denies consumption of any drug or toxic.

At the emergency room, he is slightly hypotensive (105/62 mmHg) and tachycardic (115 bpm) with bilateral crackles. A 12-lead electrocardiogram showed sinus tachycardia, a normal QTc and no ST-segment abnormalities. On blood tests: creatinine 1.59 mg/dL, CK 549 U/L (0-195), us-troponine T 1229 ng/L (0-14), NT-proBNP 7847, C reactive protein (CRP) 234.5 mg/L (0-5), procalcitonine 0,43 ng/mL, leucocytes 10.300 (4.000-11.000). Cultures of blood, sputum and urine, autoantibody screening and viral serologies were done. Transthoracic echocardiogram showed severe impairment of left ventricular ejection fraction due to diffuse hypokinesia. Under the clinical suspicion of a possible non ST segment elevation myocardial infarction (NSTEMI) vs acute myocarditis we decided to take the patient to the coronary care unit for monitoring and started supportive therapy.

Considering the time lapse between starting clozapine and the development of symptoms, clozapine was withdrawn at admission because of the possibility of a clozapine induced myocarditis. 24h after admission a coronary angiography ruled out coronary artery disease which together with the normalization of vital signs, rapid clinical improvement, fall of CRP, CK and troponine T levels after having stopped clozapine and the negative results of cultures, serologies and autoimmune determinations supported our diagnosis of clozapine induced myocarditis. One week later, a cardiac magnetic resonance (CMR) showed normal biventricular ejection fraction with no clear edema, early or late enhancements.

Clozapine is a highly effective 2nd-generation antipsychotic drug reserved for resistant schizophrenia because of its potential fatal adverse effects, like agranulocytosis or the less frequently reported cardiac adverse effects like myocarditis. Clozapine induced myocarditis, has an incidence of 0.2-3%. It occurs within the first 4-8 weeks and can present with unspecific symptoms with a mortality up to 50%. Like careful titration and monitoring for preventing agranulocytosis is mandatory, standardized protocols

regarding early detection of cardiac adverse events should be developed in order to withdraw the treatment and improve the otherwise possible fatal outcomes. CMR may provide additional information to support the diagnosis but it has to be taken into account, that the enhancement patterns of clozapine induced myocarditis may differ from those of viral myocarditis.

P481

When it was not just a gastroenteritis

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We present a case of a 67-year-old woman with past medical history of asthma, allergic bronchopulmonary aspergillosis and gastroesophageal reflux disease, that was admitted to the hospital due to epigastric pain, bilious vomiting, watery diarrhoea, fever, anorexia of 4 days duration and cutaneous lesions with onset in the lower limbs and progression to the abdomen and upper limbs. The patient denied epidemiological context suggestive of infectious-contagious disease and cardiovascular symptoms. Physical examination was remarkable for the presence of purpuric lesions in limbs and abdomen.

Laboratory analysis revealed leukocytosis with eosinophilia (23,900 leukocytes/L;8230 eosinophils/L), elevation of IgE (3207 U/mL), transaminases (AST/ALT 64/85 IU/L), C-reactive protein (11.9 mg/dL) and troponin T hs (300 ng/L).

She was hospitalized due to suspected acute gastroenteritis. During hospitalization she presented an episode of oppressive anterior chest pain associated with troponin elevation (maximum 1070 ng/L), with electrocardiogram showing sinus rhythm with mild ST-depression in V4-V6 leads. The transthoracic echocardiogram revealed the presence of mild to moderate circumferential pericardial effusion without hemodynamic compromise and hypokinesia of medial segment of the anterior wall and medial and apical segments of the inferior septum. The diagnosis of myopericarditis was assumed. During hospital stay she also developed complaints of paresthesias and muscle weakness and the diagnosis of distal asymmetric polyneuropathy was assumed.

After additional workup, the definitive diagnosis of ANCA-negative eosinophilic granulomatosis with polyangiitis (EGP) was admitted, with cutaneous, gastrointestinal, neurological and cardiac involvement. Immunosuppressive therapy with systemic corticosteroid therapy was initiated, with clinical and analytical improvement.

To better characterize the cardiac involvement of this syndrome, a cardiac magnetic resonance imaging was performed that revealed: left ventricular wall motion abnormalities with slightly reduced left ventricular ejection fraction and diffuse subendocardial late enhancement, aspects related with small vessel disease as well as a mild to moderate pericardial effusion. In T2 weighted images, no hyperintense signal suggestive of myocardial oedema was documented. An invasive coronary angiography was also performed, which did not reveal epicardial coronary disease.

At 1-year follow-up, she maintains immunosuppressive therapy with systemic corticosteroid therapy and intravenous immunoglobulin therapy was added with clinical improvement and she remains with no cardiovascular symptoms and arrhythmic events.

EGP is a rare disease which symptomatic involvement of the cardiovascular system occurs in 27-47% of cases. The authors would like to emphasise one of the differential diagnoses of chest pain with troponin elevation, as well as to elucidate to this rare pathology with cardiac involvement.
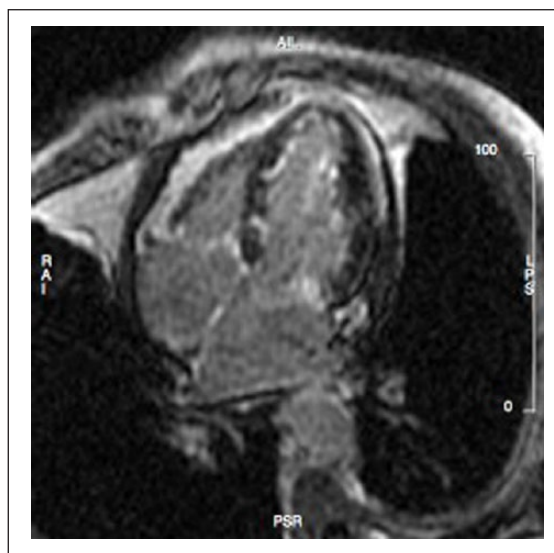
P482

A female patient with a broken heart and multiple sclerosis

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We report the case of a 35-year-old female patient with unremarkable previous history and no regular medication.

She presented to the emergency department with sudden occipital headache, chest pain, nausea and vomiting. She also reported paresthesias of the right lower limb which extended to the trunk and right hemiface, and difficulties in speech.

Physical examination revealed hypotension (minimum systolic pressure 55 mmHg). She was eupneic and cardiopulmonary auscultation showed no remarkable changes. Neurologic examination documented left upper limb monoparesia and expression aphasia.

EKG showed ST-segment depression in the inferior leads and head CT had no changes.

TTE documented severe LV systolic dysfunction with hypokinesia of the basal and mid segments and hypercontractility of the apical region, suggesting reverse takotsubo cardiomyopathy (TTC). Laboratory evaluation was remarkable for leukocytosis (17.000 × 109/L) and elevation of high-sensitivity cardiac troponin T (724 ng/ml) and NT-proBNP (3373 pg/ml). She was started on fluids and, due to persistent signs of hypoperfusion, dobutamine infusion was initiated. Coronary angiography excluded significant coronary artery disease.

She was admitted to the coronary care unit with the diagnosis of cardiogenic shock of unknown etiology and presumable CNS disease.

Cardiac MRI was performed and showed non-dilated LV with normal wall thickness, no significant segmental changes, and mildly compromised systolic function (ejection fraction 45%); non-dilated RV, with mildly compromised global systolic function; T2-weighted images demonstrated transmural signal hyperintensity at basal and mid segments of the lateral and anterior walls; there were no areas of late enhancement (figures A-B). Considering the absence of late enhancement, the probability of myocarditis was low, and stress cardiomyopathy was considered more likely.

Head and spine MRI documented more than 20 small lesions in the cerebral parenchyma, hyperintense in T2-weighted images; a lesion in the medial cerebellar peduncle and a second lesion in the postero-medial region of the medulla oblongata; and at least five small lesions in the spine (figures C-D). The lumbar puncture, viral serologies, trombophilia and autoimmunity studies were negative.

After 10 days of hospitalization, she was started on methylprednisolone 1 g/day for 5 days, with good response. She was discharge without evidence of focal neurological deficits and medicated with captopril 6.25 mg tid. The final diagnosis was reverse TTC associated with multiple sclerosis.

After two months of follow-up she had no cardiac symptoms or signs and TTE showed normalization of segmental abnormalities and LV function (LVEF 54%), confirming the diagnosis of TTC, despite evidence of different longitudinal strain values, with lower values at the basal and mid LV segments.
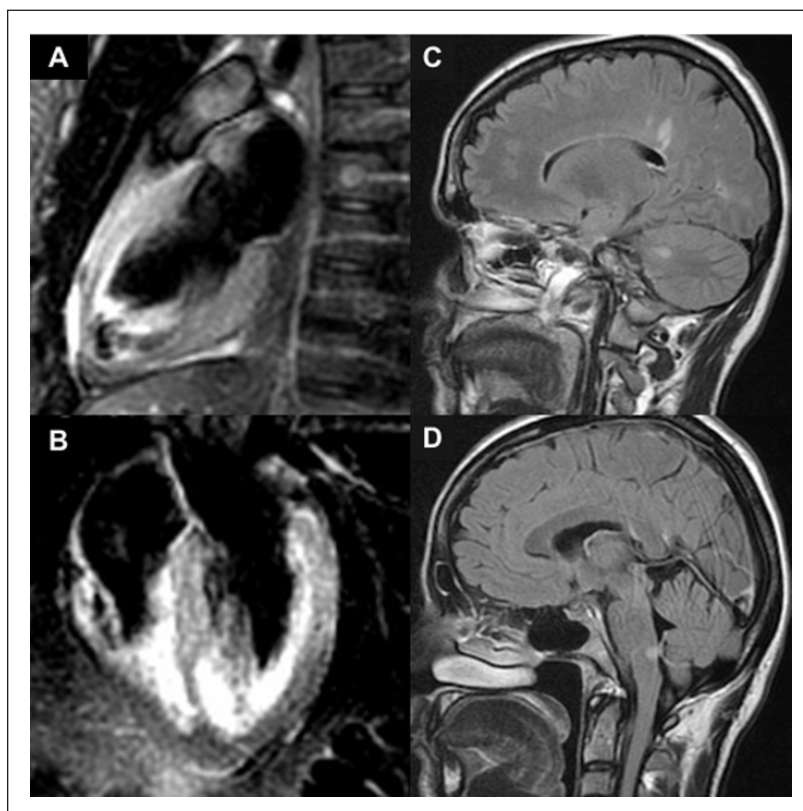
P483

Ballooning heart: a cautionary tale of epinephrine

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Background: Epinephrine is the mainstay for management of several conditions including allergic reactions, anaphylaxis, cardiogenic shock and cardiac arrest. It is often used as an adjunct with local anesthetics for routine office procedures. Its property of vasoconstriction increases the duration of action of the anesthetic and decreases systemic absorption and toxicities. Although rare, a review of literature does highlight several instances of catecholamine-mediated cardiotoxicity associated with improper administration of epinephrine.

Case: A 20-year-old male with no past medical history presented for an elective septoplasty. Patient inadvertently received 10 times the intended dose of epinephrine during the procedure. The patient initially became hypertensive to 180/130 and tachycardic to 150/minute for 40 minutes. He then became hypotensive with blood pressure 80/64, hypoxic with oxygen saturation of 89 percent on 15 liters oxygen through non-rebreather mask. His respiratory rate was 34/minute. Labs showed a new troponin leak of 0.47. A stat chest x-ray showed pulmonary vascular congestion. He received intravenous furosemide and was transferred to a tertiary care centre. ECG showed sinus tachycardia with heart rate 115/min, no other changes. Further blood work demonstrated leukocytosis, elevated lactate (4.2 mmol/L) and BNP (774 pg/ml). Troponins

were trended and resulted as 0.42, 0.43, 0.32 ng/ml. He underwent an emergent echocardiogram which showed basal left ventricular hypokinesis with apical sparing with a calculated ejection fraction of 35%. He was managed conservatively. His blood pressure improved with fluid resuscitation. Low dose beta-blockade was initiated. Patient initially required respiratory support of 15 liters of oxygen through closed facemask. By day 3, his hemodynamics improved, repeat echocardiogram showed normalization of EF at 56%. He was discharged after symptoms improved. At a follow-up visit after 4 weeks, patient was asymptomatic with echocardiogram showing EF of 64%. Beta-blocker was discontinued after 8 weeks.

Conclusion: Epinephrine usually causes transient and minor side effects. Although major cardiac events are rare, they can be fatal if not recognized promptly. The catecholamine surge associated with epinephrine has been linked to Takotsubo and Reverse Takotsubo syndromes in multiple case reports. Most were associated with inadvertent intravenous administration of concentrated epinephrine. In severe cases, it could lead to refractory cardiogenic shock requiring ventricular assist devices or extracorporeal membrane oxygenation. Given how routinely it is used for various office procedures, it is essential to develop and implement mechanisms to reduce the inadvertent administration of concentrated epinephrine.

Figure Legend: ECHO on admission (Figure 1; EF 35% with ballooning and hypokinesis of basal segments) and on day 3 (Figure 2, EF recovered to 56% without regional wall motion abnormalities).
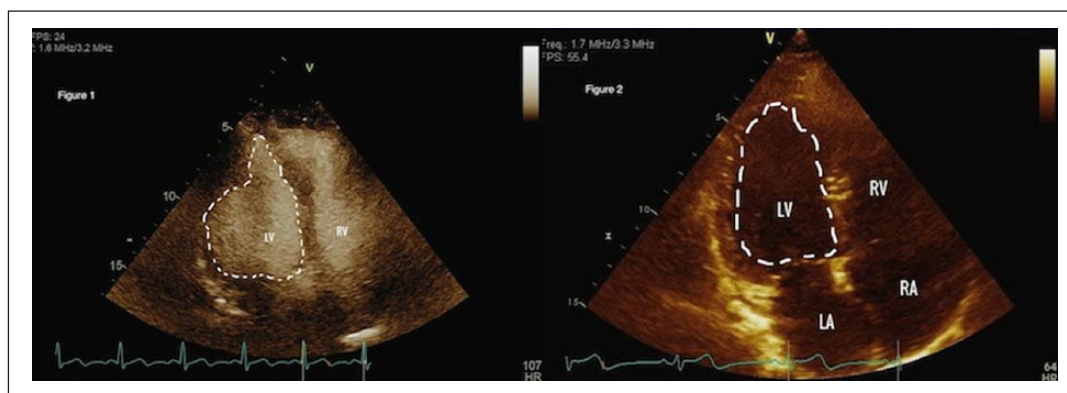
Epinephrine induced reverse Takotsubo

P484

Chest pain in a woman with personal antecedents of melanoma

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Introduction: Takotsubo cardiomiopathy (TC) was first described in 1991 in Japan. Since then it has been referred with increased frequency, although there are still uncertainties concerning its physiopathology, diagnosis

and management. TC typically occurs after situations of physical or emotional stress, mainly in post-menopausal women. Symptoms and signs are usually similar to the ones in acute coronary syndrome (ACS).

Clinical report: A 44-year-old female, without known coronary risk factors, bearing an intrauterine device for birth-control, was admitted to the emergency department with sudden onset chest pain that irradiated to both arms. The pain appeared at rest. She had personal antecedents of depression and melanoma (excised 4 months earlier; at that moment she was receiving radiotherapy treatment). The ECG at admission showed sinus rhythm (62/min) and J-point elevation of 2mm in V2 and V3 and 1mm in V4, V5, DIII and aVF. Initial Troponin I level was 7,58 ng/mL (reference value: <0,04 ng/mL); the maximum level was 20,91 ng/mL, 5 hours after hospital admission. The echocardiogram showed normal left ventricular ejection fraction, regional wall motion abnormalities in the apex and apical segments of the septum and minor mitral insufficiency. Given the diagnostic uncertainty, urgent coronary angiography was performed. It did not present obstructive coronary artery disease. Cardiac magnetic resonance confirmed the regional wall motion abnormalities previously described, without evidence of delayed enhancement. It was assumed TC as the diagnosis, and dual antiplatelet therapy was suspended; both beta-blockers (BB) and angiotensin-converting enzyme (ACE) inhibitors were maintained. In the first 48 hours, episodes of non-sustained ventricular tachycardia were registered. Chest pain relieved completely after the first day of hospital stay. The ECG evolved with prolonged QT interval with negative T waves. The patient was discharged with BB and ACE inhibitor. At 3-month follow-up there was normalization of both ECG and echocardiographic alterations.

Conclusion: This case points the importance of TC as a differential diagnosis of chest pain, with relevance given for the antecedents of melanoma. Echocardiography, coronary angiography and cardiac magnetic resonance contributed importantly in the diagnostic workup. The "unique" physiopathology of TC implies a different pharmacological management, so a correct diagnosis is essential. Nevertheless we still lack large scale studies that support a specific diagnostic workup and management of TC.

P485

A very unusual electrocardiographic presentation of Takotsubo Syndrome: 25 mm ST-segment elevation

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A 64-years-old male with no previous history of cardiac disease and affected by metastatic colic cancer on treatment with capecitabine was admitted to our Hospital because of sepsis caused by an urinary tract infection. On a routine ECG a widespread ST-segment elevation was recorded in all leads, up to a maximum of 25 millimetres (2.5 V) in lead V3 (Fig 1A). The patient was asymptomatic for chest pain, mildly symptomatic for dyspnoea at rest.

An urgent coronary angiography was performed, showing normal coronary arteries and the absence of vasospasm, while the echocardiogram documented a moderate left ventricular (LV) systolic disfunction (LV ejection fraction 40%), akinesia of the apical region with compensatory hyperkinesia of the basal segments and a mild pericardial effusion (7 mm) with fibrinous material. Capecitabine was stopped. Cardiac troponin I peak was 0.8 ng/ml (nv <0.04 ng/ml). Thirty-six hours after the admission to the ICU complete ST segment resolution and widespread negative T-waves with a prolonged QT interval were documented. A complete recovery of the LV systolic function and the persistence of pericardial effusion were found at the echocardiogram after seven days. Cardiac Magnetic Resonance Imaging (MRI) was performed, documenting the presence of a high intensity T2 signal in apical segments (Fig 1 B) and the lack of late gadolinium enhancement, confirming the diagnosis of Takotsubo Syndrome (TTS).

Acute ST-elevation myocardial infarction had been excluded because of non-coronary distribution of ST elevation without a specular depression, the absence of significant obstructive coronary lesions and the minimum increase in troponin levels. Acute pericarditis had been evaluated as potential explanation for clinical and electrocardiographic presentation, though the complete lack of chest pain and the distribution of wall motion abnormalities argued against this hypothesis. Myocarditis was excluded based on the results of MRI.

The association between cancer, chemotherapy and TTS has been described, owing to the adrenergic hyperactivation due to cancer-related stress and the well-known role of some chemotherapic agents in favouring TTS. Capecitabine has been reported to be associated with TTS with vasospasm being suggested as the most likely pathophysiological mechanism. In our patient vasospasm was not found, suggesting possible alternative mechanisms causing TTS in patients treated with this drug. The presence of sepsis as well as the local pericardial inflammation might have acted as stress factors contributing to the induction of TTS and, specifically, pericarditis might have contributed to the dramatic and unusual ST elevation observed.
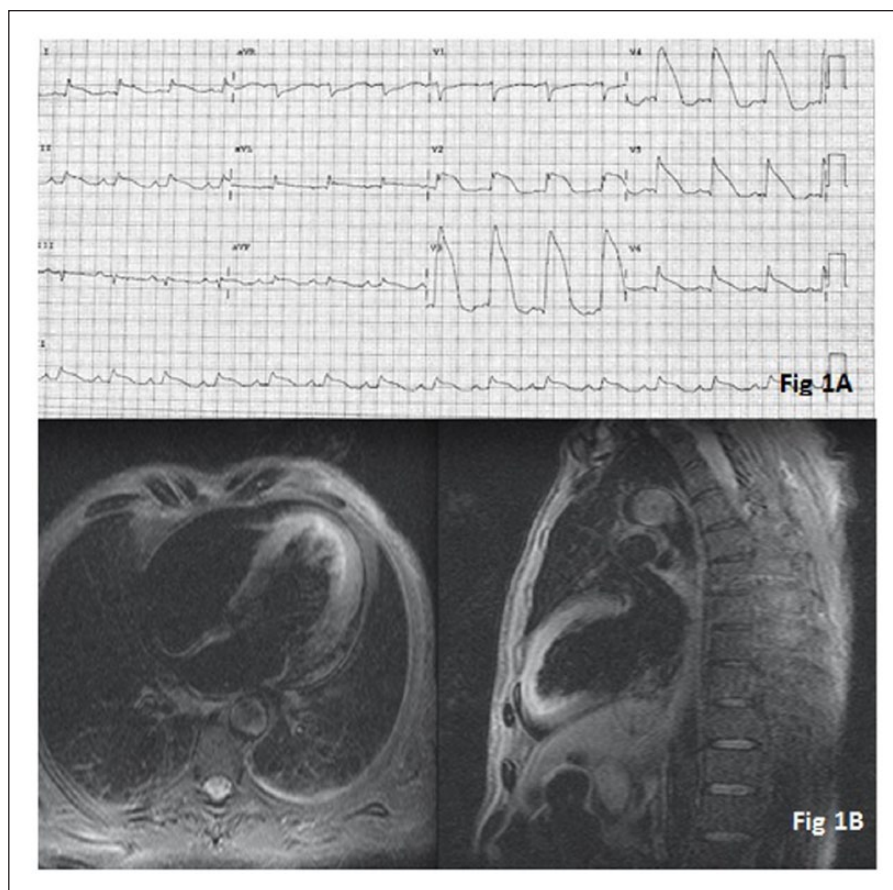
Figure 1

Multiple complications of stress-induced cardiomyopathy with fatal outcome

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Female patient 77 y o was admitted to surgical unit due to pain in right lateral side of abdomen, nausea and weakness. Surgical pathology was excluded.

However, the next day after admission she had intensive angina pain and ECG changes – ST elevation in V1-V3 - were registered. Cardiac ultrasound revealed akinesis of all apex segments and non-linear interventricular septum rupture.

Patient was transferred in tertiary hospital with cardiac surgery facilities. Dyspnea with signs of moderate pulmonary congestion was obvious at physical exam. During echocardiography myocardial rupture was confirmed and thromb in akinetic apex was revealed. Abdomen and low extremities vessels ultrasound found no abnormalities. No obstructive lesions were found on coronary angiogram. Single episode of atrial fibrillation with spontaneous rhythm conversion was registered.

Within 48 hours after admission open heart closure of rupture was undertaken.

The same day embolic left low extremity ischemia became the reason to the embolectomy with flow restore. However, after 4 hours the irreversible ischemia of left low extremity was diagnosed and multiple organ failure including lactatacidosis rapidly progressed.

Due to patient's critical status the amputation was postponed until stabilization. Despite renal replacement therapy, extracorporeal membrane oxygenation and mechanical ventilation patient died at the second day after surgery.

At the autopsy the coronary arteries were intact. According to histological study there were areas of necrosis and lysis of cardiomyocytes without clear borders and leucocytic infiltration but with focal interfibrous haemorrhages and superficial thrombi. Also ischemic stroke was found.
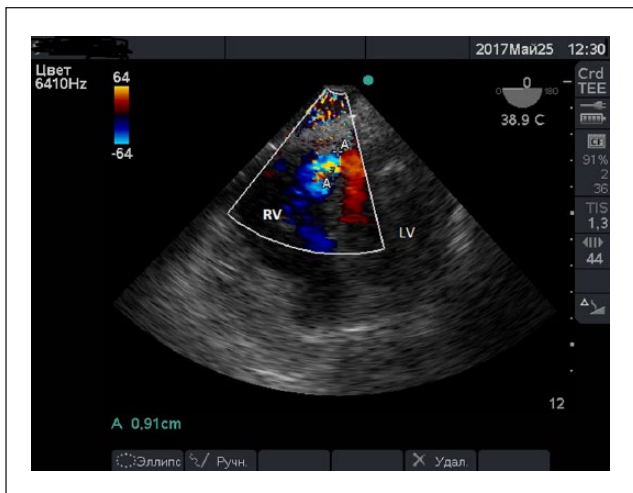
intraoperative TEE, transgastric view

P487

Thrombi in left ventricle complicating ACS - to treat or not to treat ?

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70 year old female patient was hospitalised with acute ST-elevation myocardial infarction (STEMI) on 17th of may 2017 at 16:10. Symptoms had started 1,5 hours prior arrival to hospital and ECG showed sinus rhythm with ST-elevations up to 3mm in leads II, III, aVF and V4-V6. Concomitant diseases included hypertension treated with enalapril and unspecified tachycardia treated with propranolol. Previously patient had had a "micro-infarction" in 2004 (coronary anatomy unknown). Patient was transferred directly to catheterization laboratory where coronary angiogram was done using radial approach and bolus of intravenous (i.v) unfractionated heparin (UFH). Only distal end of left anterior descending (LAD) artery was occluded and reperfusion of the artery with thrombus aspiration and POBA was unsuccessful. Upon arrival to CCU angina had resolved, but ST-elevations remained. Echocardiography showed ballooning and akinesia of the apical segments and hyperkinesia in basal segments of the left ventricle (LV), with EF 35-40%. There was also pericardial effusion up to 1 cm and a thrombus with a diameter of 2 cm in the apex of the left ventricle. After further history taking patient recalled that episodes of angina had actually started a week before hospitalisation after attending a funeral. Analyses showed elevated TnT, but normal level of CK-MBm. Although patient remained hemodynamically stable, echocardiography was repeated after one hour. There was no change in the size of pericardial effusion, but surprisingly another

2x1,5cm thrombus had appeared and the first thrombus had become more mobile. Because the risk of thromboembolic event seemed to be higher than possible haemorrhage to pericardium, UFH infusion was started at 19:10. Patient remained hemodynamically stable with no change in the size of pericardial effusion. APTT was above target goal at 23:00 and UFH infusion was stopped. Patient experienced sharp chest pain at 23:30 and 01:00 that resolved with i.v morphine and paracetamol. Echocardiography findings remained unchanged and UFH infusion was restarted at 01:00 per protocol. Unfortunately at 04:00 there was sudden hemodynamic collapse with pulseless electric activity. Advanced cardiac life support was commenced without success. Echocardiography performed during resuscitation showed pericardial tamponade and patient was declared dead at 04:20. Patients family refused the autopsy. Despite the ECG changes, stress-cardiomyopathy was probably the primary disease with formation of LV thrombus and emboli to LAD. Although it is rarely done in our hospital, ventricular angiography could have given additional information about the etiology of the primary disease and pericardial effusion. Ventricular rupture and thrombus are known complications of STEMI, but are very-rarely seen in stress-cardiomyopathy. Management of thrombi in the presence of pericardial effusion remains challenging.

P488

Takotsubo cardiomyopathy as an acute form of microvascular angina

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Features of the etiology, pathogenesis of stress-induced cardiomyopathy currently not well understood.

73 years women was hospitalized to the cardiology department due to the prolonged angina attack. Anamnesis: a long time arterial hypertension III degree. Patient had pressing pain in the chest, shortness of breath during physical exertion, psycho-emotional stress, in cold windy weather during few years.

On ECG ST elevation in II, III, aVF, V3-6 was recorded. Troponin test was positive. The diagnosis was acute ST elevation inferior-lateral myocardial infarction. Urgency coronary angiography (CA) was performed: a balanced type of blood supply , the left descending artery without hemodynamically significant changes can be traced all over with a sharp drop in the diameter of the lumen in the distal - apical parts of the branches 3 of the order can not be traced (a symptom of "charred tree"), MPG = 0. Arteries without hemodynamically significant stenoses. Surgical treatment was not performed.

Echocardiogram: EF = 49 %, the apex akinesia , hypokinesia of middle segments of all walls, dyskinesia of apex of the right ventricle, severe mitral regurgitation.

According to the control echocardiogram on the 12th day the EF was 63 % , hypokinesia of apex of the left ventricle, mitral regurgitation I. Patient felt slight chest pain during exertion and emotional stress.

After 1 month on echocardiogram EF was 65 %, there is no violation of contraction zone.

Due to the rapid and significant positive trend of disease, the reversibility of the changes according to the echocardiogram, as well as data CA (coronary arteries without hemodynamically significant changes, the lack of branches of order 3 anterior descending artery), the diagnosis of myocardial infarction is excluded. Most likely, the patient had Takotsubo cardiomyopathy due to microvascular angina.

To confirm the diagnosis perfusion positron emission tomography of the heart carried out. In a series of cardiac tomograms performed alone, indicated moderate hypoperfusion of the myocardium in the apex of the heart, local contractility disturbances have been identified. By cold pressor test hypoperfusion in all segments of the anterior and lateral walls of the left ventricle, in the interventricular septum was revealed. Pharmacological test with adenosin: in the 5th minute of the sample registered oppressive chest pain, typical for the patient; revealed hypoperfusion of the myocardium in the apex; contractility zone violation have not been established.

Thus, this is a case of acute form of microvascular angina as cardiomyopathy Takotsubo.

P489

Takotsubo cardiomyopathy with significant coronary stenoses as a complication of permanent single-chamber pacemaker implantation

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A 79 year-old-woman with a history of hypertension and pulmonary embolism was admitted for dyspnea and dizziness. The ECG presented low frequency atrial fibrillation (32 beats/min) with right bundle branch block. Physical examination showed bilateral pulmonary crackles. She was on warfarin, furosemide and angiotensin-converting enzyme inhibitor. Findings on laboratory tests were within the normal range. Chest radiography was unremarkable. Echocardiography showed normal left and right ventricular function without valvular disease. A single-chamber pacemaker with ventricular lead in the right ventricle apex was then implanted without procedural complications. On the night following the implant, the patient complained of dyspnea. Her ECG showed atrial fibrillation with ventricular pacing. Chest radiography excluded pneumothorax and showed normal lead position; however, there was a wide bilateral pleural effusion. Pacemaker interrogation was unremarkable but at echocardiogram akinesia of the apical portions of the left ventricle with reduced systolic function (EF 38%) was observed. Hs Troponin T was slightly increased (93 pg/mL). The patient was treated with a beta blocker, ace-inhibitor and diuretics. In the suspicion of acute myocardial infarction, coronary angiography was performed and significant lesions wrapped around the left anterior descending artery at the middle part and the right coronary artery at the proximal part were observed. The ventriculography revealed ballooning of apical region with typical so-called Takotsubo shape . By exclusion of other diagnoses, pacemaker implantation-induced Takotsubo cardiomyopathy was considered to be the cause of this acute onset of heart failure. After 2 months, her left ventricular function had returned to normal and she was well. A dipyridamole stress testing was normal.

Takotsubo cardiomyopathy is characterized by chest pain and/or dyspnea, ST segment elevation, mild cardiac enzyme increase, transient left ventricular systolic dysfunction with akinesia of the middle and distal portions of the left ventricle with hyperkinesia of basal segments, and absence of coronary artery lesions. It typically affects postmenoupasal women, and the prognosis is usually favourable. An emotional or physical stressful event often precedes the clinical picture. The underlying mechanism is unclear, but it seems mainly related to excess of cathecolamine release. Pacemaker implantation even if uncomplicated may be sufficiently stressful in individual patients to precipitate this syndrome as previously described in some cases. In our patient, no other perioperative stressful events other than implantation itself were identified that could explain the acute heart failure. In fact the presence of coronary artery disease was considered an incidental finding as described in only a minority of patients. Besides, dypiridamole stress echocardiography was negative for myocardial ischemia.

P490

High risk staged LM PCI and transaortic TAVR with bridge to recovery VA-ECMO support

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On behalf of: HUMC Meridian Heart Vascular-Cardiothoracic Surgery

The patient is an 82 y/o man with h/o COPD presented to ED with acute MI and cardiogenic shock, requiring high dose pressors, inotropic support and intubation for pulmonary

edema. He had advanced aorto-peripheral atherosclerosis. Patient developed intractable arrhythmias, non sustained VT became

hemodynamically unstable: CI < 1.4 l/m2, PAs 65/24 and MVO2 < 44%. Echo revealed severe AS with AVA 0.7cm2, and reduced LVEF of 25%. CTA showed no access for IABP or LVAD peripheral MCS support:

Occlusion of right subclavian, 99% left ICA stenosis, and severe iliac-femoral disease (Fig 1).

Coronary angiogram demonstrated 90% proximal LM stenosis and CTO occlusion of a dominant RCA.

(Fig 2). Refractory shock indicated emergent salvage intervention. He was taken to the Hybrid OR for VA-ECMO support that was elected via left axillary cutdown. A tunneled 10 mm Hemashield graft/ 7.0 arterial cannula was secured to ensure arterial access (Fig 3). Using percutaneous femoral (27 Fr) long cannulation VA-ECMO support allowed to stabilize the patient. PCI to the LM via left brachial artery was successfully done: Xience 3.5 x 12 mm DES. On day 6, a palliative BAV (Tyshak II, 22 mm x 5 cm) aortic valvuloplasty was performed that allowed further hemodynamic recovery. ECMO explant was tolerated on day 8. Patient was discharged to rehabilitation with plan for future TAVR evaluation by the Heart Team.

TAVR studies measurements were as follows: d 31.4 x 23.3 mm, area 572 mm2, p 86.3 mm, and LM height 11.8 mm. The operative mortality STS score was 8.3%. A trans-apical access was elected via left thoracotomy given his known prohibitive aortic and vascular disease. A 29 SAPIEN Edwards

trans-catheter valve was later on implanted with good echo result (Fig 4).

In patients in refractory shock with poor vascular access, axillary or central cannulation offer viable alternatives for intervention. Early VA-ECMO support offers a bail out option for primary or staged PCI and TAVR interventions as well as bridge to recovery.
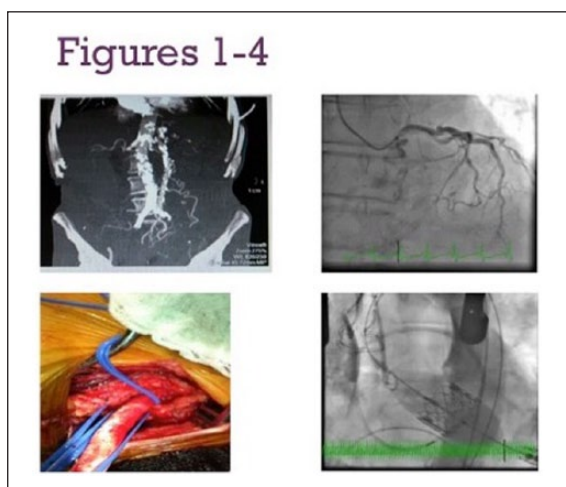
1: CTA 2: LM 3: Axillary ECMO 4: TAVR

P491

A rare case of recurrent myocarditis complicated with renal infarction

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Myocarditis refers to an inflammatory disease of the myocardium. The process may be focal or diffuse and is associated with cardiac dysfunction. Can be induced by infections, immune-mediated damage, or toxins. It can be defined on the basis of histopathologic or clinical criteria. We report a rare case of acute myocarditis complicated with renal enfarction. A 28-year-old male with a past history of myocarditis 8 years ago and was discharged from Hospital at that time with a normal echocardiography. Presented to the emergency room with a three-day history of fiever, malaise and sore throat, being on antibiotics since 2 days, given by the Family Doctor. He was admitted to our hospital for sudden onset of left sided chest pain. On examination, his body temperature was 37,6°C, blood pressure 105/56 mmHg, pulse 86/min, no jugular venous distension, heart sounds were normal, and his lungs were clear to auscultation. The rest of the initial physical assessment was unremarkable. The initial electrocardiogram showed a widespread ST segment elevation. Normal chest radiography. Serum test showed elevation of leukocytes count 12.3 10^9/L, C-reactive protein 21.48 mg/dl and troponin Ths 1.480 ng/L. Echocardiography showed mild reduced ejection fraction, no images suggested presence of thrombus. Four days after admission Cardiac Magnetic Resonance was performed and showed images compatible with myocarditis, but also revealed an apical left ventricular thrombus (Figure 1), having immediately initiated anticoagulation therapy.

Two days later, progressive onset of right quadrants abdominal pain, nausea, vomiting and recurrence of fever, had completed course of antibiotic for bacterial Tonsillitis four days ago. Abdominal computed tomography showed extensive right renal infarction affecting 2/3 of the upper parts of the kidney (Figure 2). Serum test showed elevation os creatinine (1.5 mg/dl) and a reactive inflammatory response with leukocytes count 22.6 10^9/L, C-reactive protein 29.02 mg/dl. Blood and urine culture were negative. Acute renal infarction involves occlusion of the arterial supply to the kidney and most commonly occurs as the result of cardiogenic thromboembolism. The optimal treatment for renal infarction due to thromboemboli is uncertain, given the absence of comparative studies. Reported approaches include anticoagulation, endovascular therapy (thrombolysis/thrombectomy with or without angioplasty), and open surgery. After clinical discussion with Vascular Surgeon, Nephrologist and General Surgeon, conservative treatment was decided, with analgesics and continuation of anticoagulation therapy. In this

case the therapeutic decision was based on the time of onset of abdominal pain (more than 24 hours), the extension of the ischæmic lesion and the fact that the patient was already on anticoagulation therapy. The outcome was favorable, with spontaneous resolution of the inflammatory response, and normalization of serum creatinine.

Figure 1: Cardiac Magnetic Resonance: 1- Left Atrium; 2- Left Ventricul; 3- Apical Thrombus. Figure 2: Abdominal Computed Tomography: A- Hypoattenuation consistent with infarct throughout right kidney.
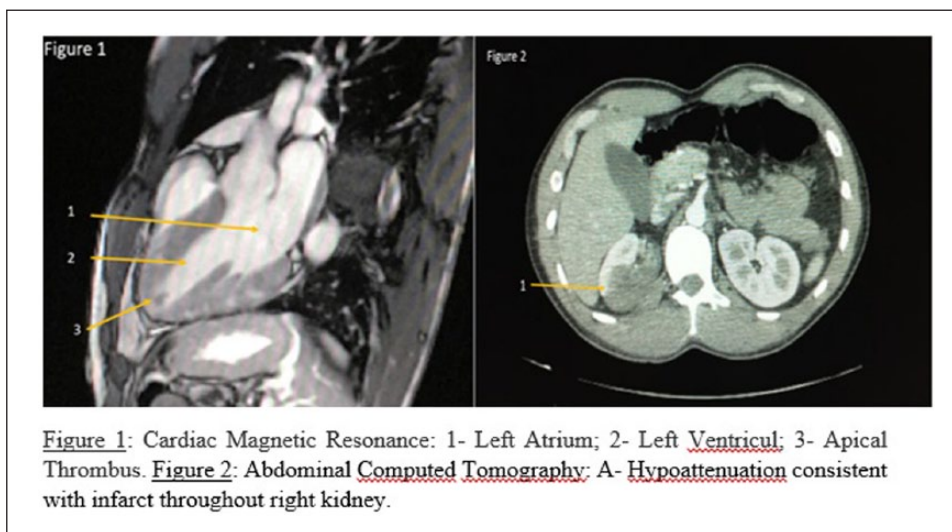
Figure 1 and 2

General Acute Coronary Syndromes

P492

Exploring ECG patterns predictive of chest pain due to coronary microvascular dysfunction in emergency department (ED) patients

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Background: Electrocardiographic (ECG) changes in patients with chest pain due to cardiac microvascular dysfunction (CMD) have not been well studied. We aimed to identify patterns of ECG changes that would predict patients at high or low risk for CMD in ED populations.

Methods: A prospective observational study of patients with chest pain admitted to an ED observation unit from 2/14-11/15 who underwent a 82Rb cardiac PET/CT for evaluation of coronary artery disease (CAD). CMD was defined as depressed coronary flow reserve with no evidence of coronary artery disease (CAD) or calcification. Exclusions were: age ≤30 years, hemodynamic instability, hypertensive crisis, heart failure or dialysis.

We used a standardized data abstraction form to document change in ECGs (at baseline, serial [at 3 and 6 hours of ED arrival] and during PET stress) between patients diagnosed as CMD versus normal PET. Abnormalities were noted if: PR >200 msec, QRS > 120, QTc > 460 (women) or >440 (men), any change in T waves (except lead III or V1), ST segments or abnormal rhythm.

Recursive partitioning predictive modeling with Random Forest ensembles was used to identify predictors to best differentiate CMD from normal patients. These predictors were used in Classification And Regression Tree (CART) modeling with 10-fold cross validation to elucidate clinical profiles that defined subgroups as high/low CMD risk. Area under the curve (AUC) was calculated.

Results: 81/195 (42%) patients with PET scans were diagnosed with CMD; 22% were normal. Patients with CMD were similar in age (mean 51 yrs), more likely to be female (82% vs. 58%) than normal patients. We compared three ECG groups: a) Baseline ECG showed similar mean HR 76 (SD 16), similar intervals (p >.05) and more T wave inversions with CMD than normal (64% vs 51%; p=0.2); b) Serial ECG showed more transient changes with CMD than normal in PR prolongation (12.3% vs 0%) and QTc prolongation (32% vs 23%); and c) Stress ECG showed no differences between groups (p>.05). CART indicated the following variables to be predictive of CMD high/low risk subgroups: development of PR prolongation on serial ECG, female sex, T wave inversions on baseline ECG and QTc prolongation on serial ECG (AUC= 0.73).

Conclusion: In an exploratory analysis, T wave inversions on baseline ECG and transient first degree AV block or QTc prolongation on serial ECGs were predictive of CMD in ED patients.

P493

Demographics of acute myocardial infarction: experience at a non-PCI (percutaneous coronary intervention) center in Middle East

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Purpose: Acute myocardial infarction (AMI) is a common cause of mortality and morbidity worldwide. Although PCI is the preferred mode of treatment in these patients, non-PCI centers can offer immediate and timely initial conservative treatment. We analyzed the demographics of patients presenting to our center with acute MI without PCI facility and compared the outcomes.

Methods: A prospective analysis of 254 consecutive patients admitted with AMI (Non-ST-elevation and ST-elevation MI) to our center between 2014 and 2016 was performed. All patients who fulfilled the criteria according to the third universal definition of myocardial infarction (European Heart Journal 2012) were included.

Results: A total of 254 patients were included. Mean age was 53.2 years (range 30-93), 90.5% were male, 42.1% were diabetics, 43% were hypertensives, 8.6% were dyslipidemics and 33.5% were active smokers. 54.7% were diagnosed as non-ST-elevation MI and 45.3% were diagnosed as ST-elevation MI. Regarding in-patient treatment, 100% had aspirin and clopidogrel, 81.1% had beta-blockers, 82.6% had ACE-inhibitors, 95.6% had statins, 50.8% had glycoprotein 2b3a inhibitors and 42.1% had fibrinolysis with IV tenecteplase. In-hospital events were recorded. Overall in-hospital mortality was 3.9%, 16.9% had congestive heart failure, 5.5% had cardiogenic shock, 2.7% had VT/VF and 8.2% were transferred to the tertiary center for rescue angioplasty. Compared to non-ST elevation MI, more ST-elevation MI patients had cardiogenic shock (7.8% vs 3.6%) and VT/VF (5.2% vs 0.7%). However, mortality rate was higher in non-STEMI (4.3% vs 3.5%) as well as congestive heart failure (19.4% vs 13.9%).

Conclusion: Although PCI is the preferred treatment in acute MI, non-PCI centers can provide appropriate initial conservative treatment in these patients as per guidelines. In-patient mortality at our center is comparable to PCI centers in the region, hence, highlighting the importance of immediate medical treatment.

P494

Short and long-term mortality of patients presenting with major bleeding to the emergency department. the massa-carrara propensity matched community hospital cohort study

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Background: Management and outcomes of patients presenting with bleeding events to the emergency department (ED) still represent a major problem. Aim of the present study was to analyze clinical characteristics associated with short and long-term adverse outcomes.

Methods: Visits to a community hospital were considered during 2016-2017 years. Inclusion criterion was presence of any bleeding events to the ED. Clinical parameters, site of bleeding, major bleeding, ongoing anti-thrombotic treatment strategy, need of reversal treatment or blood transfusion, admission and death were collected. Propensity score matching was performed to adjust for baseline characteristics of patients who underwent death. Hard 5:1 matched analysis based on the propensity score using logistic regression was conducted. To ensure good matches, a small caliper of 0,15 was defined. Endpoints were one-month and one-year death.

Results: Out of catchment area of 250.000 inhabitants with 83.000 ED visits per year, 3.050(1.8%) patients were enrolled (mean age 72±17 year), and eventually 429 were analyzed after propensity. Major bleeding account for 111(26%) of whom 4% eye bleeding, 21% gastrointestinal, 21% intracranial, 18% epistaxis, 19% haematuria, 10% gynecological bleeding, 7% hemoptysis. Overall, 200(47%) patients were admitted and 21(5%) underwent reversal treatment strategy or blood transfusion. Death at one-month and one-year was 26(6%) and 72(17%), respectively. Independent predictors of one-month death were major bleeding (Odds Ratio, OR 27, p < 0.001), female gender (OR 7, p < 0.001) and white blood cells (OR 1.2, p=0.01); one-year were major bleeding (OR 7, p < 0.001), age (OR 1.1, p < 0.001) and female gender (OR 2.3, p=0.04). One-month and one-year death of gastrointestinal bleeding accounts for 4(15%) and 18(25%), respectively; intracranial 20(77%) and 34 (47%), respectively; haematuria 2(8%) and 8(11%), respectively; one-year death epistaxis 6(8%), hemoptysis 6(8%); p < 0.001 for all comparisons. Overall, ischaemic vascular diseases account for 112(26%) patients, cancer 169(39%), cardiomyopathy 46(11%), pulmonary embolism 19(5%; p=0.67), atrial-fibrillation 74(17%), obstructive pulmonary disease 41(10%), kidney disease 18(4%), anticoagulants 108(25%), antiplatelets 126(29%); p=N.S. for all comparisons versus death. Receiver operator characteristics analysis for one-year death showed higher values of major bleeding (area 0.75, CI 0.68-0.83) and age (0.72, 0.65-0.80) over CHADVASC>/=2 (0.54, 0.46-0.63), female gender (0.58, 0.49-0.66), and white blood cells (0.60, 0.51-0.68); p < 0.05 on C-statistic.

Conclusions: Bleeding events to the ED accounts for 2% visits. Death at one-month and one-year was high. Predictors of death were major bleeding, female gender, white blood cells and age. Gastrointestinal, intracranial bleeding and haematuria were more likely to die at one-month; in addition epistaxis and hemoptysis at one-year.

P495

Is extrasystolic arrhythmia the risk factor of arterial thromboembolism?

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In the list of risk factors of arterial thromboembolism there's no extrasystolic arrhythmia.

Purpose: To determine the relationship between the different types of extrasystoles and thromboembolic complications.

Materials and methods. We analyzed the 24-hours ECG monitoring results of 987 patients with multi-focus atherosclerosis of main arteries with supraventricular and ventricular extrasystoles without atrial fibrillation in anamnesis. Extrasystoles were divided into groups due to the moment of their appearance in cardiocycle:

1. Extrasystoles before the mitral valve opening.

2,3. In phase of fast ventricules filling before and after the peak of transmitral blood flow.

4. In slow ventricules filling phase.

5. Other extrasystoles (allorrhythmias, group).

We analyzed tomography-verified ischemic stroke and system arterial embolism in anamnesis. We analyzed the regular, extraordinary and first post-extrasystolic contractions. Intra-arterial blood flow was estimated by ultrasound-doppler. The moment of extrasystoles appearance was determined by EchoCG, ECG and 24-hours ECG monitoring. The kinetics of vessel wall was calculated by sphigmograms and included: speed, acceleration, power, work.

By multifactorial analysis we estimated the risk of thromboembolism within 1 year including: heart failure NYHAII and more, AH, age (under 65, over 65), diabetes mellitus, ischemic stroke or system thromboembolism in anamnesis, hemodynamically important carotid bifurcation (CB) stenosis, heterogenic atheromas of any localization, extrasystoles before and after the peak of transmitral blood flow, group extrasystoles, allorrhythmias, ventricular tachycardia paroxysms. The contribution of each parameter into the overall thromboembolism risk was measured by points.

Results: The main contribution into thromboembolism was made by: age over 65, ischemic stroke of system thromboembolism in anamnesis, hemodynamically important CB stenosis, extrasystoles before the peak of transmitral blood flow, group extrasystoles, allorrhythmias, ventricular tachycardia paroxysms.

Main importance has the moment of extrasystole appearance in cardio cycle and the ability of the first post-extrasystolic contraction to reestablish an adequate resulting blood flow. It is characterized by: stroke volume rising from 5 to 40%; systolic BP increase up to 30%; rising of arterial walls kinetic parameters; blood flow velocity rising; grown arterial wall deformation.

Conclusion: Extrasystolic arrhythmia is the risk factor of thromboembolic complications with multifocal atherosclerosis. The source of thromboembolism can be wall thrombus, dissections. The main moment is the hemodynamic changes and additional arterial deformation because of the increased blood flow wave after the first post-extrasystolic contraction. The sooner the time of extrasystole appearance, the higher kinetic parameters of arterial wall and blood flow velocity in first post-extrasystolic contraction

The risk of thromboembolic complications

TABLE 1. RISK FACTORS

Parameter	Points
Heart failure NYHA II and more	1
Arterial hypertension	1
Age under 65	1
Age over 65	2
Diabetes mellitus	1
Ischemic stroke, system thromboembolism in anamnesis	2
Hemodynamically important carotid bifurcation stenosis	2
Heterogenic atheromas any localisation	1
Extrasystoles before transmitral blood flow peak in phase of fast filling	2
Extrasystoles after transmitral blood flow peak in phase of fast filling	1
Group extrasystoles, allorrhythmias, ventricular tachycardia paroxysms	2

TABLE 2. SUMMARY RISK

Summary points	Risk of thromboembolic complications (1-year period)
16	26,4%
15	25,2%
14	24,6%
13	22,1%
12	20,8%
11	18,1%
10	15,6%
9	13,2%
8	11,7%
7	9,3%
6	7,5%
5	6,3%
4	3,8%
3	2,1%
2	1,7%
1	0,9%
0	0,4%

P496

The initial level of platelet aggregation and some endothelium biomarkers at the patients with arterial hypertension complicated with non-ST-elevated myocardial infarction

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Background: Atherotrombosis is one from the recent complications arterial hypertension (AH), which is the basis of the development of myocardial infarction, stroke or, thrombotic occlusions of peripheral arteries. On the other hand, the study of indexes of the collagen-induced thrombocytes aggregation at the patients with arterial high blood pressure can testify to the degree of risk of increased clotting formation in the areas of the injured vascular wall. Platelets are not only the active participants of thrombus formation but also are the source of some biomarkers of vascular affection, such as the superfamily of vascular endothelium growth factors (VEGF), cell adhesion molecules, von Willebrand factor (vWF) etc.

Aim: to define the character of interrelationship of the collagen-induced thrombocytes aggregation with the changes of level and activity of synthetic biomarkers of endothelial function – Nitric Oxide metabolites (NO-m), soluble platelet endothelium cell adhesion molecule-1 (SPECAM-1) and VEGF – 165 in AH with high risk.

Materials and methods: We have examined 149 patients (97 women and 52 men, aged 37 to 65 years), among them 114 people were diagnosed the arterial arterial hypertension complicated non-ST-elevated Myocardial Infarction (NSTEMI), 35 people were with non-complicated arterial hypertension and 30 healthy as control group. The 3 indexes of collagen-dependent platelet aggregation (the level, time and rate of aggregation) and the plasma levels of NO-metabolites, SPECAM-1 and VEGF-165 were measured.

Results: Multivariate nonparametric analysis of variance showed statistically significant differences in aggregation indexes only in the levels of aggregation ($p < 0,05$) but not with the indexes of time and rate ($p>0,05$). This parameter was significally higher in the group of AH and NSTEMI. As for the interrelationship between the aggregation parameters and the biomarkers we have found a reliable negative correlation between the level of collagen aggregation and VEGF-165 ($R=-0,53$; $p=0,048$) and positive - between the time of aggregation and VEGF-165 ($R=0,37$; $p=0,053$). Also we have set the weak relation between the decrease of NO-m and augmentation of the level ($R=-0,21$; $p=0,055$) and rate ($R=-0,29$; $p=0,019$) of aggregation. There wasn't a significant interrelation between the aggregation and the level of SPECAM-1.

Conclusion: Study provides evidence that alterations in thrombocyte collagen-dependent aggregation in hypertensive patients with non-ST-elevated myocardial infarction may affect the changes of functional state of endothelium and forward to the severity of vessel wall damage which contributes in acute cardiovascular complications

P497

Ticagrelor vs clopidogrel: real life data

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Introduction: PLATO trial demonstrated a reduction in cardiovascular death with the use of ticagrelor in patients (pts) admitted with acute coronary syndrome (ACS), without increasing major hemorrhage.

Methods: 1673 pts consecutively admitted with an ACS between October 2009 and September 2016. Pts in mono anti-platelet therapy, medicated with prasugrel and those who switched between clopidogrel and ticagrelor were excluded. The pts were divided into 2 groups: A) Pts medicated with ticagrelor (n=158, 75.7% men) vs B) Pts medicated with clopidogrel (n=1515, 69.6% men). The groups were compared according to the composite primary endpoint (CPE) (re-infarction, stroke, cardiovascular death) and secondary endpoints for in-hospital stay and, with the available pts, at 1 year of follow-up (FU).

Results: Group B displayed higher mean age (A=60.5±11.8 vs B=65.7±13.3, p<0.001), and more prevalence of history of stroke (A=4.4% vs B=8.8%, p=0.033), heart failure (A=1.3% vs B=6.9%, p=0.001), hypertension (A=51.9% vs B=66.9%, p<0.001), dyslipidemia (A=41.8% vs B=49.5%, p=0.038) and chronic kidney disease (A=3.2% vs B=7.8%, p=0.018). No differences between groups regarding gender, previous myocardial infarction (A=15.8% vs B=19.1%) or diabetes (A=24.7% vs B=30.9%).

Pts in group A presented with ST elevation myocardial infarction more often (A=53.8% vs B=41.0%, p=0.001). No differences regarding presentation with Killip ≥2 (A=17.8% vs B=22.8%).

Group A was more medicated with beta-blockers (A=75.3% vs B=54.3%, p<0.001) and more submitted to invasive stratification (A=99.4% vs B=90.1%, p<0.01) and angioplasty (A=86.7% vs B=69.8%, p<0.01). Group B was more medicated with glycoprotein IIb/IIIa inhibitors (A=12.7% vs B=24.2%, p<0.01).

No differences regarding overall hemorrhagic complications (A=5.5% vs B=7.1%), hemorrhage requiring transfusion (A=1.9% vs B=1.8%), cardiogenic shock or cardio-respiratory arrest.

Regarding in-hospital stay, no differences regarding all-cause mortality (A=5.7% vs B=6.8%), cardiovascular death (A=5.1% vs B=6.2%), re-infarction (A=0.0% vs B=1.2) or CPE (A=5.1% vs B=8.1%) were found.

At 1 year of FU, group B reached CPE more often (A=4.9% vs B=14.6%, p=0.018) and displayed higher all-cause mortality (A=4.9% vs B=12.9%, p=0.040).

Conclusion: Double anti-platelet therapy with ticagrelor was not associated with increase hemorrhagic complications during in-hospital stay. At 1 year FU, pts treated with clopidogrel displayed worse outcomes.

P498

Safety and efficacy of low molecule weight heparin bridging therapy in surgical valve replacement

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Introduction: Periprocedural antithrombotic management in patients who undergo surgical valve replacement (SVR) is uninvestigated. Subcutaneous low molecule weight heparin (LMWH) might be considered, as an alternative to unfractionated heparin (UFH). The safety and efficacy of this prophylaxis is unknown.

Aim: We investigate the safety and efficacy of periprocedural LMWH prophylaxis, dosage and time of LMWH cessation/initiation, before/after SVR. Additionally, the impact of oral anticoagulants (OAC) was assessed.

Methods: Retrospective, single-center observational analysis of pts who undergone SVR/SVR+CABG between 2015-2016. Endpoints were: 1. Bleeding, 2. Transfusions, 3. Reoperation due to bleeding 4. Thromboembolic events. Risk factors were: 1. LMWH/OAC prophylaxis, 2. Dosage (mg/day) and time of LMWH/OAC cessation/initiation, before/after SVR.

Results: We included 388pts;63.6±12.57yr; 86(41.23%) women. LMWH before/after SVR were used in 58(14.94%)/382(98.45%)pts. OAC were used in 59 (15.2%)/147(37.88%)pts, respectively. LMWH were ceased 2.27±3.02 days before, and started 0.27±0.49 days after SVR. OAC were stopped 6.93±3.04 days before, and started 2.08±1.27 days after SVR. Higher dosage of LMWH premedication was an independent risk factor for bleeding and transfusion, with >60 mg/day as a predictor for these events. First dosage of LMWH on the day of SVR was an independent predictor of bleeding, transfusions and reoperation with >40 mg/day. (Table1) Earlier beginning of LMWH after SVR increased the risk bleeding OR 2.607 95%CI[1.693-4.014];p<0.001 and transfusion OR 2.764 95%CI[1.726-4.427];p<0.001. OAC after SVR reduced the risk of bleeding, transfusion and reoperation.

Conclusions: Early OAC prophylaxis after SVR is beneficial. Adverse impact of LMWH might result from unsuitable dosage and day of its periprocedural cessation/initiation.

Table 1. Safety and efficacy of LMWH/OAC.

Risk factors OR 95%CI; p value AUC 95%CI;p value	Bleeding n=156	Transfusion n=218	Reoperation due to bleeding n=25	Thromobembolic events n=7
LMWH before SVR	0.685 [0.361-1.301]; 0.24	1.197[0.645-2.221]; 0.56	2.015 [0.776-5.233]; 0.15	- 0.99
LMWH dosage before SVR	1.019 [1.001-1.037]; 0.03 0.654 [0.521-0.773]; 0.032 cut-off value >60mg/day	1.026 [1.005-1.048]; 0.013 0.700 [0.566-0.812]; 0.002 cut-off value >60mg/day	1.014 [0.989-1.040]; 0.25	0.123 [0.001-8.446]; 0.33
LMWH after SVR	0.364 [0.063-2.077]; 0.25	- 0.99	0.405 [0.047-4.27]; 0.48	-0.99
LMWH dosage on the SVRday	1.069 [1.035-1.103]; <0.0001 0.615 [0.556-0.672]; 0.0001 cut-off value >40mg/day	1.039 [1.009-1.070]; 0.008 0.564 [0.504-0.623]; 0.006 cut-off value >40mg/day	1.201 [1.123-1.282]; <0.0001 0.891 [0.849-0.925]; 0.0001 cut-off value >40mg/day	1.048 [0.985-1.12]; 0.13
LMWH dosage 1st day after SVR	1.0028 [0.989-1.016]; 0.68	1.0007 [0.988-1.013]; 0.91	0.9867 [0.950 -1.023]; 0.47	1.024 [0.986-1.062]; 0.2
LMWH dosage 2nd day after SVR	0.994 [0.982-1.006]; 0.38	0.996 [0.985-1.007]; 0.48	0.986 [0.962-1.0361]; 0.52	1.03 [0.991-1.060]; 0.13
OAC before SVR	1.199 [0.636-2.259]; 0.57	1.46 [0.772-2.785]; 0.24	2.535 [0.920-6.9835]; 0.07	-0.99
OAC after SVR	0.482 [0.303-0.766]; 0.002	0.441 [0.281-0.694]; 0.004	0.2869 [0.093-0.88]; 0.02	0.244[0.027-2.157]; 0.2
OAC dosage after SVR	1.0058 [0.749-1.349]; 0.96	0.876 [0.646-1.187]; 0.39	1.321 [0.547-3.194]; 0.53	0.731[0.1203-4.45]; 0.73

P499

The impact of CYP4F2 rs3093135 TT variant on bleeding and thrombosis in dual antiplatelet therapy users

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Introduction: Dual antiplatelet therapy (DAPT) of thienopyridines (ticagrelor or clopidogrel) and aspirin is recommended for patients with acute coronary syndromes for a period of 12 months after percutaneous coronary intervention (PCI) and stent implantation. Individual patients` genetic and non-genetic factors may determine bleeding and thrombosis during DAPT. As it was showed already, CYP4F2 rs2108622 may significantly affect antiplatelet treatment with clopidogrel. Our most recent data showed, that CYP4F2 rs3093135 TT variant carriers, users of ticagrelor, had lower platelet aggregation values than non-carriers.

Aim: To determine the impact of CYP4F2 rs3093135 TT variant on bleeding and trombosis in patients treated with dual thienopyridine (ticagrelor or clopidogrel) and aspirin antiplatelet therapy after percutaneous coronary intervention (PCI) and stent implantation.

Methods: This prospective study was carried out with the patients hospitalized with acute coronary syndromes at the Department of Cardiology of Hospital of Health Sciences, Lithuania between January 2013 till December 2016. All the patients received dual antiplatelet therapy (DAPT) with ticagrelor or clopidogrel and aspirin for at least of 6 months after PCI and stent implantation. From a total of (n=378) patients receiving DAPT, only the patients with CYP4F2 rs3093135 TT variant (n=33) were selected into this study. Bleeding was defined according to Bleeding Academic Research Consortium (BARC) classification.

Results: From a total of 33 patients, carriers of CYP4F2 rs3093135 TT variant, 9 (27.3%) patients received ticagrelor and 24 (72.7%) were treated with clopidogrel. Only 2 patients who used ticagrelor had no bleeding events. Seven patients had type 1 or 2 bleeding according to BARC classification and one patient had a major type 3a gastrointestinal bleeding and required a blood tranfusion. The bleeding events were not documented in clopidogrel users, but 7 patients experienced arterial thrombotic events such as recurrent myocardial infarction and stenting, and 2 patients had stroke. A such effect was not observed in ticagrelor treated patients.

Conclusion: Ticagrelor users patients with CYP4F2 rs3093135 TT variant had a higher incidence of nonprocedural bleeding events after 6 months of antiplatelet therapy. Clopidogrel users carriers of CYP4F2 rs3093135 TT variant more frequently had arterial thrombotic events compared to ticagrelor users.

P500

Cardioembolic stroke in anticoagulated patients with non-valvular atrial fibrillation: a retrospective study

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Introduction: Anticoagulation is the major therapeutic weapon for cardioembolic stroke prevention, but is unable to prevent all events. However, data from clinical trials shows that patients with an ischemic stroke on oral anticoagulant (OAC) therapy might be neurologically less affected than patients free of treatment.

Aim: To assess functional disability in cardioembolic stroke patients, according to the presence or absence of previous OAC therapy.

Methods: The authors (AA) analyzed a consecutive series of patients admitted in a stroke unit during a 30 month period with cardioembolic stroke caused by non-valvular atrial fibrillation (AF). Stroke disability was assessed through NIH stroke scale (NIHSS) and modified Rankin scale (mRS). To estimate newly-induced disability, the AA calculated the difference between the mRs at discharge with mRs value before the acute event. For this purpose past medical history, family interview and medical records were used. All fatal strokes and those causing severe functional disability (NIHSS $\geq$ 15) were classified as a severe episode.

Results: From a total of 312 ischemic strokes, 82 patients with AF-related cardioembolic stroke were identified, with a mean age of 82.5 ± 8.6 years. Gender distribution was balanced (56.1% were female). A small percentage of this group (19.5%, n=16 patients) was exposed to OAC before admission, at 11 with warfarin (mean INR at admission $= 1.44 \pm 0.53$), 4 with inappropriately low doses of dabigatran and 1 with regular dose of apixaban. Compared with patients not previously exposed to OAC, patients on OAC had lower NIHSS at discharge [9.25 vs. 18.15, p=0.03]; less severe strokes [15% vs. 44%, p=0.04]; and lower mRs elevation [+0.9 vs +2.5, p<0.01]. There was a trend pointing to a lower mortality rate in patients on OAC (12.5% vs. 23%, p=0.315).

Conclusion: Despite inappropriately low doses, patients on OAC recovered with less disability and with an apparently better prognosis.

P501

Coronary artery disease prognostic model for among young and middle age women, including traditional, biochemical and genetic factors

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According to logistic regression analysis model for prognosis of CAD among young and middle-age women (384 patients) was created. From all 15 factors were important for prognosis (table1).

The regression coefficient for prognostic factors of CAD development among young and middle-age women.

Chance of developing (Y) of CAD for certain person is possible to calculate by formula:

$$Y = \exp(\psi) / (1 + \exp(\psi)), \text{ with } \psi = -26{,}4 + 0{,}3 \times X1 + 1{,}6 \times X2 + 0{,}1 \times X3 + 7{,}6 \times X4^* + 2{,}8 \times X5^{**} + 1{,}8 \times X6^{***} + 0{,}2 \times X7 + 3{,}0 \times X8 + 1{,}4 \times X9^{****}$$

Note: *- presence of diabetes – X is 1/absence – 0; ** CAD heredity X is 1/no heredity – 0***; genotypes 4a4b and 4a4a X is 1, 4b4b – 0; ****- smoking X is 1, no smoking – 0;

The model statistic importance: $\chi^2 = 123{,}0$, $p < 0{,}0001$; OR=326,3.

After calculating the Y resulting figure is multiplied by 100 and expressed as a percentage risk of developing the disease in the certain woman. The developed mathematical model, which includes, along with traditional risk factors, genetic factors and markers of endothelial dysfunction makes it possible to predict the risk of coronary heart disease among women young and middle age with a sensitivity of 94% and a specificity of 96%.

Table 1.

Factor		regression coefficient	Prognostic rank
X1	Number of circulating endothelial cells/3 × 10^5 ^{leucocytes}	0,3	1
X2	triglycerides, mmol/l	1,6	2
X3	Systolic blood pressure mm Hg	0,1	3
X4	Diabetes 2 type	7,6	4
X5	CAD heredity	2,8	5
X6	Carriage of 4 a allele of 4a4b polymorphism ecNOS gene	1,8	6
X7	cholesterol of non-high density lipoprotein, mmol/l	0,2	7
X8	Waist/hip circumference	3,0	8
X9	smoking	1,4	9

P502

Periprocedural myocardial infarction and bleeding risk with different loading doses of p2Y12 inhibitors in elective percutaneous coronary intervention

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Nowadays, the ESC/EACTS Guidelines on Myocardial Revascularization recommend clopidogrel loading dose of 300 or 600 mg added to 150-300 mg of AAS in elective percutaneous coronary interventions (PCI). However, there is few evidence of this recommendation and other P2Y12 inhibitors have not been tested in these patients. In addition, some patients do not receive double antiplatelet therapy (DAPT) before the procedure and it is not known the safety and effectiveness of loading doses of these drugs in patients who underwent ad hoc PCI.

Purpose: To evaluate the effectiveness and safety of different loading doses of clopidogrel and ticagrelor in patients without DAPT who undergo elective PCI by stable coronary artery disease (SCAD).

Methods: Retrospective study of 147 consecutive patients with SCAD undergoing elective PCI (67.9 ± 10.9 years, 77.5% male) between March-2014 and May-2017. All patients were chronically treated with acetylsalicylic acid (ASA) before PCI. Different loading P2Y12 doses were administered during PCI: clopidogrel 600 mg, clopidogrel 300 mg, clopidogrel 150 mg or ticagrelor 180 mg. We evaluated the occurrence of major adverse cardiovascular events (MACE) defined as cardiovascular death, myocardial infarction (periprocedural myocardial infarction -PMI- and myocardial infarction at follow up), target lesion or vessel revascularization and stents thrombosis. PMI and myocardial injury was defined according to "2012 Third Definition of Myocardial Infarction" criteria. We also evaluated major bleeding according to TIMI criteria. Median follow up was 17 months.

Results: 125 patients were treated with clopidogrel (16 with clopidogrel 150 mg, 7 with clopidogrel 300 mg, 93

with clopidogrel 600 mg) and 21 with ticagrelor 180 mg immediately before or after PCI. There were no differences between treatment groups regarding the demographic characteristics, complexity of coronary disease, revascularized vessels or number of stents. Ticagrelor group underwent PCI by radial approach most frequently (p=0.001), however there were no differences between radial and femoral approach in terms of major bleeding, haemoglobin drop post PCI or MACE rate.

Peak troponin-I was lower in ticagrelor group than clopidogrel 600 mg group, and these presented lower values than the 150 mg clopidogrel group (0.7±3.4, 0.8±3.5 and 1.4±3.7 ng/ml, p=0.04). Ticagrelor group had lower myocardial injury than clopidogrel group (27.8% vs 33.1%, p=0.4). PMI and MACE rates at follow-up were not difference. There were no differences between groups in terms of major bleeding and haemoglobin drop post PCI.

Conclusions: In patients without DAPT undergoing elective PCI, the use of loading doses of ticagrelor showed lower peak of post-procedure troponin and a trend of less myocardial injury without more bleeding complications.

P503

What risk factors influence vitamin K antagonists overdose?

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Aim of the study: To determine risk factors for bleeding, major bleeding and death in patients with overdose of vitamin K antagonists.

Methods: The retrospective study examined patients, who have overdosed vitamin K antagonists and were admitted to Vilnius university Santariškės hospital between 2010-01-01and 2016-10-31. Age, sex and bleeding risk factors were compared between groups with bleeding events and without bleeding events.

Results: Total of 518 patients' data were analyzed, 253 (48,8%) were men, 265 (51,2%) women, average age was 73,2±11,2 years old. 298 (57,5%) had bleeding event, 149 (50%) were women, average age was 72,3±11,7 years old. Group with bleeding event were more likely to have gastrointestinal bleeding history:16 (5,4%) vs. 3 (1,4%) (p=0,017. 162 patients had major bleeding, average age was 72,8±11,8 years old, 88 (54,3%) were women. Major bleeding group also had more common gastrointestinal bleeding history - 10 (6,2%) vs. 9 (2,5%) (p=0,04). 56 (10,8%) patients died, average age was 74,8±11,2 years old, 27 (48,2%) were women. Patients with lethal outcomes

had kidney disease history more often (creatinine was over 200mmol/l) -17 (30,4%) vs. 64 (13,9%) (p=0,001).

Conclusions: Patients who had symptomic warfarin overdose with bleeding or major bleeding were more likely to have gastrointestinal bleeding history. 9,4% of all bleeding event were lethal. Patients who died during hospitalization and had warfarin overdose were more likely to have kidney diseases and creatinine value over 200 mmol/l. These risk factors might be prognostic to predict if warfarin overdose will be symptomic, but further investigation is required.

P504

Initial arterial blood levels of c-reactive protein have prognostic information in patients admitted with suspected STEMI

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Background: Slightly elevated serum levels of high sensitivity C-reactive protein (hsCRP) are common in patients with chronic ischemic heart disease and predict future events. Furthermore, a rise in hsCRP is seen in the hours following acute myocardial infarction (AMI) and recent evidence has shown that blockage of this inflammation reduces the risk of a latter cardiac event in patients with a history of myocardial infarction.

Purpose: The purpose of the study was to assess the prognostic value of the inflammatory biomarker hsCRP measured at time of admission in patients with suspected STEMI.

Methods: In a consecutive cohort of patients with suspected STEMI admitted for primary PCI, levels of hsCRP were measured immediately on admission to the hospital before coronary angiography. Patients were stratified in quartiles based on the hsCRP serum concentration and survival analyses were applied using Kaplan-Meier plots and log-rank tests. To assess the association of increasing levels of hsCRP with 30-day all-cause mortality we used a multivariable Cox Proportional Hazard model adjusting for age, sex, hypertension, diabetes, known ischemic heart disease, ischemic time and smoking.

Results: hsCRP was measured in 2002 out of 2247 patients on admission. Stratification of patients into quartiles based on blood levels of hsCRP resulted in the following mean values within each quartile: 0.98 (Q1), 2.7 (Q2), 6.5 (Q3)

and 17.9 (Q4) mg/L. The highest hsCRP quartile, Q4, was significantly associated with a higher 30-day mortality (plog-rank<0.0001) (FIGURE).

When adjusting for potential confounders we found a significant increased hazard ratio (HR) for Q4 (HR 2.4 (1.2 – 4.8), p=0.02) compared to Q1 on 30-day all-cause mortality. Adding verified STEMI diagnosis vs. other diagnosis to the model did not alternate the result.

Conclusion: Inflammation measured by hsCRP acutely is associated with 30-day mortality in STEMI patients and can be used as a prognostic tool at admission in patients with acute cardiovascular disease.
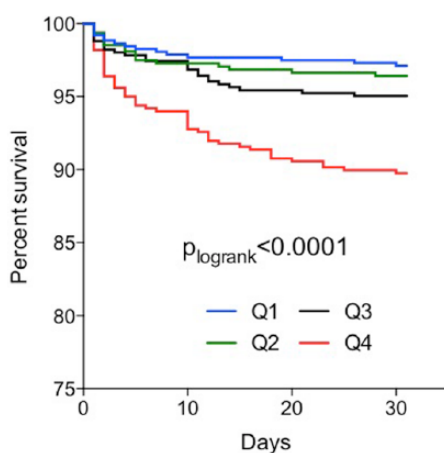
Patient survival

P505

The incidence of traditional risk factors in young patients with acute coronary syndrome

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Object: Evaluating of risk factors for Acute Coronary Syndrome in young patients.

Materials and Methods: The study included 75 patients with confirmed acute coronary syndrome of young age (under 45) treated at the Acute Myocardial Department of the Regional Cardiology Clinic within the period of 2015-2016. All patients were evaluated in re to clinical and anamnestic data, the standard general clinical and biochemical check, assessment of the thickness of the intima-media complex, Microalbuminuria level, afterwards the risk factors were identified.

Results: During the period of 2015 - 2016 75 patients younger than 45 years old with Acute Coronary Syndrome were treated, the number accounts for 2.3% of all patients

with ACS. The average age of them was $38,7 \pm 7,3$, 54 patients (72%) were diagnosed with acute myocardial infarction (AMI), 21 patients (28%) were diagnosed with unstable angina (UA). The majority of patients (90%) is male. The bigger part of patients under study had idiopathic hypertensia - 43 (57.3%), 11 patients (14.6%) had type II diabetes mellitus. Hereditarily tainted CDV (cardiovascular disease), was aggravated in 33 patients (44%), smokers made up 74.6% (56 patients). Body mass index (BMI) in the patients under study corresponded to excess body weight - $29,2 \pm 0,6$, myocardial infarction thrombolysis indeex (intima-media complex) exceeded standard $1,0 \pm 0,2$,the Microalbuminuria level, (UIA) amounted up to $42,6 \pm 11,2$ mg / l, which is above the statutory value and indicates the presence of subclinical renal irritation. LVMMI (Left Ventricular Myocardium Mass Index) was $122,3 \pm 6,7m^2$, indicating the presence of LVH (left ventricular hypertrophy) in most of examined patients. Glucose level exceeded the upper limit of standard and made up to $6,02 \pm 0,2$ mmol / l, total cholesterol index also was higher than standard and was $5,2 \pm 0,8$ mmol / l, LDL cholesterol index (low density lipoprotein) $2,3 \pm 0,6$ mmol / l, HDL (high-density lipoprotein) index was below normal - $0,95 \pm 1,2$ mmol / l, TG (thyroglobulin) was significantly higher than standard and made up to $2,1 \pm 1,2$ mmol / l

Conclusions: Patients of a young age make up about 2.3% of all patients with ACS, most of them have MI (72%). The most important and frequently encountered in these patients risk factors for ACS were: idiopathic hypertensia, type II diabetes, hereditarily tainted CDV (cardiovascular disease), smoking, and excessive body weight, a tendency to hyperglycemia and dyslipidemia, with a predominance of hypertriglyceridemia and reduction of HDL Cholesterol level (high-density lipoprotein cholesterol) A significant number of patients in this group alongside with coronary artery atherosclerosis had characters of subclinical lesions of brachiocephalic vessels, which is ultimately evidenced by the increase in the intima-media complex, subclinical renal irritation with due consideration of increased Microalbuminuria level.

P506

Diastolic dysfunction in patients with myocardial infarction and preserved left ventricular ejection fraction

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Purpose: To determine the presence and assess the severity of diastolic dysfunction in patients with STEMI and preserved left ventricle ejection fraction.

Material and Methods: 100 consecutive STEMI patients with acute heart failure Killip class I and LVEF ≥40%. All patients underwent endovascular revascularization of the infarct-related artery. In addition to standard laboratory and instrumental tests, all patients underwent echocardiography on days 1, 10-12 of the in-hospital period and 1 year after MI. Diastolic function was assessed by measuring the transmitral blood flow, including the ratio of the early (E) to late (A) ventricular filling velocities (the E/A ratio), isovolumic relaxation time (IVRT), and E-wave deceleration time (DT), using tissue Doppler imaging (TDI). Pulsed-wave TDI was used to measure the e'-wave, the early diastolic mitral annular velocity, and the E/e' ratio, the ratio of mitral inflow E velocity and annular e' velocity.

Diastolic dysfunction (DD) grading was performed on days 1, 10-12 and 1 year after MI and was defined as: grade I DD - E/A <0.8, DT ≥200 msec, E/e <8 (septal and lateral); grade II DD - E/A 0.8-1.5 (pseudonormal), E/e '(mean) - 9 - 12, DT ≥200 ms, E/e <8; grade III DD - E / A ≥ 2, DT <160 ms, E/e ≥13.

Results: The mean age in the total group of STEMI patients was 57.5 (52, 63) years. Of 100 patients, 74 were men and 26 were women. The prevailing positive cardiovascular risk factors were arterial hypertension (n=70 patients). According to the results of the analysis of the past medical history, about half of the patients had clinical signs and symptoms of CAD: angina pectoris (n=31 patients), MI (n=5 patients). Left ventricular ejection fraction in the total group of MI patients, was 56.0 % [48.5; 61.0] on day 1, 60.0% [52.0; 64.0] on days 10-12, and 61.0% [53.0; 65.0] 1 year after MI. On day 1, the signs of DD were observed in 19% of patients, whereas on days 10-12 it was 18%, suggesting the absence of statistical significance. However, the detailed analysis of DD severity reported the statistically significant detection rate of grade 2 DD on days 10-12 (9% vs. 4% on day 1, p < 0.05), which is associated with more severe DD in those patients, who previously had grade 1 DD. 1 year after STEMI, the rate of DD significantly increased up to 26.1% (mainly due to the development of grade 1).

Conclusion: Diastolic dysfunction in MI patients with preserved left ventricular ejection fraction and successful revascularization was found in almost 20% of patients. Its severity aggravated at discharge, resulting in more than 25% incidence rate during the 12-months follow-up period. On day 1 and 1 year after MI, the incidence of grade 1 DD was higher, compared to other visits. However, grade 2 DD was more commonly detected on days 10-12. A statistically significant increase in all detected cases of DD (grade 1 and grade 2) has been found 1 year after myocardial infarction.

P507

Diagnosis of acute myocardial infarction in patients presenting with right bundle branch block

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On behalf of: APACE investigators

Background: Patients with suspected acute myocardial infarction (AMI) and right bundle branch block (RBBB) may present a unique diagnostic and therapeutic challenge for clinicians, particularly latest guidelines recommend an early invasive strategy in these patients.

Methods: We aimed to prospectively evaluate the incidence of AMI and the diagnostic performance of specific ECG changes and high-sensitivity cardiac troponin (hs-cTn) in patients presenting with symptoms suggestive of AMI and RBBB to an emergency department. Adjudicated final diagnoses have been performed by two independent cardiologists using all available clinical information. Long-term mortality was the prognostic endpoint.

Results: Overall, RBBB was present in 176 patients (4.4%). AMI was the adjudicated final diagnosis 19% of all patients and in 27% of patients with RBBB, with similar incidence in those with known RBBB versus those with presumably new RBBB (29% vs 24%, p=0.50). Primary percutaneous coronary intervention (PCI) was performed in 22% of RBBB patients vs. 16% of patients in the overall population (p=0.03; 26% in known RBBB and 17% in presumably new RBBB, respectively, p=0.19) A culprit lesion has been identified in the left main coronary artery in 32% of patients with RBBB and AMI. ST-Segment Elevation or Depression in RBBB patients resulted in 99.2% and 83.7% specificity and 90.9% and 50% positive predictive value for AMI, respectively. Diagnostic accuracy of hs-cTnT in RBBB patients at presentation as quantified by the area under the receiver-operating characteristics curve was very high at 88.3 (95%CI 82.8 – 93.7). In unadjusted landmark analyses, mortality was significantly associated with known and new/presumably new RBBB versus no RBBB (HR 2.23 (95%CI 1.50 – 3.32). This association lost its statistical significance after adjustment for age, sex and history of known coronary artery disease (HR 1.12 (95%CI 0.75 – 1.67).

Conclusion: Most patients presenting with suspected AMI and RBBB will be found to have diagnoses other than AMI. Specific ECG changes and hs-cTn values should be used for the diagnosis of AMI.

Table I

Table 1 Angiography Findings

	all RBBB (n=176)		known RBBB (n=90, 51%)		new RBBB (n=86, 49%)		RBBB no AMI (n=129, 73%)		RBBB and AMI (n=47, 27%)		p-value known/new RBBB	p-value no AMI/AMI
Coronary Angiography n (%)	51	29%	28	31%	23	27%	20	16%	30	64%	0.523	<0.001
one vessel disease	5	2.8%	2	2.2%	3	3.5%	2	1.6%	3	6.4%	0.677	0.119
two vessel disease	12	6.8%	7	7.8%	5	5.8%	4	3.1%	8	67.0%	0.767	0.003
three vessel disease	29	17%	18	20%	11	13%	11	3.1%	18	38.0%	0.197	<0.001
Coronary Intervention n (%)	38	22%	23	26%	15	17%	11	4.0%	22	47.0%	0.191	<0.001
more than one intervention n (%)	6	3.4%	1	1.1%	5	5.8%	1	0.8%	5	11.0%	0.112	0.006
culprit lesion n (%)	41	23%	25	28%	16	19%	11	8.5%	30	64.0%	0.159	<0.001
left main vessel	4	2.3%	3	3.3%	1	1.2%	2	1.6%	2	4.3%	0.621	0.290
RIVA proximal	7	4.0%	3	3.3%	4	4.7%	0	0.0%	7	15.0%	0.716	<0.001
RIVA mean	8	4.5%	3	3.3%	5	5.8%	2	1.6%	6	13.0%	0.489	0.005
RIVA distal	1	0.6%	1	1.1%	0	0.0%	1	0.8%	1	2.1%	1.000	0.267
Ramus diagonalis 1 or 2	2	1.1%	1	1.1%	1	1.2%	1	0.8%	1	2.1%	1.000	0.464
RCX proximal	3	1.7%	3	3.3%	0	0.0%	2	1.6%	1	2.1%	0.246	1.000
RCX distal	4	2.3%	2	2.2%	2	2.3%	1	0.8%	3	6.4%	1.000	0.059
Ramus marginalis 1 or 2	4	2.3%	4	4.4%	0	0.0%	1	0.8%	3	6.4%	0.121	0.059
ACD proximal	1	0.6%	0	0.0%	1	1.2%	0	0.0%	1	2.1%	0.489	0.267
ACD mean	3	1.7%	1	1.1%	2	2.3%	0	0.0%	3	6.4%	0.614	0.018
ACD distal	4	2.3%	4	4.4%	0	2.0%	2	1.6%	2	4.3%	0.121	0.290
CABG n (%)	4	2.3%	2	2.2%	2	2.3%	0	0.0%	4	8.4%	1.000	0.005

Table Legends: RBBB: left bundle branch block; AMI: acute myocardial infarction; RIVA: Ramus interventricularis anterior; RCX: Ramus circumflexus; ACD: Arteria coronaria dextra; CABG: coronary artery bypass graft

P508

The relation between fragmanted QRS morphology and occurrence of coronary atherosclerosis

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Background and Aim: The aim of this study was to assess the prognostic values and clinical significance of fractionated QRS (fQRS) morphology for occurrence of coronary atherosclerosis.

Methods: Total of 125 patients with presence of fQRS in their electrocardiogram, who underwent coronary angiography because of chest pain or equivalent symptoms were included in this retrospective study (exclusion criteria included QRS duration ≥120ms, old bundle branch block, left ventricular hypertrophy, prior myocardial infarction). Patients were divided into five groups: fQRS type 1 (18%), fQRS type 2 (17%), fQRS type 3 (22%), fQRS type 4 (20%), fQRS type 5 (23%).

Results: Patients who had fQRS type 1 had longer QTc values than other groups (0.46±0.1 vs 0.42±0.12, p: 0.026). Until fQRS type 2 was related only with single-vessel coronary artery disease (CAD) (44.4% vs 13.8%, p:0.036), fQRS type 4 was related with 2-vessel CAD (83.3% vs 33.6%, p:0.001), hypertension and diabetes mellitus (respectively p: 0.003 and p: 0.001). fQRS type 3 was more viewed in male gender (90% vs 74%, p:0.041), but hadn't any correlation with coronary artery disease. fQRS type 5 was related with lower left ventricular ejection fraction (EF) (0.45±0.1 vs 0.5±0.7, p: 0.014), left main CAD (26.2% vs 10.9%, p: 0.027) and in-hospital cardiac mortality (23% vs 7.8%, p: 0.018). Also presence of fQRS type 5 was more viewed in patients undergoing anterior myocardial infarction (MI) (21.3% vs 1.6%, p<0.001). Inferior localization of fQRS was related with patients undergoing MI (50% vs 25.6%, p: 0.009), but patients who had >70% stenosis in coronary angiography anterior localization of fQRS was greater (p: 0.002). In multivariate analysis; male gender, age>70, 3-vessel CAD, inferior localization of fQRS and fQRS type 5 were independent predictors for severe CAD and mortality (R^2:0.66, p<0.001).

Conclusions: fQRS type 5 and inferior localization of fQRS were observed as independent predictors for severity of coronary artery diseases and mortality. These results showed that beyond presence of fQRS, it is important to examine the type and localization of fQRS and it may be used as non invasive marker to determine severity of CAD.
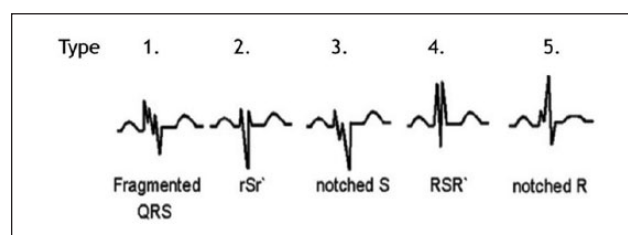
Morphology of fQRS

P509

Mitral regurgitation and acute left ventricular failure in patients with acute myocardial infarction

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Background: Acute left ventricular failure (ALVF) is a common complication of myocardial infarction (MI), even in the absence of a significant reduction in ejection fraction

(EF). Some patients present with mitral regurgitation (MR) due to acute papillary muscles dysfunction. A new-onset MR leads to an increase in left atrium pressures and results in decreased cardiac output, deteriorating the course of MI.

The purpose was to evaluate the relationship between the presence and degree of MR on the one side and the manifestation of ALVF, on the other in pts with MI.

Methods: 48 pts, 28 men and 20 women, aged 58 to 77 years with MI and ALVF were observed. All pts underwent Doppler echocardiography with a measure of regurgitation on the mitral valve (MV), according to the Recommendations of the American Society of Echocardiography for Noninvasive Evaluation of Native Valvular Regurgitation (2017). The following parameters were analyzed: the vena contracta width (VCW) (less than 0.3 cm – mild MR, 0.3-0.59 cm – moderate MR, more than 0.6 cm – severe MR), the effective regurgitant orifice area (EROA) (less than 0.20 cm2 – light degree of MR, 0.2-0.49 cm2 – medium degree of MR, more than 0.5cm2 – severe degree of MR), calculated pressure in pulmonary artery. The presence of ALVF and its severity was assessed on the basis of signs of pulmonary congestion, respiratory rate, natriuretic peptide level, chest X-ray. Patients with valvular heart disease were excluded from investigation.

Results: In 16 (33.33%) pts ALVF manifested with pulmonary edema, 32 (66.67%) pts had clinical and radiologic signs of pulmonary bed congestion. On echocardiography the EF in pts ranged from 55% to 35%. All pts were divided into 2 groups. The 1st group included 21 pts with EF below 40%, the 2nd group included 27 pts with a EF above 40%. MR was found in all observed pts. In the 1st group, severe and moderate MR were recorded in the majority of pts (in 9 pts - 42.85% and 10 patients - 47.62%, respectively), whereas in the 2nd group the severe MR was not found. In 2nd group 74.07% of pts had moderate MR and 25.92% had a mild degree of MR. The frequency of recording a hemodynamically significant MR in two groups differed significantly by the χ^2-test. The mean value of VCW was 0.61 ± 0.07 cm in 1st group, in 2nd group 0.44 ± 0.16 cm ($p < 0.05$). The mean EROP in 1st group was 0.72 ± 0.19 cm2, in 2nd group $0.38\pm1,01$cm2 ($p < 0.05$). Along with this, a significant increase in the mean value of the pulmonary artery pressure in the 1st group was found in comparison with the 2nd group (68.28 ± 4.76 mm Hg and 49.32 ± 5.44 mm Hg respectively, $p < 0.05$)

Conclusions: In the pts with ALVF caused by acute MI, MR can occur in the absence of structural lesions of the valve. High degree of MR commonly is associated with systolic dysfunction. At the same time, 74% of patients with preserved EF had a grade 2 MR. These results suggest a relation of new-onset or transient MR to the development of ALVF in MI.

P510

Evaluation of left ventricle diastolic dysfunction in the manifestation of acute heart failure in acute coronary syndrome

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Background: Acute heart failure (AHF) could occur in patients with normal ejection fraction (EF). In acute coronary syndrome (ACS) ischemia seems to be a critical factor of the left ventricle (LV) diastolic dysfunction (DD). DD is characterized by a decrease in LV myocardial compliance, a violation of cardiac muscle relaxation, a change in the normal ratio of early and late LV filling, an increase in the end diastolic pressure, which contributes to a cardiac output reduction.

The purpose of this clinical study was to evaluate the role of LV DD in the manifestation of AHF in patients with ACS.

Methods: 36 patients, 20 women and 16 men aged 55 to 77 years with ACS were enrolled in the study. Patients were divided into two demographically comparable groups, depending on the presence or absence of typical AHF features. In both groups, non-Q-MI was the predominant form of ACS. There were 22 pts in the 1st group: 11 women and 11 men aged from 60 to 77 years, 16 of them had non-Q-MI, 2 pts had Q-IM and 4 pts had unstable angina (UA). The 2ndgroup included 14 pts: 8 female and 6 male, aged 58 to 69 years, 9 pts had non-Q MI, 2 pts had Q-MI and 3 pts had UA. All subjects underwent echocardiographic examination on the 1stday of hospitalization. EF was more than 40% in all patients included in the study.

The diagnosis of AHF and its severity was proved on the basis of respiratory rate (RR), clinical and radiologic signs of the pulmonary congestion, and the brain natriuretic peptide (BNP) levels. The DD was diagnosed according to the recommendations of the American Society of Echocardiography in conjunction with the European Association for Cardiovascular Imaging (2016).

Results: AHF manifested as pulmonary edema in 36.3% of pts from the 1st group, in 63.6% of pts there were clinical and radiologic signs of pulmonary bed congestion. The mean levels of BNP was 116.54 ± 5.78 pg/ml in the 1stgroup and 67.84 ± 7.56 pg/ml ($p < 0.05$) in the 2nd group. All patients of the 1st group were diagnosed having DD of different degrees: 27.3% of pts had grade 3, 40.9% had grade 2 and 31.8% had grade 1 DD. In the 2nd group LV DD of 1-2 degree was found in 72.7% of cases: in 50% and 22.7% of pts, respectively. Significant differences in the main DD values between groups were obtained. The mean value of pulmonary artery pressure was higher in the 1stgroup (66.5 ± 4.72 mm Hg) than in 2ndgroup (44.92 ± 3.56 mm Hg, p

< 0.05). A positive correlation was found between the signs of AHF on the one hand and the DD indicators on the other.

Conclusion: The AHF in the patients with ACS in the absence of systolic dysfunction is associated with LV DD. The degree of LV DD determines the manifestation and severity of AHF in observed cohort.

P511

Three vessel coronary artery disease revealed by pseudoinfarction pattern due to severe diabetic ketoacidosis with hyperkalaemia

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A 63-year-old male presented to the emergency department with a 24 hour worsening history of malaise, fatigue, dyspnoea and vomiting. His previous medical history included: type 2 diabetes insulin treated, arterial hypertension, long term tobacco and alcohol abuse.

On physical exam, his blood pressure was 98/54 mmHg, heart rate 102/min, he was afebrile but showed anxiety, restlessness, signs of dehydration and tachypnoea despite normal peripheral oxygen blood saturation. Chest examination only revealed tachycardia. Abdominal exam revealed mild epigastric discomfort and no focal neurologic signs were perceptible despite of a 14 points Glasgow Coma Scale (GCS) which jeopardized the anamnesis.

At admission, a 12 lead electrocardiogram (ECG) was performed, showing sinus tachycardia, ST segment elevation in leads aVR and V1 with reciprocal ST segment depression in leads V3-V6, DII-III and aVF, as well as acute T waves (Panel 1). The diagnosis of probable acute ST elevation myocardial infarction (STEMI) was assumed and the patient promptly admitted for coronary angiography which showed relevant three vessel coronary disease without signs of critical acute stenosis (Panel 2).

Since STEMI diagnosis was not proved and GCS dropped to 13 points, an arterial blood gas analysis was performed showing severe metabolic acidosis (pH 6.84) with severe hyponatremia (112mmol/L) and mild hyperkalaemia (6.4 mmol/L). Blood analysis showed hyperglycaemia of 13338mg/dL with high osmolality (339mOsm/Kg), renal dysfunction (serum creatinine 263umol/L), rhabdomyolysis, troponin elevation (1.49ng/mL) and C-reactive protein 27.8mg/L. Blood count revealed leukocitosis (21800/uL) with neutrophilia.

Taking the diagnosis of severe diabetic ketoacidosis (DKA) into account, intensive therapy was started and the patient promptly admitted in the Intensive Care Unit. The arterial pH normalized 48h later and the ECG performed revealed sinus rhythm with no ST segment deviation. Pre-discharge

transthoracic echocardiogram showed preserved ejection fraction with no regional wall motion disturbance.

The patient was discharged on the fourth day after admission. Since surgical reperfusion was refused, percutaneous revascularization was scheduled.

The presence of ST segment elevation in leads aVR and V1 with reciprocal ST segment depression is a well-known sign of important three vessel disease and/or of the main left coronary artery. Although STEMI is a cardiologic emergency which can present with atypical features, especially in diabetic old patients, other conditions can lead to ST elevation mimicking acute coronary disease. The present case underlines the role of hyperkalaemia and diabetic ketoacidosis as possible causes of ST segment elevation, unmasking the presence of three vessel disease and causing myocardial necrosis. It also emphasizes the importance of a complete history and of the arterial gas analysis in the initial management of patients showing electrocardiographic abnormalities.

Panel 1. Electrocardiogram at admission (A) presenting ST segment elevation in leads aVR and V1 with reciprocal ST segment depression in leads V3-V6, DII-III and aVF, as well as acute T waves. Electrocardiogram after correction of hyperkalaemia and diabetic ketoacidosis (48 hours after admission) showing normalization of ST-T features previously reported (B).

Panel 2. Coronary angiogram showing extensive lesion of 50% along the mid-segment of the right coronary artery (A), a lesion of 50-70% in the mid-segment of the left anterior descending artery, and a 80% lesion in the proximal circumflex artery (B).

Electrocardiogram and coronary angiogram

P512

Prehospital treatment in patients with suspected myocardial infarction - a real world observation

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Background: The early administration of acetylsalicylic acid (ASA) and unfractionated heparin (UFH) in patients suggestive of myocardial infarction (MI) as soon as possible after symptom onset is accepted in clinical routine. However, it is unclear how many patients get prehospital treatment and if outcome is affected in patients with suspected MI.

Methods: 1,600 patients presenting to a German emergency department (ED) with symptoms suggestive of MI were included. Patients presented either self-contained, via confinement of general physician or via ambulance. Preclinical treatment with either ASA or UFH was recorded according to accompanying letter or ambulance protocol. All patients were treated according to local standard of care. Two-year follow-up for mortality was assessed.

Results: 1,250 patients (78.1%) did not receive pretreatment with ASA or UFH. Patients with preclinical treatment were older (70.0% vs. 63.0%, p < 0.001), had more often a final diagnosis of MI (36.9 vs. 18.0, p < 0.001), were more likely to be smoker (29.9% vs. 22.9%, p=0.024), already on antiplatelet therapy (46.4% vs. 36.1%, p < 0.001) and had less often radiating chest pain (63.4% vs. 73.9%, p < 0.001). Further management in the ED revealed higher baseline troponin values (8.7 ng/L vs. 6.3 ng/L, p < 0.001) in pretreated patients, they had more often pathological electro- or echocardiogram (35.9 vs. 45.4, p < 0.001) and underwent coronary angiograms more often (42.0 vs. 23.1, p < 0.001). Two-year follow-up did not show significant differences in mortality for both patient groups (Figure 1).

Conclusion: In clinical reality, the vast majority of patients with suspected MI did not receive prehospital treatment. Although, there were considerable differences in patient characteristics, two-year outcome was similar in pretreated and not pretreated patients.
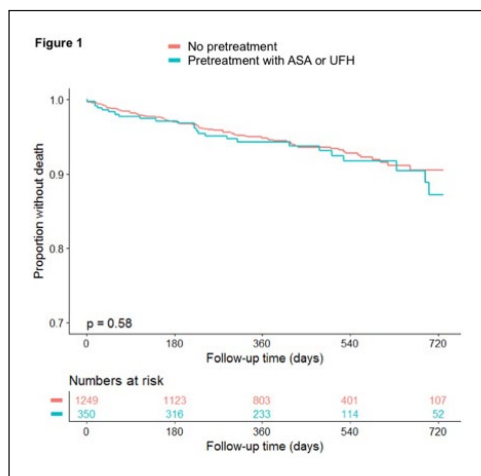
2-year survival

P513

Doxycycline therapy and markers of degradation of extracellular collagen matrix in patients with acute primary anterior STEMI

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Purpose: To assess the influence of doxycycline on the dynamics of markers of degradation extracellular matrix in patients with acute primary anterior myocardial infarction with ST-segment elevation (STEMI).

Methods: Study included 21 patients with STEMI, all of them had a percutaneous coronary intervention at the first 24th hours from the onset. The serum levels of matrix metalloproteinases (MMP), tissue inhibitor of metalloproteinases1 (TIMP1), C-terminal telopeptide, human C-reactive protein (hCRP), interleukin-1β (IL1β) were determinated by the immunoassay on the 1st (T1), 3d (T2), 7th (T3), 14th (T4) day and 6 month (T5) after STEMI. Depending on the additive administration of doxycycline (100 mg 2 times a day during 7 days), patients were divided into 2 groups.

Results: The level of MMP-9 decreased to T3, during to T5, but MMP-3 had the opposite dynamics at the same time, MMP-2 was without significant dynamics. The level of MMP9/TIMP1 decreased to T3, but the level of C-terminale telopeptide –to T4. The patients with/without doxycycline had the similar baseline clinical characteristics. The level of MMP-3 increased to T3, during to T5, but the level of C-terminal telopeptide decreased to T5, hCRP –to T4 in the doxycycline group. The level of MMP-2 increased from T3 to T5, MMP-9 and hCPR decreased from T1 to T5 in the group without doxycycline. However, the level of MMP-9/TIMP1 was significant lower at T2 and T3 in this group.

Conclusion: Additive therapy of doxycycline at the early postinfarction period in the patients with STEMI decreased the growth of MMP-2, but the level of MMP-3 increased from T3 to T5. Despite on the absence of a direct influence of doxycycline on the level of MMP-9, the level of MMP-9/TIMP1 was more at T2, T3, and activity of TIMP1 was decreased. In the doxycycline group, the level of hCRP and C-terminale telopeptide decreased to 14th day.

P514

Prior therapy with acetilsalicilic acid will be a protective factor in the time of coronary syndrome?

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Introduction: The use of acetylsalicylic acid (ASA) in primary prevention of cardiovascular events has long been questioned.

Objective: To characterize the influence of previous therapy with ASA on the clinical and electrocardiographic presentation of Acute Coronary Syndrome (ACS) and on in-hospital morbidity and mortality.

Methods: From a population of 745 patients (P) hospitalized in a Cardiac Intensive Care Unit diagnosed with ACS, all P without previous history of ACS or angioplasty (N = 488) were considered. We divided these P in 2 groups: P with previous therapy with ASA and P without prior therapy with ASA. The patient's age, gender, personal history, clinical and electrocardiographic presentation of ACS, left ventricular ejection fraction (LVEF), coronary angiography and angioplasty were recorded. The following in-hospital complications were defined: acute heart failure, cardiogenic shock, re-infarction, mechanical complications, stroke, major haemorrhage and need for blood transfusion. In-hospital mortality was compared between both groups.

Results: P with previous therapy constituted 16.3% (60 P) of the study population. These patients were older (70.9 ± 12.3 vs. 65.6 ± 14.3, p = 0.002), had a higher prevalence of arterial hypertension (90.0% vs 65.6%, p < 0.001), Diabetes mellitus (45.2% vs 26.9%, p = 0.008), dyslipidaemia (67.5% vs 45.8%, p = 0.001), chronic renal failure (16.3% vs 8.0%; P = 0.03), stroke (12.5% vs 5.3%, p = 0.03). P with previous therapy with ASA were less frequently admitted with STEMI (26.3% vs 50.8%, p = 0.001) and more frequently admitted with Unstable Angina (13.8% vs 4.4%, p = 0.003) and undetermined AMI (17.5% vs. 4.6%, p = 0.001). The rate of coronary angiography and angioplasty and the access used for coronary angiography was similar between the groups. During hospitalization, patients with previous therapy with ASA had a higher prevalence of acute heart failure (20.0% vs. 7.5%, p = 0.001) and a need for non-invasive ventilation (6.3% vs 0.8% P = 0.002), but there were no differences in LVEF and in the other complications considered, namely reinfarctation, stroke or major haemorrhage. There were no differences in in-hospital mortality between groups.

Conclusions: In patients with ACS, previous therapy with ASA seems to condition the clinical and electrocardiographic presentation of ACS and seems to be associate with a development of acute heart failure during hospitalization.

P515

Impact of chronic antiplatelet therapy on in-hospital outcomes in patients hospitalized with acute myocardial infarction

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Background: Patients hospitalized with acute myocardial infarction (AMI) are often on prior single (SAPT) or a dual (DAPT) antiplatelet therapy (APT). Whether chronic SAPT or DAPT is beneficial or associated with an increased risk in AMI is still controversial.

Purpose: We investigated the clinical effects of chronic SAPT or DAPT on myocardial infarct size, as estimated by troponin I peak value, and major bleeding events, in consecutive real-world AMI patients.

Methods and Results: We prospectively enrolled 1,718 consecutive AMI patients (798 STEMI and 920 NSTEMI) who were divided according to their chronic APT (no APT, SAPT, or DAPT). The study primary end point was the infarct size, as estimated by troponin I peak. Incidence of major bleeding was also evaluated. Five-hundred-thirty-six (31%) patients were on chronic SAPT and 215 (13%) on DAPT. A graded increase in GRACE and CRUSADE risk scores was found going from patients without APT to those with DAPT, while a progressive smaller troponin I peak was observed with the increasing number of chronic antiplatelet agents (11.2 [IQR 2-45], 6.6 [1-33], 4.1 [1-24] ng/ml; P < 0.001 for trend). This result was maintained after adjustment for baseline ischemic risk profile (GRACE score) and other major confounders (P < 0.001). The incidence of bleeding was higher in patients on chronic APT than in those without APT (5.2% vs. 2.4%; P=0.002). However, when the bleeding risk was adjusted for the CRUSADE risk score, chronic SAPT (OR 1.40 [95% CI 0.77-2.53]) and DAPT (OR 0.70 [95% CI 0.29-1.70]) were not associated with an increased bleeding risk.

Conclusions: In AMI patients, chronic APT is associated with higher baseline ischemic and bleeding risks. Despite this and unexpectedly, they have a smaller infarct size and similar adjusted bleeding risk.

P516

Predictors of newer P2Y12 inhibitors prescription at discharge in a contemporary cohort of patients with acute coronary syndrome

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Aims: identify predictors of newer P2Y12 inhibitors prescription at discharge in patients suffering from ACS.

Methods: We did a retrospective analysis of a multicenter ACS registry. From November 2012 to December 2015, all consecutive patients admitted for ACS were included. Patients dead before hospital discharge (n=142) and those

with missing antiplatelet therapy at discharge (n=109) were excluded. Multivariate binary logistic regression analysis was performed to identify independent predictors of newer P2Y12 inhibitors prescription at discharge.

Results: The final study population included 3515 patients (66)13 years, 74% male; 40% ST-segment elevation ACS). A total of 1021 patients (29%) were treated with newer P2Y12 inhibitors at discharge. Prasugrel was used in 346 (9.8%) and ticagrelor in 675 (19.2%). Patients on these agents at discharge were younger, had less comorbidity, better clinical status at admission and more frequently underwent percutaneous coronary intervention. Independent predictors associated with newer P2Y12 inhibitors prescription at discharge are shown in Table 1.

Conclusions: Our study results suggest that several factors influencing clinicians on the prescription of newer P2Y12 at discharge in ACS patients. Understanding new antiplatelet prescribing behavior such settings is crucial to inform interpretation of new studies exploring benefits of new antiplatelet drugs in ACS, and identifies opportunities for future efforts to improve the quality of prescribing therapies.

Table 1. Predcitors of P2y12 at discharge.

	OR (95%CI)	P value
Age (per 10 years)	0.60 (0.56-0.65)	< .001
Diabetes mellitus	1.69 (1.39-2.05)	< .001
Hyperlipidemia	1.43 (1.19-1.72)	< .001
Peripheral artery disease	0.64 (0.44-0.93)	.020
Hematocrit (per 3%)	1.04 (1.02-1.06)	< .001
Elevated cardiac markers	1.60 (1.19-2.15)	.002
ST-segment deviation	1.25 (1.03-1.51)	.023
Percutaneous coronary intervention	4.65 (3.53-6.12)	< .001
Coronary artery bypass grafting	0.23 (0.09-0.59)	.002
In-hospital stent thrombosis	4.13 (1.01-16.8)	.048
Major bleeding (previous and in-hospital)	0.56 (0.33-0.96)	.034
Indication for OAT at discharge	0.18 (0.13-0.26)	< .001

P517

Persistence with ticagrelor as part of dual antiplatelet therapy in Russian acute coronary syndrome patients during 1 year (STREAM study)

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Background: Dual antiplatelet therapy (DAPT) is the cornerstone of acute and long-term treatment in patients with acute coronary syndrome (ACS), and should be taken for at least 12 months. Ticagrelor 90mg BID + aspirin is the only DAPT that has demonstrated a reduction of cardiovascular death. There are no data about persistence with ticagrelor 90mg therapy in Russian ACS patients in clinical practice.

Purpose: The aim of this analysis is to describe persistence, duration of ticagrelor 90mg therapy as part of DAPT and switching to another P2Y12 inhibitor.

Methods: The STREAM study (NCT02288260) is a Russian observational study with both retrospective and prospective components. The prospective part is a single-arm, longitudinal cohort study which includes ACS patients who were discharged from hospital with ticagrelor 90mg BID. A descriptive analysis approach has been used to analyze study objectives.

Results: A total of 1,012 patients were enrolled in the prospective part of the study. 652 (64.4%) patients in the study had a discharge diagnosis of ST-segment elevation myocardial infarction (STEMI), 176 (17.4%) – a non ST-segment elevation myocardial infarction (NSTEMI) and 184 (18.2%) - unstable angina. A total of 191 (18.9%) patients had history of myocardial infarction, 461 (45.5%) – a history of stable coronary artery disease and most of patients had dyslipidemia – 760 (75.5%) and arterial hypertension – 889 (87.9%). Clopidogrel was prescribed in 576 (57%) patients at prehospital stage before ticagrelor 90mg initiation. Approximately 10% of patients (n=98) with STEMI received thrombolysis at prehospital stage. The median duration of ticagrelor 90mg was 285 days (interquartile range, 105-372 days). In the 955 patients who completed the study, 229 (24%) patients took DAPT with ticagrelor during first 3 months after ACS, 141 (14,8%) patients were on the therapy up to first 6 months, whereas 132 (13.8%) patients were persistent with the therapy at 9 months and 331 (34.7%) patients for up to 1 year. There was 3.7% (n=35) of the patients who had interruptions with ticagrelor 90mg. Bleeding was the reason for interruption of therapy in 2 (0.2%) patients. A total of 78 (8.2%) patients had significant violations of ticagrelor therapy (omissions

of ticagrelor usage more than 2 tablets consecutively, incorrect drug use: not every day or once daily usage). Switching to clopidogrel occurred in 27.4% (n=262) of patients during follow up period. Reasons for switching to clopidogrel were as follows: patient desire in 43 (16.6%) cases, surgery in 10 (3.86%) patients, financial reason in 197 (76.1%) patients, bleeding in 3 (1.2%) patients, and other reasons in 49 (18.9%) patients.

Conclusion: Median duration of ticagrelor 90mg treatment was 285 days. Only one third of patients were treated with ticagrelor 90 mg for up to 12 months. There is a room for improvement in patient persistence with ticagrelor as part of DAPT after an ACS event.

P518

Does level of myocardial injury differ between primary angioplasty patients loaded with clopidogrel then shifted to ticagrelor and the ones loaded and continued on ticagrelor?

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Background: In daily clinical practice we encounter STEMI patients loaded with clopidogrel when admitted to the CAG laboratory. We load those patients with the new recommended P2Y12 inhibitors at the first hour of primary angioplasty, if they've no contraindications.

Purpose: We aimed to compare the level of injury in STEMI patients who were first loaded with clopidogrel, compared with the ones first loaded with ticagrelor. Although clopidogrel loaded patients were shifted to ticagrelor at the first hour of angioplasty, antiplatelet action might still be lower than the ticagrelor loaded ones. We also searched for the major bleeding rates and in hospital MACE in this 2 groups

Methods: STEMI patients, with angina onset ≤3 hours and who had primary angioplasty to the proximal segments of one of the 3 coronary arteries were included in our study. Patients with LMCA intervention, GFR<60, who need tirofiban, who were on anticoagulants and who need multivessel or multistent intervention were excluded. All patients had total thrombotic occlusion at the proximal segment. Admission level of troponin I and the level at 6th hour of angioplasty were measured and Δtrop (6th hour trop-admission trop) was calculated to compare the level of myocardial loss.

Results: Totally 105 patients were included (52 were loaded with ticagrelor 180 mg and 53 were loaded with 600 mg clopidogrel first and shifted to 180 mg ticagrelor in the first hour of angioplasty). Two groups were similar for baseline characteristics. All demographic data, basal laboratory values, drug use and angiographic characteristics,

including lesion site and stent type, were not statistically different, except from the frequency of B2-C type lesions more common in the ticagrelor loaded group (p:0.011). All antiplatelet loadings were done at the first medical contact, ticagrelor loading time for switch group was at 56.28±10.91 minutes after the primary angioplasty. Δ troponin levels were significanty higher in the clopidogrel loaded group when compared to ticagrelor loaded group (53.23±34.01 vs 37.95±27.28, p=0.013). When we checked the major bleeding and in hospital MACE rates both groups were similar.

Conclusions: In STEMI patients with 2 different P2Y12 inhibitor loadings, we showed the degree of cell loss was more prominent in clopidogrel loaded patients,despite the switch to ticagrelor in the first hour of intervention. Ticagrelor loaded group had significantly less damage, though they had more complex lesions. We concluded that clopidogrel's slow, modest and variable platelet inhibition continued to be a negative factor on myocardial injury, though switching to ticagrelor. Recent recommendations for dual antiplatelet loading in STEMI should be put into daily practice effectively in the emergency departments where initial diagnosis and treatment is done. Shifting to a newer generation antiplatelet agent should be done promptly at suitable patients.

P519

Are all glycoprotein IIb/IIIa inhibitors the same in ST segment elevation myocardial infarction?

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On behalf of: Investigadores do Registo Nacional Português de Síndromes Coronárias Agudas

Introduction: The role of glycoprotein (GP) IIb/IIIa inhibitors in patients (P) with ST segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PCI) is not fully understood. The aim of this study was to evaluate if all GP IIb/IIIa inhibitors showed the same efficacy.

Methods: From a Registry of Acute Coronary Syndromes we studied P with STEMI underwent primary PCI.

The use of each of the inhibitors (eptifibatide, abciximab and tirofiban) was compared with no use of inhibitor. In-hospital primary endpoint [composite of in-hospital mortality (HM), re-myocardial infarction[MI] and stroke] and secondary end-points (each factor separately) were evaluated.

Results: We included 4177 patients, 2690 received no inhibitor, 809 received eptifibatide, 463 abciximab and 215 tirofiban.

In the comparison of eptifibatide versus (vs) non-inhibitor, there were no differences in the location of STEMI and in the major bleeding (MB) rate. In the eptifibatide group there was more P under dual antiplatelet therapy (DAPT) (p = 0.002) and less P with a high TIMI score (p < 0.001).

In the comparison of abciximab vs non-inhibitor, in the abiciximab group there was more P with previous MI (p = 0.02), more P under DAPT (p = 0.002), more P with major bleeding (p = 0.03) and less P with a high TIMI score (p = 0.01).

In the comparison of tirofiban vs non-inhibitor, there was no difference in the location of MI, in the DAPT rate, in the major bleeding rate or in the TIMI score.

Regarding the occurrence of endpoints, it was observed that:

In the comparison of eptifibatide vs non-inhibitor, eptifibatide was associated with a lower risk of primary endpoint (3.3% vs 5.4%, p = 0.019) and HM (2.5% vs 4.4%, p = 0.016). There were no differences in the rates of stroke (0.4% vs 0.9%, p = 0.17) and re-MI (0.6% vs. 0.5%, p = 0.7).

In the comparison of tirofiban vs non-inhibitor, tirofiban was associated with a higher risk of primary endpoint (10.7% vs 5.4%, p = 0.002), HM (8.4% vs 4.4%, p = 0.009) and re-MI (1.9% vs. 0.5%, p = 0.025). The stroke rate (0.9%) was the same in both groups.

In the comparison of abciximab vs non-inhibitor, there were no differences in the primary endpoint rates (6.7% vs 5.4%, p = 0.2), HM (4.7% vs 4.4%, p = 0,7) and stroke (1.1% vs 0.9%, p = 0.6). The rate of re-MI was 1.3% with abciximab vs. 0.5% non-inhibitor, p = 0.061.

In the multivariate analysis, it was observed that abciximab was a predictor of re-MI (p = 0.01, OR: 3.7). Tirofiban was a predictor of re-MI (p = 0.003, OR 6.3) and a predictor of primary endpoint (p = 0.01, OR: 2.4).

Conclusion: In our study we found significant differences in thrombotic endpoints between the different GP IIb/IIIA inhibitors. Tirofiban was a predictor of the primary endpoint (HM, re-MI or stroke) and re-MI. Abciximab was a predictor of re-MI. Eptifibatide was associated with a lower risk of the primary endpoint.

P520

Clinical outcomes of clopidogrel versus ticagrelor in real-world elderly patients with acute coronary syndrome

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Background: ESC recommends ticagrelor over clopidogrel for the treatment of acute coronary syndrome (ACS) but there is a distinct lack of evidence for the elderly patients (>75) and concerns over bleeding has led to significant variation in its use within the UK.

Purpose: To compare the 12-month clinical outcomes in real-world elderly population (>75) with ACS discharged with either clopidogrel or ticagrelor.

Methods: A retrospective cohort study was conducted on patients aged 75+ who were admitted to the Hospital between 2013 to 2015 with ACS based on the MINAP registry.

Results: 288 patients were included in this study of which 137 were discharged on clopidogrel and 151 on ticagrelor. The baseline clinical characteristics, presentation, treatment strategy and crusade bleeding score were similar between the groups. There were no significant differences in all-cause mortality (8.8% vs 10.6%, p=0.69), cardiovascular mortality (2.9% vs 2.0%, p=0.71), ischaemic stroke (0.7% vs 2.0%, p=0.62), admissions with non-cardiac chest pain (5.8% vs 5.3%, p=1.0), angina (6.6% vs 5.3%, p=0.80) or STEMI (2.2% vs 1.3%, p=0.67) between patients discharged on clopidogrel or ticagrelor. Patients on clopidogrel however had significant increased re-admissions with NSTEMI compared to ticagrelor (8.0% vs 2.0%, p=0.024). No difference was observed in either major (8.6 vs 8.8%, p=1.0) or minor TIMI bleeding (20.5% vs 18.2%, p=0.66).

Conclusions: In this real world analysis, elderly patients discharged on ticagrelor had significantly reduced re-admissions with NSTEMI without an increase in either major or minor bleeding compared to patients discharged on clopidogrel.

P521

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

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Introduction: The new antiplatelet drugs (NNAA), ticagrelor and prasugrel, have demonstrated superiority in treatment of acute coronary syndrome (ACS).

Objetive: We intend to analyze if the introduction in our environment is different in the female sex.

Methodology: We retrospectively studied the patients admitted for ACS in our Coronary Unit since August 2011, collecting the use of NNAA in the different stages of the ACS episode. The differences between groups were analyzed using chi-square, with a p < 0.05 considered significant.

Results: We included 1478 patients. Of them, 882 were ST-segment elevation myocardial infarction (STEMI), 29

aborted myocardial infarction, and 567 Non-ST-segment elevation myocardial infarction (NSTEMI). The mean age was 63.5, and the GRACE score was 146. Women were 26.6% (393). Since 2011 there has been and increase in the administration of NNAA in women (0%, 4.7%, 30.9%, 50.9%, 63.9%, 63.8%, p < 0.001) and men (4.9%, 16.1%, 52.3%, 70.8%, 78.2%, 79.2%, p < 0.001). However, use in women was significantly lower than in men (35.1 vs 49.4%, p < 0.001).

Conclusion: NNAA are being used more often in treatment of acute coronary syndrome, however the use in women is significantly lower than in men.

P522

Eptifibatide is more effective than other glycoprotein IIb / IIIa inhibitors in ST segment elevation myocardial infarction in real life

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Introduction: The role of glycoprotein (GP) IIb/IIIa inhibitors in patients (P) with ST segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PCI) is not fully understood. The aim of this study was to evaluate the clinical impact of the use of eptifibatide versus (vs) another inhibitor in these patients.

Methods: From a Registry of Acute Coronary Syndromes, we studied P with STEMI undergoing primary PCI who received GP IIb/IIIa inhibitors during the procedure. The use of eptifibatide was compared with the use of another inhibitor (tirofiban or abciximab). We evaluated the occurrence of the primary in-hospital endpoint [composite of in-hospital mortality (HM), re-MI and stroke] and the occurrence of secondary endpoints (each factor separately). Also we evaluated the major bleeding rate.

Results: We enrolled 1487 P with STEMI who underwent primary PCI who received an inhibitor. 809 P received eptifibatide, 463 abciximab and 215 tirofiban.

Regarding the baseline characteristics, it was observed that:

- In the eptifibatide vs abciximab comparison, there were no differences regarding the location of the MI, the rate of dual antiplatelet therapy (DAPT) or the TIMI score. In the abciximab group, there were more P with multivessel disease (52% vs 34%, p < 0.001) and more P with LVEF <50% (50% vs 24%, p < 0.001).

- In the eptifibatide vs tirofiban comparison, there were no differences regarding the location of the MI, the rate of DAPT or the TIMI score. In the tirofiban group there were more P with multivessel disease (43% vs 34%, p = 0.02) and more P with LVEF <50% (46% vs 24%, p < 0.001).

Regarding the occurrence of endpoints, it was verified that:

- In the eptifibatide vs abciximab comparison, eptifibatide was associated with a lower risk of primary endpoint (3.3% vs 6.7%, p = 0.007) and HM (2.5% vs 4.7%, p = 0.032). There were no differences in the rates of stroke (0.4% vs 1.1%, p = 0.1) and re-MI (0.6% vs 1.3%, p = 0.2). The major bleeding rate was similar between the groups (1.7% vs 3%, p = 0.1).

- In the eptifibatide vs tirofiban comparison, eptifibatide was associated with a lower risk of primary endpoint (3.3% vs 10.7%, p < 0.001) and HM (2.5% vs. 8.4%, p < 0.001). There were no differences in the rates of stroke (0.4% vs 0.9%, p = 0.3) and re-MI (0.6% vs 1.9%, p = 0.1). The major bleeding rate was similar between the groups (1.7% with eptifibatide vs 3.2%, p = 0.2).

In the multivariate analysis, administering tirofiban was a predictor of primary endpoint (p = 0.009, OR: 3.1) and HM (p = 0.002, OR: 9.0).

Conclusion: In primary PCI, the eptifibatide was associated with a reduction of primary endpoint (HM, re-MI or stroke) and HM compared to abciximab or tirofiban.

In the decision to perform a GP IIb / IIIa inhibitor in patients with STEMI undergoing PCI, eptifibatide appears to be the most effective.

P523

Prognostic impact of use of new antiplatelet drugs in female patients with acute coronary syndrome

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Introduction: According to clinical guidelines, new antiplatelet drugs (NNAA), ticagrelor and prasugrel should preferably be used to clopidogrel in acute coronary syndrome (ACS).

Objective: We want to analyze the impact of NNAA in female patients with ACS.

Methods: We analyzed clinical features and hospital evolution of patients admitted to ACS in our Coronary Unit since August 2011, and compared those receiving NNAA with those receiving clopidogrel. The differences between groups were analyzed using chi-square, ANOVA and logistic regression, with a p < 0.05 considered significant.

Results: We included 393 patients, the mean age was 65.8, GRACE score 155.9, and CRUSADE score 39.7. Twenty patients (5.1%) received pre-hospital NNAA, 56 (14.2%) in the hospital with a total of 138 (35.1%). Patients with NNAA were younger (63.7 vs. 68.9, p 0.001), had lower Killip, more dyslipemia, less history of anticoagulation, and more STEMI. The NNAA was associated with lower hospital mortality (2.9

vs 13.3%, p 0.001), with a similar incidence of bleeding (13.8 vs. 11.4). In logistic regression analysis, NNAA approached the statistical significance in reducing mortality, with an odds ratio of 0.337 (CI 0.108 to 1.049, p 0.060).

Conclusion: In our hospital, the use of NNAA in women is associated with lower mortality in ACS, although the multivariate analysis of this cohort does not reach statistical significance.

P524

Prevention of sudden cardiac death after myocardial infarction by using of physical and cardiorespiratory training

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Sudden cardiac death (SCD) is the main reason of mortality during one year after myocardial infarction (MI). Independent predictor of SCD after MI is the vegetative imbalance. Heart rate variability (HRV) is a widely used method for an assessment of a condition of vegetative nervous system. Possibilities of medicament impacts on a vegetative imbalance are limited, actual search of alternative methods of impact on HRV, such as physical trainings (PT) and cardiorespiratory training (KRT) is very important.

The purpose of this study: the assessment of changes of vegetative regulation of HR at patients with MI, receiving standard methods of treatment, sessions of KRT and PT in early period after MI.

Material and methods: 89 patients with IM in early period of disease at the age from 40 till 70 years were surveyed. The 1-st main group consisted from 29 people by whom KRT (5–10 sessions) was carried out. The assessment of efficiency and safety of KRT was carried out on a clinical picture and on parameters of HRV before, after and during KRT. The 2-nd main group was created from 30 patient by whom aerobic PT on bicycle was carried out. Both study groups received standard therapy. Control group (CG) consisted of 30 patients receiving only standard therapy.

Results: During carrying out of KRT, and after KRT worsening of clinical picture at patients of the 1-st main group was not observed. 4 patients from group of PT were excluded due to angina pectoris and signs of heart failure. HRV analysis at patients of the main group showed that after end of KRT decrease in an index of tension (p < 0,05), increase in an indicator of the general dispersion of HR (p < 0,05), and also a tendency to increase of vagal part of total power during spectral analysis (p=0,05) was observed. Normalization of HR and arterial pressure (AP), growth of cardiorespiratory index and index of a variation took place, cardiorespiratory

synchronization was restored. Persons from CG had no such changes. After the termination of PT in patients of 2-nd AP and HR has decreased while in the CG, opposite, accrued. Upon termination of PT at patients from 2-nd main group (4 months after IT) reliable increase in the general HRV parameters at the expense of parasympathetic (SD, dRR) and sympathetic (lgLF and LFn) influences was found; the share of humoral and metabolic influences (%VLF) decreased against a distinct tendency to the general improvement of HRV. Persons from CG had no such changes.

Conclusion: PT and KRT are safe and effective methods, allowing to improve vegetative regulation after MI

P525

Impact of diabetes mellitus on cardiopulmonary capacity in patients with ischemic heart disease

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Introduction: Diabetes mellitus (DM) is associated with long-term cardiovascular complications, including ischemic heart disease (IHD). Hyperglycaemia and insulin resistance leads to myocardial hypertrophy and fibrosis, leading to ventricular stiffness and myocardial dysfunction. The aim of this study was to assess the impact of type 2DM in cardiopulmonary function in patients with IHD.

Methods: We included 77 consecutive patients (57±9 years, 92% men) who underwent a cardiopulmonary exercise test (CPET) 2-3 months after an acute coronary syndrome. Demographic, clinical, echocardiographic and coronary angiographic variables were recorded at study entry. Categorical data were analysed using χ^2test. Continuous variables were analysed using T-test and the Mann–Whitney U-test as appropriate. Differences statistically significan p<0,05. Statistical analysis SPSS 20.

Results: Of 77 patients with IHD included in the study, 17 (22%) were diabetic. Age, body mass index (BMI), left ventricular ejection fraction (LVEF) and prevalence of hypertension, chronic obstructive pulmonary disease and smoking status were non-significantly different between patients with and without T2DM. HbA1c was 7.2±1.3% in the diabetic group. Results of the CPET were depicted in Table1. T2DM patients had lower VO2 max (17.5±2.6 vs 21.4±6.4 mLO2/kg/min; P<0,01), lower O2 pulse trajectory (12.4±2.2 vs 14.6±4.1 mL/beat; P<0,01), lower PETCO2 (31.3±2.7 vs 34.1±3.9; P=0.01) and higher VE/VCO2 slope (34.4±4.1 vs 31.6±5.9; P<0,01) compared to patients without DM. Peak respiratory exchange ratio

(RER) and breathing reserve were similar between both groups.

Conclusion: In IHD patients, T2DM was significantly associated with an impaired aerobic capacity and a ventilation-perfusion (V/P)mismatching, independently of LVEF and BMI. Non-vascular impairment of cardiac structure and function may explain the impaired functional capacity and V/P abnormalities observed in patients with DM.

Table 1. Clinical variables and CPET.

	T2DM	Non-T2DM	P
Age (years)	58.4±7.1	56.8±9.2	0.55
BMI (kg/m^2)	29.4±4.2	29.7±5.1	0.86
LVEF (%)	54.7±10	56.3 ±8.3	0.51
METs	6.8 ± 2,2	8.8 ± 2.4	<0.01
Peak VO$_2$ (mLO$_2$/kg/min)	17.5 ± 2.6	21.3 ± 6.4	<0.01
O$_2$ pulse trajectory (mL/beat)	12,4 ± 2,2	14.6 ± 4.1	0.01
RER at maximum load	1.04 ± 0.06	1.06 ± 0.07	0.18
VE/VCO2 slope	34.4 ± 4.1	31.6 ± 5.9	0.01
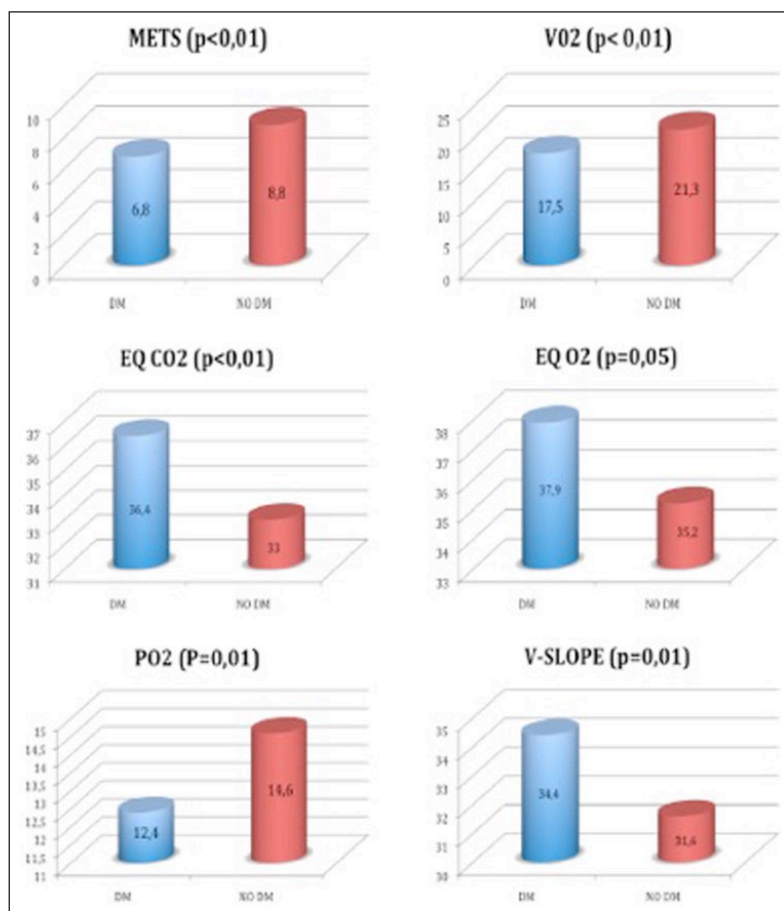
Figure 1

P526

Clinical and analytical predictors of infection diagnosis in patients hospitalized for acute myocardial infarction in the coronary intensive care unit

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Background: Infectious complications in the context of hospitalization in the Intensive Care Unit (ICU) are directly

associated with increased mortality, morbidity and length of stay. On the other hand, over diagnosing infection in the presence of other inflammatory process can lead to antibiotic overuse, higher rates of antibiotic resistance, and increased hospitalization time and overall costs. The inflammatory response associated with and dependent on the pathophysiology of acute myocardial infarction (AMI) imposes the diagnostic challenge of confirming or excluding the presence of any concomitant infectious process.

Purpose: To evaluate and determine the clinical and analytical predictors of infection diagnosis in a cohort of patients hospitalized for AMI in a Coronary Intensive Care Unit

Methods: 39 patients were consecutively admitted for AMI within 30 days. In each patient, several hematological and biochemical inflammatory markers were ordered during hospitalization. Demographic, clinical and analytical predictors were compared between the two groups (infection diagnosed vs infection not diagnosed).

Results: Mean age was 69.2 ± 10.8 years, 66.7% male. There was a mortality rate of 7.7% (n = 3) and an infection rate of 17.9% (n = 7). Most cases of infection were diagnosed in the first 72 hours of hospitalization (71.4%). In all cases, antibiotic therapy was initiated, and only one bacterial agent was isolated in two infected patients (28.6%). Univariate analysis found maximum heart rate during hospitalization (OR 1.08, p = 0.018), longer hospitalization time (OR 1.24, p = 0.007), prior stroke (OR 20.0, p = 0.005), New York Heart Association class > 2 (OR 3.26, p = 0.013), left ventricular ejection fraction <30% at admission (OR 7.25, p = 0.042), lower hematocrit nadir during hospitalization (OR 1.36, p = 0.011), positive C-reactive protein (CPR) at admission (OR 1.72, p = 0.015) and higher CHA2DS2-VASc score (OR 1.75, p = 0.032) as predictors of infection. It should be noted that the maximum CPR values as well as at 4h, 8h, 16h, 24h, 48h, 72h and 5 days after admission were not predictors of concomitant onset of infection. No independent predictors of infection were identified in the multivariate analysis.

Conclusions: In our population, the CRP value at admission was a predictor of assumed infection in patients with AMI, but the remaining serial values of CRP were not. The present finding raises the hypothesis that in many patients hospitalized for AMI, the diagnosis of infection is erroneously based on the value of CRP at admission which, given the low percentage of cases with isolated agent, may be associated with overuse of antibiotics.

Biomarkers

P527

Kinetic of high-sensitivity cardiac troponin T in patients with non ST-segment elevation myocardial infarction

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Background: cardiac biomarkers including troponins are the cornerstone of the biological definition of acute myocardial infarction. In previous literature it was shown that hs-Troponin T blood assay follows a typical biphasic kinetic in patients (pts) affected by ST segment elevation myocardial infarction (STEMI), treated by primary percutaneous coronary intervention (PCI), while this does not appear to be the case for creatinphosphokinase (CPK) and hs-Troponin I assays. According to these previous data, we studied hs-troponin T and CPK kinetics in pts suffering from non-ST segment elevation myocardial infarction (NSTEMI).

Methods: we retrospectively analysed blood samples for cardiac biomarkers in NSTEMI pts consecutively admitted to the coronary care unit of our institution from January 2015 to May 2016.

Results: A total of 83 pts were included. 89% of pts were treated by PCI; 98% of these pts received PCI within 24 hours from hospital admission. Among the 83 enrolled pts, only 11% was treated by surgical revascularization and/or anti-ischemic pharmacological therapy. A double peak of hs-troponin T was observed only in pts treated by PCI (p=0,0001). In these pts the mean time to first hs-troponin T peak was at $35,84 \pm 4,4$ hours while the mean time to second hs-troponin T peak was at $78,62 \pm 8,7$ hours. CPK value at hospital admission was $208,6 \pm 34,8$ U/L while first hs-troponin T peak was $560,1 \pm 112,9$ ng/L; the second hs-troponin T peak was $240,3 \pm 33,7$ ng/L, in absence of CPK double peak.

Conclusions: similarly to previous studies, showing a double peak of hs-troponin T kinetic in STEMI pts, our data confirm the presence of hs-troponin T double peak, in the absence of CPK second dispersion, also in NSTEMI pts. The hs-troponin T second peak is strongly related to PCI procedure while pts undergoing conservative treatment or surgical coronary revascularization do not show such a kinetic. Another aspect to take into account is the absence of CPK second dispersion. This could suggest a potential trivial meaning of hs-troponin T second peak. Therefore, the second peak could not be of any significance for prognostic evaluation and appropriate timing of pts discharge from acute cardiac care units, with the relative economical implications. Our hypothesis should be further evaluated by larger and prospective studies.

P528

Cytokine and adipokine profiles of adipocytes patients with coronary artery disease

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Background: Studying the metabolic characteristics of adipocytes from epicardial adipose tissue (EAT) located in the immediate vicinity of ischaemic areas may provide new insights into basic and applied cardiovascular research.

Objective: This study aimed to investigate the adipokine and cytokine profiles of adipocytes from EAT and subcutaneous adipose tissue (SAT) in conjunction with the visceral adipose tissue (VAT) area and the biochemical and clinical characteristics of patients with coronary artery disease (CAD).

Methods: Eighty-four patients with CAD, comprising 70 men and 14 women, were assessed and divided into two groups based on the presence of visceral obesity (VO). We sampled EAT and SAT from the patients with VO, and we cultured the adipocytes and evaluated their adipokine profiles and pro-inflammatory activity. All study was carried out in compliance with the Helsinki Declaration.

Results: EAT adipocytes were characterised by increases in the interleukin (IL)-1 and tumour necrosis factor (TNF)-α levels, and the leptin-adiponectin ratio, and decreases in the adiponectin and IL-10 levels. SAT adipocytes were characterised by a decrease in the concentration of soluble receptor for leptin (sOB-R) and more pronounced leptin resistance, and the increase in the pro-inflammatory cytokines was offset by an increase in the IL-10 concentration. Associations were determined between the presence of multi-vessel CAD, multifocal atherosclerosis, insulin resistance, atherogenic dyslipidaemia, an imbalance of adipokines, and markers of inflammation. The EAT area was associated with the presence of higher concentrations of leptin, the TNF-α levels within the adipocytes and serum, lipid and carbohydrate metabolism, and the presence of a lower level of sOB-R.

Conclusion: CAD in the context of the status of the EAT adipocytes can be characterised as a 'metabolic inflammation', which suggests the direct involvement of adipocytes in the pathogenesis of CAD.

P529

Inflammatory markers in patients with acute coronary syndrome

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Introduction: To date, the literature published the results of several studies, which revealed a clear dependence of inflammatory markers with the risk of adverse events in patients with different forms of acute coronary syndrome (ACS). Timely detection of the increased levels of inflammatory markers may reduce the number of vascular complications.

Aim: To assess the features of inflammatory response in patients with ACS. To investigate whether there is the association between inflammatory response and severity of coronary stenosis in patients with myocardial infarction (MI) using the SYNTAX score (SXscore).

Methods: A total of 360 patients with ACS were examined. Group 1 included 86 patients with unstable angina (UA) (mean age 58±8.4 years); group 2 consisted of 274 patients with MI (mean age 61±11.4 years). The patients of group 2 were divided into 2 tertiles based on the SYNTAX trial results. The low syntax group (n=73) was defined as those with an SXscore ≤22. The intermediate SXscore ≥23 and <33 and high syntax groups SXscore ≥33 were combined into one (n=201). Biochemical studies were performed on admission to the hospital. Cellular inflammatory markers (neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR)); vascular inflammatory markers (hs-CRP, TNF-alpha, homocysteine, interleukine 1β, 6, 8; sCD40, CD40L, MMP-9, TIMP-1); endothelial dysfunction markers (endothelin-1, nitrites); markers of myocardial damage (creatine phosphokinase myocardial band (CPK-MB), troponin T) were measured.

Results: Patients in group 2 had significantly higher level of such parameters as: CPK-MB, troponin T, NT-proBNP, interleukine 1β, 6, 8, hs-CRP, TNF-alpha, MMP-9,TIMP-1, CD40, sCD40L, homocysteine, endothelin-1 and nitrites compared to patients in group 1. Logistic regression found that patients in groups 1 and 2 significantly differed not only by the level of troponin T and CPK-MB, but such markers as: NLR (β=0.950, p=0.001), PLR (β=-0.10, p=0.047), hs-CRP (β=-0.312, p=0.045). Troponin T, NT-proBNP, interleukine 1β, 6, hs-CRP, TNF-alpha, MMP-9 were significantly lower in patients with low SXscore compared to patients with intermediate and high SXscore (p < 0.05). Logistic regression analysis revealed that hs-CRP, interleukine 6 and CD40L (coefficient β=0.639, 66%, p < 0.01) were significantly associated with low SXscore in patients with MI. Besides TNF-alpha, homocysteine, CD40L, MMP-9 (coefficient β=-5.539, 66%, p < 0.01) were significantly correlated with intermediate and high SXscore in the same group of patients.

Conclusions: The study demonstrated that cellular (NLR, PLR) and vascular inflammatory markers (hs-CRP) may be associated with myocardial damage. In patients with MI inflammatory markers were significantly associated with the severity of coronary stenosis according to the SXscore.

P530

Growth differenciation factor 15 and primary ventricular fibrillation prognosis in stemi

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Background: Primary ventricular fibrillation (PVF) is an ominous complication of ST segment elevation myocardial infarction (STEMI), without known predictive factors. The Growth Differentiation Factor 15 (GDF-15) is a molecule which increases its expression in stress situations and has been demonstrated prognostic value in STEMI patients.

Purpose: Analyze the prognostic value of GDF-15 in PVF patients in the setting of STEMI.

Methods: Prospective, unicenter registry of STEMI patients treated with primary percutaneous coronary intervention (pPCI) between February 2011-August 2015. GDF-15 concentrations were measured on admission. Predictive value of GDF-15 levels on 30-days mortality was analyzed using logistic regression analysis.

Results: We enrolled 1,165 STEMI patients treated with pPCI (men 78.5%, age 62.3±13.1), including 72 PVF patients (6.2%). Median GDF-15 was doubled in PVF patients (2,655 vs 1,367 pg/ml, p<0,001). 30-days mortality in PVF patients was 13.9% vs 3.6% in non-PVF patients. GDF-15 concentrations in PVF patients were higher in 30-days deceased patients (13,098 vs 2,415, p<0,001). A multivariable analysis was performed including age, sex, clinical variables, ejection fraction, reperfusion and myocardial necrosis biomarker. LogGDF-15 remain as independent predictive factor of 30-days mortality in PVF patients (HR:7.09; IC95%:1.70-29.60, p=0.007) as well as in non-PVF patients (HR:1,87; IC95%:1,28-2,74, p=0,001).

Conclusions: GDF-15 concentration emerged as a powerful independent predictive factor of 30-days mortality in PVF STEMI patients.

P531

microRNA footprint in non-ST-segment elevation myocardial infarction. Comparison of the acute and 1-year follow-up pattern

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Background: Changes in circulating microRNA levels have been used as a tool to determine the risk of certain types of cancer. Recent studies have found changes in microRNA expression in the serum of hospitalized patients reflecting cardiac and vascular fibrosis. microRNAs could be used as cardiovascular risk biomarkers.

Purpose: The aim of the study was to determine the microRNA footprint in patients with non–ST-segment elevation myocardial infarction (NSTEMI) in the acute phase and at 1-year follow-up.

Methods: 35 patients with NSTEMI treated with percutaneous cardiac intervention were prospectively included. Serum samples were collected at the time of the infarction (acute phase) and at 1-year follow-up (stabilized phase). In addition, blood samples were collected from healthy volunteers without cardiovascular risk as a control group. Serum analysis were performed on microRNA arrays. Clinical outcomes were collected.

Results: The mean age of the patients (n=35) was 68.5 years and 48.6 years in the control group (n = 21). One year follow-up was available in 33 patients. There were 2 (5.7%) target lesion revascularizations at 1-year follow-up. Fifty-nine microRNA of the 754 analysed were found down-regulated or up-regulated at the acute phase. There was a different activation microRNA footprint in the NSTEMI acute phase compared with controls and with the patient in stable phase.

Conclusions: In NSTEMI patients, there was a characteristic microRNA footprint in the acute and in the stabilized phase. The pathophysiological mechanism involved in the change of the miRNA expression in infarction is unknown and deserves further research.
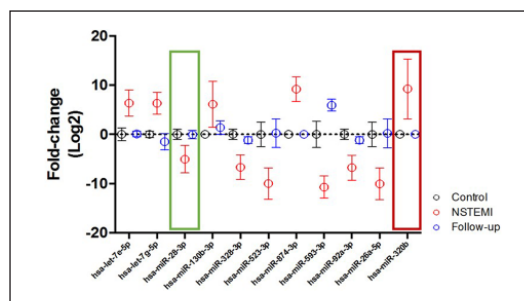
microRNA footprint in NSTEMI

P532

Inflammatory markers in patients with isolated and non isolated coronary artery ectasia

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Background: Although the etiology of coronary artery ectasia (CAE) is not fully understood, atherosclerosis is considered a major part of the process. Whether isolated CAE and CAE in the presence of obstructive coronary artery disease (CAD) are different entities is unknown.

Purpose: The aim of this study was to compare the clinical presentation and level of inflammatory markers at admission in patients with isolated CAE and CAE in the presence of obstructive coronary artery disease.

Methods: A total of 140 patients with CAE were selected in a retrospective manner from individuals who undergone coronary angiography between January 2014 and June 2016. Study population consisted of two groups: 105 (75%) patients with isolated CAE (ICAE) and 35 (25%) with both CAE and severe (>70%) obstructive stenosis in at least one coronary artery (CAE+OS).

Results: Population characteristics are given in Table 1. No significant differences were found between subjects with ICAE and CAE+OS in terms of HDL (36.5 ±10.7 vs. 38.1 ±12.7; p = 0.46), hsRCP (23.3 ±11.6 vs 42.1 ±15.9; p =0.24), albumin (3.8 ±0.4 vs 3.9 ±0.4; p = 0.18) or WBC (8.9 ±2.8 vs 9.4 ±3.3; p = 0.44). Markis type I was more frequently found in subjects with ICAE (68.5% vs 22.8%, p < 0.001). The ICAE group showed higher rates of STEMI as a initial presentation compared to CAE+OS (54.2% vs 40 %; p =0.001).

Conclusions: No differences in the levels of inflammation markers were found between patients with ICAE vs. CAE+OS. Isolated CAE carries an increased risk of STEMI as initial presentation, although mechanisms remain unclear.

Table 1.

Total (N = 140)	ICAE (N= 105)	CAE+OS (N=35)	p value
Diabetes Mellitus - no (%)	14 (13.3)	4 (11.4)	0.004
Hypertension - no (%)	59 (56.1)	20 (57.1)	0.92
Hyperlipidemia - no (%)	31 (29.5)	17 (48.5)	0.04
Smoking - no (%)	43 (40.9)	18 (51.4)	0.27
HDL (mg/dl) ~ × ±DS	36.5 (±10.7)	38.1 (±12.7)	0.46
C-reactive Protein (mg/dl) ~ × ±DS	23.3 (± 11.6)	42.1 (± 15.9)	0.24
Albumin (mg/dl) ~ × ±DS	3.8 (± 0.4)	3.9 (± 0.4)	0.18
White Cell count (mm^3) ~ × ±DS	8.9 (± 2.8)	9.4 (± 3.3)	0.44
BNP	680.5 (± 328)	1238.2 (± 462)	0.23
Glucose (mg/dl) ~ × ±DS	112 (± 29.2)	110 (± 38.0)	0.81
Type of presentation - STEMI - no (%)	57 (54.2)	14 (40.0)	< 0.01
- NSTEMI - no (%)	18 (17.1)	20 (57.1)	
- Stable CAD - no (%)	30 (28.5)	1 (2.9)	
Markis classification - Type I - no (%)	72 (68.5)	8 (22.8)	< 0.001
- Type 2 - no (%)	11 (10.4)	6 (17.1)	
- Type 3 - no (%)	14 (13.3)	10 (28.5)	
- Type 4 - no (%)	8 (7.6)	11 (31.4)	

P533

Prognostic implications of stress glycaemia, glycosylated hemoglobin and glycoregulation in patients with acute coronary syndrome

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Background: Diabetes is diagnosed in 10-20% of patients with acute coronary syndrome (ACS) not known to be diabetics. Glycosylated hemoglobin, elevated blood glucose and stress glycaemia are an independent risk factors for in-hospital morbidity and mortality, regardless of presence or absence of diabetes. AIM of our study was to evaluate the prevalence of newly-diagnosed diabetes among patients with ACS, and to assess the relationship between stress glycaemia, glycoregulation and newly-diagnosed diabetes with in-hospital morbidity and mortality.

Methods: a prospective observational study with data gathered from the hospital registry of patients treated for ACS (STEMI, NSTEMI), during the period of January 2015 - April 2017 at the University Clinic of Cardiology in Republic of Macedonia. We analyzed demographic, clinical, biochemical variables, parameters of glycemic metabolism, LV function, extent and severity of coronary artery disease, culprit artery, and in-hospital cardiac events. We comparatively analyzed patients according to the HgbA1C and known DM in five groups: non-DM (< 5.6%), new pre-DM (5.6-6.5%), new DM (≥ 6.5%), controlled (<7%) and uncontrolled (≥7%) known DM. Statistical analyze: descriptive and comparative statistic with t-test and Pearson Chi square, univariate and multivariate regression analyze for identifying independent predictors. Significance was determined at the level of 0.05.

Results: 912 patients, (590 males and 322 females) at mean age of 56±11y, were included. Impaired glucose metabolism was detected in 43.5% of patients, 8.1% of whom were newly-diagnosed DM. The highest levels of stress glycaemia were found in newly-diagnosed, and uncontrolled known diabetics. The in-hospital event rate was 21.3%, the mortality rate 8.1%, being the highest in newly-diagnosed and known but uncontrolled diabetic patients.

Conclusions: We observed high prevalence of unknown diabetes among patients with acute coronary syndrome. Stress glycaemia and failure to achieve glycemic controlee, were an independent predictors of in-hospital morbidity and mortality.
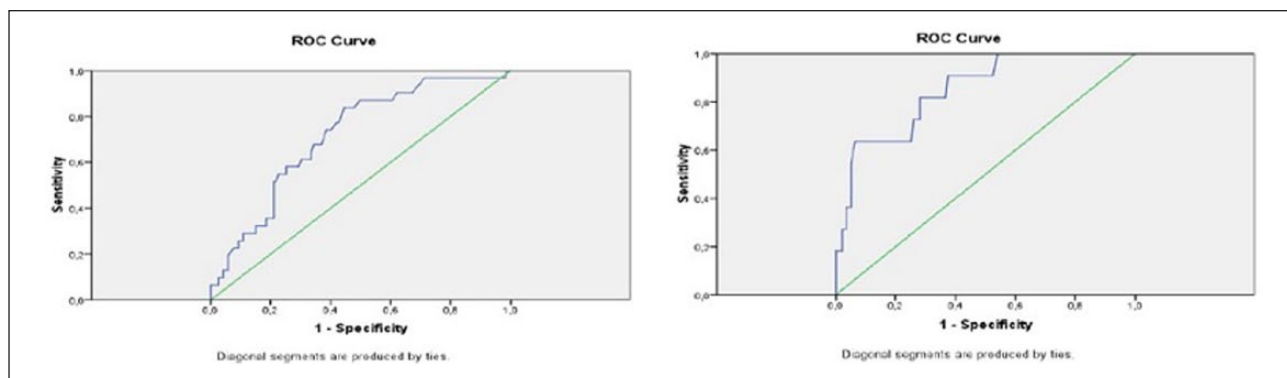
ROC curve: stress glycaemia and CVE/CVD

P534

B-type natriuretic peptide as predictor of in-hospital mortality in acute coronary syndrome in the presence of renal dysfunction, obesity and advanced age

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On behalf of: The ProACS Registry Investigators

Introduction: The prognostic value of B-type natriuretic peptide (BNP) in acute coronary syndrome (ACS) is not well studied and no definitive cut-off values in ACS context are established. Moreover, BNP levels may be influenced by renal dysfunction, advanced age and obesity. The aim of the present study is to evaluate BNP as predictor of in-hospital mortality in ACS in these particular populations.

Methods: Analysis of BNP admission value as predictor of in-hospital mortality in ACS patients (P) admitted between 2010 and 2017, in a national ACS registry. P were divided according the study characteristics: without renal dysfunction vs renal dysfunction (creatinine > 1.2mg/dl); non-obese vs obese (body mass index >30 kg/m^2); non-elderly (<65 years) vs elderly (> 65 years)

Results: 4387 P were enrolled, 71.7% males, mean age 67±13 years.

826 P (18.8%) presented renal dysfunction. In this subgroup BNP showed a sensibility of 68.8% and a specificity of 59.4% to predict in-hospital mortality, with an area under the ROC curve (AUC) of 0.670, p > 0.001; contrasting with subgroup without renal dysfunction (sensibility of 85.1%; specificity 61.2%; AUC 0.780; =0.022). The cut-off value of BNP as predictor of in-hospital mortality was higher in renal dysfunction P (577.5 vs 195.5 ng/ml).

973 P (22.2%) were obese. In this subgroup the BNP sensibility was 69.0% and specificity was 78.3% (AUC 0.778; p < 0.001), comparing to 87.4% and 54.1% respectively in non-obese P (AUC 0.771; p < 0.001). The cut-off value of BNP was higher in obese P (392.5 vs 196.5 ng/ml).

2389 P (54.5%) were elderly. BNP presented a sensibility of 68.1% and a specificity of 63.0% (AUC 0.710; p < 0.001) in older P comparing to a sensibility of 60.9% and a specificity of 83.9% (AUC 0.790; p < 0.001) in younger P. The cut-off value of BNP to predict in-hospital mortality was higher in elderly (391.5 vs 312.5 ng/ml).

Conclusion: BNP lost sensibility to predict in-hospital mortality in patients with renal dysfunction and obesity, being less specific in elderly population. Higher values of BNP should be considered in these populations as marker of worst prognosis in ACS.

P535

Is b-type natriuretic peptide a good predictor of heart failure in context of acute coronary syndrome?

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Introduction: The value of B-type natriuretic peptide (BNP) as surrogate marker of in-hospital heart failure (IH HF) in acute coronary syndrome (ACS) is less established, particularly in elderly and obese patients (P) and in the presence of kidney disease.

Objective: Evaluation the BNP as predictor of HF in ACS in such subgroups of P.

Methods: Analysis of BNP admission value in ACS patients (P) admitted between 2010 and 2017, in a national ACS registry. P data were analysed according to age (non-elderly [<65 years] vs elderly [> 65 years]), obesity (non-obese vs obese [body mass index >30 kg/m^2] and renal function (without renal dysfunction vs renal dysfunction [creatinine >1.2mg/dl]).

Results: The study included 4387 P, 71.7% males, mean age 67±13 years.

2389 P (54.5%) were elderly. In this subgroup the BNP cut-off value to predict IH HF was 304ng/ml (sensibility 81.8%; specificity 66.2%). The cut-off value in non-elderly P was 239ng/ml, with lower sensibility (70.9%) but higher specificity (83.8%). There was not significant difference in area under the ROC curve (AUC) between both models (0.798 vs 0.812; p=0.463).

973 P (22.2%) were obese. The cut-off of BNP as predictor of IH HF was lower in obese P (210 vs 250ng/ml), with similar sensibility (89.0% vs 82.2%) and specificity (74.2% vs 71.5%) comparing with non-obese. The discriminatory power of BNP was superior in obese P (AUC 0.857 vs 0.823; p=0.043)

826 P (18.8%) presented renal dysfunction. A BNP cut-off value of 432ng/ml predicted with 77.9% of sensibility and 68.8% of specificity the occurrence of IH HF in P with renal dysfunction. In P without renal dysfunction the cut-off value was 250 ng/ml with 78.5% of sensibility and 76.3% of specificity. Discriminatory capacity of BNP were substantially lower in P with renal dysfunction (AUC 0.770 vs 0.825; p=0.003).

Regarding the BNP as predictor of left ventricular ejection fraction <40%, the cut-off values were 410ng/ml (AUC 0.763) in elderly, 263ng/ml (AUC 0.802) in obese and 596ng/ml (AUC 0.737) in P with renal dysfunction.

Conclusion: Higher values of BNP should be considered as marker of HF in ACS, particularly in elderly and in the presence of kidney disease. The cut-off value was lower in obese comparing with non-obese. Discriminatory power of BNP was higher in obese and lower in P with kidney disease.

P536

Role of new biomarkers in prognosis of acute kidney injury in patients with acute myocardial infarction

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Acute kidney injury (AKI) is a common complication of acute myocardial infarction (AMI), but has not been well studied so far. AKI strongly associates with long-term mortality, especially in those patients, who underwent primary percutaneous coronary intervention (PCI). In order to diagnose this condition in time the search for new biomarkers is going. One of them is the soluble ST2 (sST2).

Purpose: to estimate the role of various markers in the AKI formation in patients with AMI

Methods: 103 patients were screened with ST segment elevation myocardial infarction (STEMI) (75 male and 28

female), mean age was $61,85 \pm 12,23$ years. In anamnesis patients had: 15% - previous myocardial infarction, 26% - stable angina, 79% - hypertension, 26% - diabetes mellitus. All patients had to undergo baseline investigations, including the level of serum creatinine; the glomerular filtration rate (GFR) was estimated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula. Accordingly to the result, all patients have been divided into two groups with the GFR level less and greater than 60 mL/min/1.73 m2. In addition, during the first day of hospitalization the sST2 and N-terminal pro-brain natriuretic peptide (NT-pro BNP) were determined.

Results: During the statistical analysis the mean value of sST2 in the first group was 84.06 pg/ml, in the second – 52.84; the mean value for NT- pro BNP was 846.69 pg/ml and 447.28 pg/ml, respectively. GFR has been calculated, the average was 45 ml/min/1.73m2 in the first group and 73 ml/min/1.73m2 in the second. By comparing selected groups significant difference in GFR was found (p < 0.0001). The analyses of biomarkers interconnection (NT pro-BNP, sST2) showed significant difference of estimated parameters in both groups as well (p ≤ 0.03; p ≤ 0.02, respectively). Also, correlation of medium strength between biomarkers (sST2, NT pro-BNP) and GFR (r=0.4, p ≤ 0.0001; r=0.4, p≤0.001) was found.

Conclusions: The biomarker sST2 can be used for risk stratification of AKI development in patients with STEMI; it's as sensitive as the known marker NT- pro BNP. For high prognostic possibility we can use combination of biomarkers.

P537

Soluble ST2 and adverse left ventricular remodeling in patients with acute myocardial infarction with ST segment elevation

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Purpose: to evaluate the prognostic role of soluble form of the stimulating growth factor (sST2) in the development of adverse LV remodeling (LVR) at 6 months from the development in patients with acute myocardial infarction with ST segment elevation (STEMI).

Methods and results: 31 patients with STEMI were included. Assays of sST along with other markers of adverse LVR - matrix metalloproteinases (MMP)-2, -3, -9, N-terminal prohormone brain natriuretic peptide (NTproBNP), C-reactive protein (CRP), IL-1β were taken on the 1st day (T1), 3d (T2), 7th (T3), 14th (T4), and through 6 months (T5), parameters of echocardiography were evaluated at the same time. The association with the

parameters of the standard echocardiogram, such as end-dyastolic volume (EDV), was recieved only with MMP-9 at T4 and T5 (R = 0.73, R = 0.84, P < 0.05, accordinly). The group with an increase of EDV more than 20% to T5 was the different in the levels of other markers, such as a higher level of sST2 at T5, and a lower level of IL-1β at T1 and T2 (P < 0.05). According to the results of multifactor analysis, it was revealed that the level of sST2 at T2 (P = 0.023) along with the reperfusion time (P = 0.014) were associated with the development of adverse LVR. It should be noted that in the group with a level of sST> 40 ng/mL at the T1, systolic LV dysfunction is more pronounced in the early post-infarction period, and the absence of a marker decrease to 25 ng/ml or less to the T4 is associated with the development of adverse LVD (sensitivity, specificity, diagnostic accuracy of the method - 85%, 75%, 54%, respectively).

Conclusions: The level of the sST2> 40 ng/mL at the time of admission and the absence of its decrease to 25 ng/mL and lower by the 14th day has a sensitivity of 85%, specificity of 75% in the prognosis of adverse LVR in patients with STEMI.

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Impact of acute and chronic glycemia on acute kidney injury in diabetic patients hospitalized with acute myocardial infarction

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Background: In acute myocardial infarction (AMI), acute hyperglycemia is a powerful predictor of acute kidney injury (AKI), particularly in patients without diabetes mellitus (DM). This emphasizes the importance of an acute glycemic rise, rather than glycemia level at admission.

Purpose: We investigated whether, in DM patients with AMI, the combined evaluation of acute and chronic glycemic levels may have a better AKI prognostic value than admission glycemia alone.

Methods: At admission, we prospectively measured glycemia and estimated average chronic glucose levels (mg/dl) using glycosylated hemoglobin (HbA1c), according to the formula: 28.7 x HbA1c (%) - 46.7. We evaluated the association with AKI of acute to chronic (A/C) glycemic ratio and of the difference between acute and chronic glycemia (ΔA-C).

Results: We enrolled 474 DM patients with AMI (209 STEMI and 265 NSTEMI). Of them, 77 (16%) experienced AKI. The incidence of AKI increased in parallel with A/C glycemic ratio (12%, 14%, 22%; P=0.02 for trend) and ΔA-C (13%, 13%, 23%; P=0.01), but not with admission glycemic tertiles (15%, 13%, 20%; P=0.22). At ROC analysis, A/C glycemic ratio (AUC 0.62 [95% CI 0.55-0.69]; P=0.001), and ΔA-C (AUC 0.62 [95% CI 0.54-0.69]; P=0.002) only accurately predicted AKI, without difference in the AUC between them (P=0.53). At reclassification analysis, the addition of A/C glycemic ratio and of ΔA-C to acute glycemia allowed a proper AKI risk prediction in 16% of patients. These relationships remained significant even after adjustment for baseline variables associated with AKI.

Conclusions: The study indicates that, in AMI patients with DM, AKI is better predicted by the combined evaluation of acute and chronic glycemic values than by assessment of admission glycemia alone.

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Role of novel biomarkers of renal injury in patients with st segment elevation myocardial infarction

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Worsening renal function (WRF) significantly associated with the adverse prognosis of patients with acute coronary syndrome (ACS). ST-2 is a novel and promising biomarker in the evaluation prognosis for ACS patients. sST2 as an emerging marker of reduced kidney function in ACS patients is being actively studied.

Purpose: to determine prognostic significance of sST2 and other biomarkers in prognosis of patients with reduced renal function and ACS.

Methods: 103 patients were screened with ST segment elevation myocardial infarction (STEMI) (75 male and 28 female), mean age was 61,85 ± 12,23 years. All patients had to undergo baseline investigations, including the level of serum creatinine; the glomerular filtration rate (GFR) was estimated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula. Accordingly to the result, all patients have been divided into two groups with the GFR level less (the 1st group) and greater (the 2nd group) than 60 mL/min/1.73 m2. In addition, during the first day of hospitalization the sST2 and N-terminal pro-brain natriuretic peptide (NT-pro BNP) were determined.

Results: we calculated the GFR, the average was 70,40±26,29 mL/min/1.73 m2. In the 1st group of patients the average GFR was 45±1,32 ml/min/1.73m2, in the 2nd - 73±2 ml/min/1.73m2. There was significant difference between level of GFR in those group of patients (p < 0,0001). During the statistical analysis the mean value of sST2 in the first group was 84,06 pg/ml, in the second – 52,84 pg/ml; the mean value for NT- pro BNP was 846.69 pg/ml and

447,28 pg/ml, respectively. The effect of 60 variables of clinical, instrumental and laboratorial status was assessed on formation of reduced kidney function in patients with different level of GFR. For identification of the main risk factors for WRF, we have used logistic regression (LR): NT-pro BNP (area under curve (AUC) 0.7; p < 0.05; 95% confidence interval (CI): 0.52 – 0.8; sensitivity (Se) 63%, specificity (Spe) 71%), sST2 (AUC 0.63; p < 0.02; 95% CI: 0.52 – 0.74; Se 83%, Spe 41%) were main risk factors for WRF predicting.

Conclusions: The biomarker sST2 can be used for risk stratification in WRF in patients with STEMI; it's as sensitive as the known marker NT- pro BNP. For high prognostic possibility we can use combination of biomarkers.

P540

Biochemical markers in the prognosis of the development of unstable angina in patients after coronary angioplasty and stenting

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Introduction: Vascular inflammatory reaction is of great importance in the adverse event in patients with coronary stenosis. Timely detection of the increased levels of inflammatory markers reduces the number of vascular complications after coronary stenting.

Aim: To detect factors which may be used as predictors of cardiovascular complications after coronary stenting.

Methods: 143 patients with coronary artery disease were examined. Patients were divided into two groups. Group 1 included 83 patients with stable angina (SA) (mean age 61.7±9.0 years). Group 2 consisted of 60 patients with unstable angina (UA) (mean age 59.8±9.7 years). All patients received optimal medical treatment and undergoing percutaneous coronary intervention (PCI) with drug-eluting stent placement. Lipid profile parameters, inflammatory markers (hs-CRP, TNF-alpha, homocysteine, interleukine 1β, 6, 8, 16; sCD40 L, MMP-9, TIMP-1); endothelial dysfunction markers (endothelin-1, nitrites) were measured. Laboratory tests were evaluated at baseline and 3, 6 and 12 months after PCI.

Results: High levels of LDL cholesterol, triglycerides, atherogenic index, APO B/A-1, hs-CRP, TNF-alpha, MMP-9 and endothelin-1 were found in both groups. No differences were detected in parameters of lipid profile, inflammatory and endothelial dysfunction in patients with SA compared to patients with UA. It was revealed that after coronary stenting UA episodes were noted in 72.2% (p=0.02) of patients with initial UA and in 27.8%

(p=0.01) of patients with initial SA. The method of binary logistic regression revealed that TC, LDL cholesterol, TG, endothelin-1 are the predictors of post-vascularization UA in patients with initial SA. In men, growth in LDL cholesterol value by 1 mmol/l increases the probability of occurrence of post-revascularization UA by 7.387 times (specificity 70.1%, sensitivity 75.0%). In patients with initial UA, the probability of developing UA in the post-revascularization period increases by 4.1 times (OR=4.07, 95% CI 1.32-12.59, p=0.02). All cases of repeated episodes of UA were recorded with hyperhomocysteinemia >15 μmol/l.

Conclusions: The prediction markers of the UA prognosis in patients with SA as well as in patients with UA in the post-vascularization period can be male gender, LDL cholesterol and hyperehomocysteinemia.

P541

Genetic mutations of thrombosis in patients with acute coronary syndrome at a young age

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Object: evaluating of the occurrence frequency of gene polymorphisms in young patients with confirmed acute coronary syndrome.

Materials and Methods: The study included patients with confirmed acute coronary syndrome of young age (under 45 years old) undergoing treatment at the Acute Myocardial Department of Regional Cardiology Clinic - 75 people. All patients underwent, alongside the standard general clinical and biochemical examinations, a study of polymorphisms of prothrombin genes, the MTHFR, plasminogen activator inhibitor (FII G20210-A, FV G1691-A, MTHFR C677-T, PAI 5G-4G), associated with the risk of cardiovascular disease. An exclusion criterion was stated for patients over 45 years old and for those refusing the participation in the study after being informed.

Results: the coronary care department for patients with acute myocardial infarction within the period of 2015 - 2016 hospitalized 3150 patients with acute coronary syndrome, including 75 patients (2.3%) under the age of 45 years old. The average age of them was 38,7 ± 7,3 years, 68 people (90%) of them were male. 54 patients (72%) were diagnosed with acute myocardial infarction (AMI), 21 patients (28%) were diagnosed with unstable angina (UA). From accompanying diseases 43 patients (57.3%) had idiopathic hypertensia, 11 patients (14.6%) had type II diabetes mellitus, hereditarily tainted CDV (cardiovascular disease) was aggravated in 33 patients (44%), smokers made up 74.6% (56 patients). The proven

gene polymorphism was found in 49 patients (65.3%). That includes: F5-diagnosed heterozygous mutations in 14 (28%), MTHFR polymorphisms - heterozygotes in 39 (79,5%), PAI-1 mutation, homozygote in 6 (12,2%), PAI-1 heterozygote in 8 (16,3%), MTHFR - homozygote in 8 (16.3%). F2-identified mutation was manifested in 3 (6.1%). 17 (34.69%) patients showed a combination of polymorphisms: F5- heterozygote mutation and the MTHFR polymorphisms – heterozygote, PAI-1 mutation, homozygote - in 6 (12.2%). F5-mutation heterozygote, the MTHFR polymorphisms - heterozygote, PAI-1 - heterozygote, F2-mutation - 4 (8.1%). PAI-1 - heterozygote, MTHFR – homozygote - in 5 patients (10,2%). F5-mutation heterozygote, polymorphisms of MTHFR – heterozygote – in 2 (4.0%).

Conclusions: Among the patients hospitalized within 2-year-period to the Regional Cardiology Clinic young people made up 2.3%, the most patients were with (AMI) acute myocardial infarction (72%). In 65.3% cases alongside the traditional risk factors there were identified gene polymorphisms associated with thrombosis and myocardial infarction development. The prevailing value is taken by polymorphisms of MTHFR-heterozygote (79.5%) and heterozygote mutations - F5-14 (28%). 16.3% was correspondingly made by PAI-1 - heterozygote and the MTHFR - homozygote. In major cases (34.6%) the combination of several polymorphisms is as well detected.

P542

Peak creatine kinase and cardiac troponin I levels and dual time point myocardial SPECT CT

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Objectives: The aim of this sub-study of a randomized clinical trial was to evaluate the relationship of peak creatine kinase (CK) and peak sensitive cardiac Troponin I (sc-TnI) levels with perfusion defect and left ventricular ejection fraction (LVEF) by gated single-photon emission computed tomography myocardial perfusion imaging (SPECT-MPI) in patients with ST-elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (pPCI) during the acute phase and one month later.

Methods: Patients who were admitted with STEMI within 8 hours of symptom onset underwent gated SPECT-MPI acquisition (SPECT-LDCT, Siemens Symbia T6, Erlangen) within 24 hours (timepoint (TP) 1) after pPCI and one month later (TP 2). The MPI SPECT data were reconstructed and analyzed using 4DM-SPECT software. The infarct size was defined as percentage of the total left ventricular myocardium (%LV). Serial CK (U/L) und sc-TnI (μg/L) levels were evaluated at presentation and 2, 6, 12, 24 and 48 hours after pPCI, respectively. Both, peak NT-proBNP (ng/L) values and LVEF in ECHO were assessed during day 2 and 5 after admission.

Results: Twenty-four consecutive patients (mean age 60±12 years, 8 females) were included in this analysis. All patients had TIMI 3 flow in the culprit vessel after pPCI. In total 19 patients underwent SPECT on TP1 and 17 on TP2. The median perfusion defect was significantly larger on TP1 compared to TP2 (34%LV (IQR 16-54) vs. 16%LV (IQR 4-22), p=0.008). We found significant correlations for peak sc-TnI and peak CK levels with the perfusion defect assessed on TP1 (r=0.5, p=0.031; r=0.51, p=0.026; respectively) and on TP2 (r=0.88, p<0.001; r=0.92, p<0.001, respectively). Nt-proBNP values did not significantly correlate with the perfusion defect on either TP1 or TP2 (r=0.486, p=0.056; r=0.329, p=0.297), respectively. However, we found good correlations for LVEF between ECHO and SPECT assessment at TP1 and TP2 (r=0.7, p=0.005 and r=0.68, p=0.007).

Conclusions: The results of this pilot study demonstrate a significant correlation between infarct size assessed by use of SPECT-MPI and peak values of the more specific cardiac biomarkers CK and sc-TnI. This correlation was much higher one month compared to 24 hours after pPCI. LVEF calculated with SPECT-MPI showed good correlation to echocardiography irrespective of the TP. However, Nt-proBNP, a marker of left ventricular function, was not correlated with infarct size, which might be explained by stunning of potentially vital myocardium.
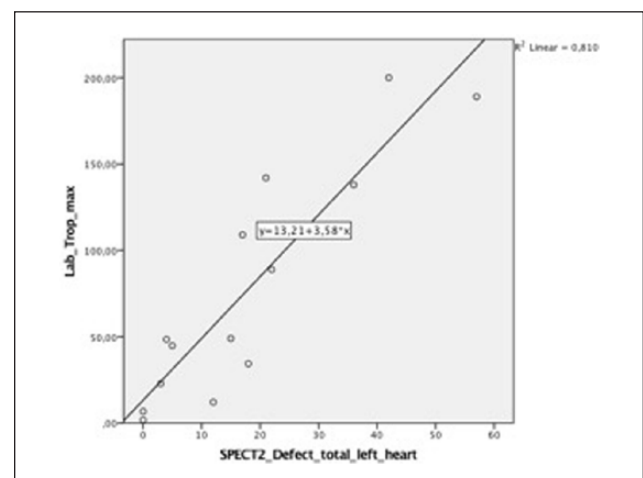
Peak sc-TnI levels and &LV at TP2

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Obesity - Knowing to better prevent

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Introduction: The obesity is one of the main health problems, being associated to an increase in the incidence of cardiovascular diseases.

The Body Mass Index (BMI) is the most commonly measurement used in the diagnosis of obesity and the abdominal perimeter (AP) is the best indicator of risk.

The present study seeks to identify the real needs for change, to establish priorities and means to act in the prevention of obesity in the target population.

Aim: To evaluate AP in an occasional sample of an urban population.

To evaluate the relation of the BP value with the values of Systolic Arterial Pressure (SBP), Blood Pressure Diastolic (DBP), total cholesterol and cardiovascular risk at 10 years.

Methods: Were evaluated 677 individuals from a street screening.

The population was divided in two groups according to the AP: Group 1 - women with AP <88cm and men with AP <102cm vs Group 2 - women with AP> 88cm and men with AP> 102cm. The population was characterized according to baseline characteristics – age; BMI; SBP, DBP, total cholesterol – and cardiovascular risk to 10 years.

Results: Were studied 677 individuals (woman- 61% (n = 413); mean age of 58 + 15). A high abomination perimeter was found in 50% of population (n=339).

There was a predominance of women in group 2 (65% versus 35%, p < 0.001). Individuals in this group presented higher values of SBP (133 ± 22mmHg versus 129 ± 20mmHg, p = 0.013) and higher BMI (30 ± 4 versus 24 ± 3, p < 0.001). The individuals of group 1 had lower cardiovascular risk (37% versus 30%, p = 0.03).

Conclusion: A normal AP was associated with lower SBP and BMI values and a lower cardiovascular risk. About half of the individuals had a high AP, especially the female sex.

The obesity is a real problem, being essential the institution of preventive measures.

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Haptoglobin as a prognostic biomarker in patients with acute coronary syndrome

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Introduction: Haptoglobin (Hp) is an acute phase protein that has been associated with an increased risk of adverse cardiovascular events. Its prognostic value in acute coronary syndrome (ACS) is not entirely defined.

Purpose: To determine the prognostic value of blood levels of Hp in patients with ACS.

Methods: We evaluated consecutive patients hospitalized in a Coronary Care Unit with a diagnosis of ACS between March 2012 and June 2013. We excluded patients whose blood level of Hp was not determined during hospital stay. Population was characterized according to demographic, clinical and laboratorial characteristics. Three groups were created according to the terciles of distribution of Hp values (1st tercile ≤161 mg/dL; 2nd tercile >161 mg/dL and ≤211 mg/dL; 3rd tercile >211 mg/dL). The major adverse events considered were the presence of death and heart failure (HF) during hospital stay (Killip Class ≥2 and/or BNP ≥400 pg/mL) or after hospital discharge (NYHA class ≥2 and/or left ventricular ejection fraction <50%).

Results: We studied 202 patients (69,8% of them were males) with a mean age of 70±13 years. The average value of Hp was 198±77 mg/dL. Patient's characteristics were similar between the different groups. Patients included in the 3rd tercile of Hp distribution presented higher percentage of major adverse events: death, 1-year death, heart failure during hospital stay and 1-year heart failure.

Conclusion: In this population of patients with ACS, higher levels of Hp were associated with higher incidence of major adverse events, thus making Hp a short and long term prognostic biomarker that can be easily determined.

Table 1.

	Haptoglobin (mg/dL)			
	Tercile 1 (≤ 161)	Tercile 2 (>161 e ≤211)	Tercile 3 (>213)	p-value
HF during hospital stay	26,4%	14,9%	50,7%	<0,001
1-year HF	12,5%	7,5%	24,6%	0,019
1-year death	0%	5,8%	26,8%	<0,001
Death	10,7%	11,5%	26,8%	0,037

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The relationship of testosterone level with the indicators of mineral and bone metabolism and lipid profile in male patients with chronic coronary artery disease

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Purpose: We aimed to study a relationship of testosterone with various indicators of mineral and bone metabolism and lipid metabolism in male patients with coronary artery disease.

Material and methods: The study included 111 men with stable angina of III functional class with a planned myocardial revascularization by coronary artery bypass grafting without clinically significant comorbidity. The mean age of the patients was 61 (55-65) years. Previous myocardial infarction occurred in 88 (79.3%) patients. Diabetes mellitus was revealed in 19 patients (17.1%), osteoporosis – in 31 patients (27.9%) and osteopenia – in 58 (52.2%) patients. In addition to general clinical methods all the patients were estimated with the following indicators: testosterone and estradiol, lipid profile, ionized calcium, phosphorus, alkaline phosphatase, calcitonin, osteocalcin, parathyroid hormone (PTH), osteoprotegerin, osteopontin and insulin. All the patients underwent densitometry of femoral bone and lumbar spine, coronary angiography and multislice computed tomography of coronary arteries. We calculated the Syntax score as well as the degree of coronary calcification by the Agatston method using CaScore programme.

Results: Correlation analysis of testosterone level with T-criterion and bone mineral density (BMD) level didn't show any significant values. The further analysis allowed to reveal a correlation between the levels of testosterone on the one hand and insulin (r = −0.20; p = 0.047) and parathyroid hormone (PTH) (r = 0.34; p = 0.0002) on the other hand. Among all the indicators of the lipid profile we revealed a negative correlation only with triglyceride level: r = −0.19; p = 0.047. In order to exclude the impact of external factors an additional group of patients younger than 60 years and without obesity (BMI < 30 kg/m^2) and/or diabetes mellitus was created. In the newly formed group (n=38) the correlation relationships of testosterone with insulin and PTH increased significantly: r = − 0.38 (p = 0.017) and r = −0.33 (p = 0.046). Herewith this group also didn't reveal any correlation with the other studied indicators. A linear regression analysis with a primary input of all the previously listed factors and a further stepwise selection identified the correlations of testosterone only with PTH (B = 0.04, T=3.05, p = 0.003).

Conclusion: The present study which was specific in the simultaneous analysis of multiple markers and indicators revealed the significant associations of the decrease in testosterone level with hyperinsulinemia and hypertriglyceridemia, which indicates on the important pathogenic role of hypogonadism in the unfavourable course of cardiovascular continuum. Herewith no association of testosterone with the markers of mineral and bone metabolism disorder, except for parathyroid hormone, was identified.

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Relationship between biomarkers of myocardial remodelling and diastolic dysfunction in patients with myocardial infarction

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Purpose: To determine the differences in the levels of biomarkers of myocardial remodelling, depending on the presence or absence of diastolic dysfunction (DD) in patients with ST-segment elevation myocardial infarction (STEMI) and preserved left ventricular ejection fraction.

Material and Methods: 100 consecutive STEMI patients with acute heart failure Killip class I and LVEF ≥40%. Biomarkers associated with the changes in the extracellular matrix, myocardial remodeling and fibrosis (MMP-1, -3 and -9, TIMP-1, galectin-3); biomarkers associated with neurohormonal activation (NT-proBNP); and biomarkers associated with the damage of cardiomyocytes (sST2) were measured. All patients underwent echocardiography on days 1, 10-12 of the in-hospital period and 1 year after MI.

Results: Of 100 patients, 74 were men and 26 were women. We found that the levels of MMP-1, MMP-2, MMP-3 were within the reference range, while the levels of TIMP-1 and galectin-3 were elevated on days 1, 10-12 and 1 year after MI. Nt- proBNP and sST2 levels were higher on day 1 after MI, compared to the reference levels. MMP-3 levels on day 1 increased 1.64-fold, compared to the levels measured on days 10-12. The levels of soluble ST2-receptor on day 1 were 2 times higher than its levels on day 12. There were no significant changes found in its concentration 1 year after MI, compared to the levels on days 12. Levels of galectin-3 and Nt-proBNP were significantly higher on day 1 after MI, compared to the levels measured on day 12 of the in-hospital period. There was a pronounced decrease in the median concentrations of both biomarkers. The median concentrations of galectin-3 and Nt-proBNP were significantly lower 1 year after MI, compared to those levels on days 1 and 10-12 after MI.

There were no significant differences found in the levels of MMP-1 and TIMP-1 during the follow-up period. The echocardiographic assessment of diastolic function reported that 19 (19%) patients had DD on day 1, 18 (18%) patients on day 12, and 22 (26.1%) patients 1 year after MI. The further analysis of biomarkers was performed according to the parameters of diastolic function during the 1-year follow-up. The subgroup of patients with DD had higher levels of galectin-3 (12.36 vs. 10.41 ng / ml, p < 0.05) and MMP-1 (6.8 vs. 1.9 ng / ml, p < 0.05) on day 1, whereas levels of MMP-2 were higher on day 1 (319.1 vs. 245.8 ng / ml, p < 0.05) and 1 year after MI (223.7 vs. 203.2 ng / ml, p < 0.05). TIMP-1 levels were lower in the group of patients with DD on day 12 (765.3 vs 973.8 ng / ml, p < 0.05) and 1 year after MI (1991.9 vs 2716.9 ng / ml, p < 0.05). The observed patterns in the subgroups of patients according to DD grading mitigated when compared to the group of patients without DD. There were no statistically significant differences found in other biomarkers' levels.

Conclusion: On days 10-12 after MI, there were elevated levels of MMP-1, MMP-2, MMP-3 and decreased levels of galectin-3, Nt-proBNP and sST-2.

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Toll-like receptor expression and mortality in critical ill patients

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Background: Toll-like receptors (TLRs) play an important role in acute inflammatory processes in critical ill patients by binding to pathogen associated molecular patterns (PAMP) and danger associated molecular patterns (DAMP). However, it is not known whether the expression pattern of TLRs on neutrophils and monocytes are associated with outcome in critical illness. Therefore the aim of this prospective, observational study was to analyze whether expression of TLR-2, TLR-4 and TLR-9 on neutrophils and monocytes is associated with 30-day survival in critically ill patients.

Methods: We enrolled 215 consecutive patients admitted to a cardiac ICU at a tertiary care center. Blood was taken at admission and expression of TLR-2, TLR-4 and TLR-9 on neutrophils and monocytes was analyzed by flow cytometry.

Results: Median acute physiology and chronic health evaluation II (APACHE II) score was 20, and 30-day mortality was 26%. TLR-2 expression on neutrophils correlated with APACHE II and sequential organ failure assessment (SOFA) score. TLR-2 (p < 0.001) and TLR-9 (p < 0.05) expression on neutrophils was significantly higher in non-survivors as compared to survivors. In contrast, TLR-4 expression on neutrophils and TLR-expression on monocytes were not associated with survival, respectively. TLR-2 (OR 2.9, 95% CI 1.2-7.2; p < 0.001) and TLR-9 (OR 2.6, 95% CI 1.3-5.0; p < 0.005) expression in the third tertile predicted mortality independent from age, gender, diagnosis and APACHE II score.

Conclusion: Neutrophil expression of TLR-2 and TLR-9 predict mortality in patients admitted to a cardiac ICU. This suggests that activation of the innate immune system by TLR-binding of DAMPs may play a significant role in critical ill patients.

Prognosis

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Predictors for outcome in patients with Type 2 myocardial infarction

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Background: Patients with type 2 myocardial infarction (T2MI) are a heterogeneous population with high cardiovascular risk. We aimed to identify predictors for cardiovascular events in a large prospective study.

Methods: We included patients presenting to the emergency department with suspected MI. The final diagnosis was adjudicated by two physicians separately. All patients were followed for up to two years to assess cardiovascular events (mortality, revascularization and rehospitalization). Hazard ratios were calculated to identify the most important predictors for the occurrence of cardiovascular events.

Results: Among 1,548 presenting with suspected MI, 99 individuals were diagnosed as having T2MI. Patients with T2MI were at a median age of 72 years, 48.5% were female and 77.8% had prior diagnosed hypertension. 14.6% of T2MI patients had known coronary heart disease, 34.3% had atrial fibrillation and 25.3% congestive heart failure. The rate of cardiovascular events for T2MI patients was 29% after one year, while it was 21.8% for non-MI patients and 39.8% for patients with T1MI. Atrial fibrillation (HR 2.77 (95%CI 1.34-5.70), congestive heart failure (HR 2.85 (1.39-5.84)) and anemia with hemoglobin concentration below 10 g/dl (HR 2.90 (1.11-7.59)) were predictors for cardiovascular outcome in T2MI patients, while history of MI (HR 2.30 (1.46-3.61)) predicted outcome in T1MI patients.

Conclusion: T2MI patients are a heterogeneous population with high cardiovascular risk. Atrial fibrillation, heart failure and anemia are predictors for outcome in these patients.

Table 1. Hazard ratios for CV-events.

	T1MI		T2MI	
	HR (95% CI)	p-value	HR (95% CI)	p-value
Age < 70 years	0.76 (0.49, 1.19)	0.23	0.60 (0.28, 1.32)	0.21
Female	1.05 (0.64, 1.72)	0.85	0.57 (0.27, 1.21)	0.14
Hypertension	1.27 (0.67, 2.40)	0.46	0.96 (0.41, 2.24)	0.93
Hyperlipoproteinemia	1.13 (0.72, 1.78)	0.59	0.69 (0.33, 1.45)	0.33
History of MI	2.30 (1.46, 3.61)	<0.001	1.67 (0.68, 4.08)	0.26
Diabetes	1.33 (0.80, 2.19)	0.27	0.97 (0.34, 2.78)	0.96
Smoking	1.05 (0.66, 1.65)	0.84	1.26 (0.61, 2.58)	0.53
Atrial fibrillation	1.31 (0.69, 2.47)	0.41	2.77 (1.34, 5.70)	0.0058
Congestive heart failure	1.32 (0.78, 2.24)	0.3	2.85 (1.39, 5.84)	0.0042
Hemoglobine < 10 g/dL	2.45 (0.89, 6.74)	0.082	2.90 (1.11, 7.59)	0.030
eGFR ≤ 30 mL/min for 1.73 m^2	1.68 (0.80, 3.49)	0.17	2.15 (0.29, 15.94)	0.45

P549

Frailty, independent marker of short-term adverse events in elderly patients with acute coronary syndrome

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Introduction: We evaluated the association between frailty and clinical events in elderly patients an acute coronary syndrome (ACS).

Methods: Observational prospective registry developed in 4 tertiary hospitals, which included patients> 75 years with diagnosis of ACS. The fragility of the patients was quantified using the SHARE-FI index. The combined event of mortality, reinfarction of nonfatal myocardium and stroke during hospitalization.

Results: A total of 304 patients (143 women, mean age 83 ± 5 years) were included. The patients fragile (n = 132; 38.6%) were predominantly women, older, with greater prevalence of comorbidities and higher scores on risk scales ischemic and hemorrhagic (GRACE and CRUSADE, respectively). Invasive management was less frequent in these patients. During hospitalization and compared with non-fragile patients, a fragile phenotype associated with a higher incidence of the combined event (2.9% vs13.7%, p = 0.001), due to mainly to higher mortality (1.7% vs10.6%, p = 0.002, respectively). Also, the patients had a significantly higher incidence of complications, especially hemorrhagic (6.1% vs. 1.2%, p = 0.02), reflecting a hospital stay significantly longer. In the multivariate analysis, after adjusting for baseline characteristics, covariates of the scale GRACE and invasive management, the fragility remained independently associated with the combined in-hospital event (OR 3.66, 95% CI 1.20-11.15, p = 0.02).

Conclusions: More than one-third of elderly patients with ACS are fragile. The fragile phenotype, as marker of biological vulnerability, is an independent predictor of adverse events in these patients.

P550

Mortality predictors in patients with ST elevation myocardial infarction with quick reperfusion

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Introduction: ST elevation myocardial infarction (STEMI) has high mortality even when promptly treated. In this work, the authors aim to identify the factors that predict bad in-hospital outcomes in such patients (pts).

Methods: Prospective analysis of 236 pts consecutively admitted with STEMI between October 2009 and September 2016 and with time door-to-balloon ≤ 60 minutes. Pts were divided into 2 groups: A) Pts with in-hospital death (n=23, 73.9% men) vs B) Pts without in-hospital death (n=213, 90.3%, 78.9% men). The variables statistically correlated with in-hospital all-cause mortality were isolated. A logistic regression adjusted for age ensued for such variables.

Results: The following variables were independent predictors of in-hospital mortality: no chest pain on admission (OR 4.235, p=0.034), heart failure (OR 12.502, p<0.001), acute kidney injure (OR 17.900, p=0.019), left main artery disease (OR 26.480, p<0.001), mechanical complications (OR 51.430, p<0.001) and cardiogenic shock (OR 70.094, p<0.001). As continuous variables, glucose at admission (OR 1.007, p=0.002), maximal BNP value (OR 1.001, p=0.001), Killip at admission (OR 3.804, p<0.001), heart rate (OR 1.042, p<0.001) and total ischemic time

(minutes) (OR 1.001, p=0.007) were isolated as predictors independent from age.

Systolic (OR 0.965, p<0.001) and diastolic blood pressure (OR 0.955, p<0.001) and pulse pressure (OR 0.944, p<0.001) demonstrated reverse relationship with in-hospital prognosis.

Smoking correlated with less probability of an adverse in-hospital outcome (OR 0.140, p=0.012).

The analysis was remade for these variables using the backwards: wald method of regression, isolating Systolic and diastolic blood pressure, heart failure, mechanical complications and cardiogenic shock as the most powerful predictors of in-hospital death.

Conclusion: From the independent predictors of in-hospital death in pts with STEMI who underwent quick reperfusion, systolic and diastolic blood pressure, heart failure, mechanical complications and cardiogenic shock were the factors that demonstrated higher prediction strength.

P551

Bleeding events to the emergency department: the tuscany population based cohort study

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Background: Case load and case-mix of bleeding events to the Emergency Department (ED) has been limited to controlled clinical trial and the real life scenario is still lacking. Aim of the present study was to analyze, in bleeding patients, baseline clinical characteristics associated with any treatment strategies and outcomes.

Methods: Visits to the EDs of the Tuscany healthcare (catchment area: 3 million inhabitants) were considered during a 2016 three-month survey. Inclusion criterion was the presence of any bleeding event regardless age, comorbidities, and ongoing treatment strategy. Clinical parameters, major or minor bleeding, site of bleeding, ongoing anti-thrombotic treatment strategy, need of reversal treatment or blood transfusion and in-hospital death or admission were prospectively collected. Primary endpoint was in-hospital death; secondary endpoints were the composite of in-hospital death or admission and the need of reversal treatment or blood transfusions.

Results: Out of 155.320 patients, 2.592(1.7%) were enrolled (mean age 64.9±20.3 year) for eye bleeding 505(20%), gastrointestinal 441(17%), intracranial 413(16%), epistaxis 304(12%), haematuria 278(11%), drop in haemoglobin values of unknown significance 237(9%), gynecological 189(7%), hemoptysis 87(3%), bruising of the soft tissues 82(3%), and trauma 56(2%). Major bleeding account for 668(26%) patients. Patients who received ongoing antiplatelets or anticoagulants (393 and 275, respectively) were more likely to present with major bleeding (171 and 127, respectively; p<0.001 versus others). Overall, 108(4%) received reversal treatment, 86(3%) transfusions and 30(1%) Vit-K-antagonist. Ongoing antitrombotics were more likely to be associated with major bleeding (p<0.001) and to receive reversal treatment or blood transfusion (p<0.05). Overall, 696(27%) patients needed observation or admission; 30(1.2%) died (5% with intracranial haemorrage). At the multivariate analysis, major bleeding (Odds Ratio, OR 7) was predictor of in-hospital death; major bleeding (OR 37) and age (OR 1.1) of the composite of death or admission; major bleeding (OR 38) and warfarin (OR 6) of the composite of reversal treatment or transfusion. Receiver operator characteristics (ROC) analysis built for death showed higher values of age, major bleeding, and systolic arterial pressure (all>0.65) over haemoglobin, anticoagulants, antiplatelets, reversal treatment or transfusion, and creatinine (all<52); p<0.05 on C-statistic. ROC analysis for major bleeding showed higher values of age (0.62) over creatinine, male gender, anticoagulants, antiplatelets, and systolic arterial pressure (all<0.53); p<0.05 on C-statistic.

Conclusions: Major bleeding was likely to predict primary and secondary endpoints in patients presenting to the ED with any bleeding events; age or warfarin to predict the secondary endpoints. One in four patients needed prolonged in-hospital stay.

P552

Incidence and adverse outcomes of patients with major haemorrhage to the emergency department. the massa-carrara propensity matched community hospital cohort study

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Background: The incidence of major haemorrhage (MH) and the search for predictors, among clinical baseline

characteristics, in patients with any bleeding events to the emergency department (ED) is still unclear.

Methods: Visits to a community hospital were considered during 2015-2016 years. Inclusion criterion was presence of any bleeding events to the ED. Clinical parameters, site of bleeding, MH, ongoing anti-thrombotic treatment strategy, need of reversal treatment or blood transfusion, admission and death were collected. Propensity score matching was performed to adjust for baseline characteristics of patients who presented with MH. Hard 5:1 matched analysis based on the propensity score using logistic regression was conducted. To ensure good matches, a small caliper of 0,15 was defined. Endpoints was the ocurrence of MH.

Results: Out of catchment area of 200.000 inhabitants of whom 8.239(4%) and 3.797(2%) were given warfarin or direct oral anticoagulants (DOACs), respectively, 3.050(2%) patients (out of 164.000 ED visits) were enrolled (mean age 66.64±19.66 year) and eventually 3.048 were analyzed after propensity. Major haemorrhage account for 1.185(39%) of whom 271(9%) eye bleeding, 548(18%) gastrointestinal, 507(17%) intracranial, 665(22%) epistaxis, 442(14%) haematuria, 453(15%) gynecological bleeding, and 158(5%) hemoptysis. Overall, 595(20%) patients were given anticoagulants of whom 223(7%) heparin; 309(10%) warfarin (3.8% of patients treated with warfarin in the catchment area) with 33(0.9%) MH versus 74(2.4%) DOACs (2% of patients treated with DOACs in the catchment area) with 130(1.6%) MH (p=0.002); 847(28%) were given antiplatelets of whom 637(21%) Aspirin and 210(7%) Clopidogrel. Overall, 1088(36%) patients were admitted. Death at one-year was 72(2%). Patients with older age (82±13 versus 66±20), high heart rate (87±18 vs 80±13), low haemoglobin (11±3 vs 13±2) high CHA2DS2VASC (3.2±1.5 vs 2.6±1.6) and female gender (5% vs 2%) were more likely to die (p < 0.01 for all comparisons). Patients with older age (74±16 vs 62±20), high heart rate (82±16 vs 79±11), low haemoglobin (12±3 vs 13±2), high creatinine (1.2±0.8 vs 1.0±0.7), high CHA2DS2VASC (3±1 vs 2±2) and receiving anticoagulants (48% vs 37%; of which only heparin 57% vs 38%), or antiplatelets (50% vs 35%; of which Aspirin 48% vs 36% and Clopidogrel 56 vs 38%) were more likely to present with MH (p < 0.001 for all comparisons). Regression analysis showed that age (Odds Ratio 1.03, p < 0.001), heart rate (1.02, p < 0.001) and haemoglobin (0.79, p < 0.001) were independent predictors of MH.

Conclusions: Major haemorrage account for one-third of patients presenting with any bleeding events to the ED. Older age, high heart rate, low haemoglobin were predictors of MH. Heparin, Aspirin or Clopidogrel were predictors of MH. Eventually, in the catchment area, Warfarin was more likely to be associated with MH versus DOACs

P553

Predictors of major bleeding in a large population based study in the real life. case load of patients presenting to the emergency department

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Background and Aim: To search for predictors of bleeding events, still unknown, in patients presenting to the emergency department (ED), we analyzed a large population of the public Tuscany healthcare.

Setting: EDs of six Tuscany healthcare districts, with a catchment area of three-million inhabitants and half-a-million visits per year.

Methods: Major bleeding was adjusted with patient's clinical characteristics including site of bleeding, ongoing antithrombotic treatment strategy, need of reversal treatment or transfusion, admission and death. Primary endpoint was major bleeding; secondary endpoint the composite of in-hospital admission or death

Results: Major bleeding accounts for 668(26%) of 2.592 patients enrolled (mean age 65±20 year; first tertile 130 patients, age<59 years; second 219, age 59-77 years, third 317, age >77 years; p < 0-001). Eye bleeding accounts for 505(20%) patients, gastrointestinal 441(17%), intracranial 413(16%), epistaxis 304(12%), haematuria 278(11%), drop in haemoglobin values of uncertain significance 237(9%), gynecological 189(7%), hemoptysis 87(3%), bruising of the soft tissues 82(3%), and trauma 56(2%). Patients with ongoing antiplatelets (n=171) or anticoagulants (n=127) (p < 0.001 for all) and Warfarin (63; p=0.025) were more likely to show major bleeding as compared to others. This was not the truth for direct oral anticoagulants (p=0.129). Patients with major bleeding were more likely to show older-age (mean age 72.5±17.3, 95% Confidence Intervals 71.2-73.7, p < 0.001), higher heart rate (78±13 b/min, 12±15, p < 0.001), and higher creatinine value (1.12±0.74 mg/dL, 0.54-0.94, p=0.005). These patients were more likely to receive plasma prothrombin complex concentrate (n=24), Tranexamic Acid (n=43) or vitamin-k (n=78) (p < 0.001 for all); to undergo admission (n=503) and to reach the primary (n=25) or secondary endpoint (n=596) (p < 0.001). At the multivariate analysis age (OR 1.04, 95 Confidence Intervals 1.02-1.05, p < 0.001), male gender

(0.51, 0.39-0.67, p < 0.001) and heart rate (OR 1.02, 1.01-1.03, p < 0.001) were predictors of the primary endpoint. Conversely, age (OR 1.02, 1.02-1.03, p < 0.001), heart rate (OR 1.02, 101-1.03, p < 0.001) male gender 0.48, 0.36-0.62, p < 0.001) were predictors of the secondary endpoint. Receiver operator characteristics (ROC) analysis showed higher values of age (area 0.62, 95% Confidence Intervals, 0.59-0.66), heart rate (0.58, 0.54-0.61), creatinine (0.56, 0.52-0.59) over systolic arterial pressure (0,53, 0.49-056), antiplatelets (0.51, 0.48-055), anticoagulants (0.51, 0.47-054), male gender (0.42, 0.39-0.46), p < 0.05 on C-statistic.

Conclusions: Major bleeding accounts for one in four of patients presenting with any bleeding events to the ED and was more likely to show higher creatinine plasma value, heart rate and age. Age, male gender, and heart rate were predictors of the primary and secondary endpoints.

P554

Predictors of adverse outcome in patients presenting with major bleeding to the emergency department. a multicenter population based study

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Objective: Bleeding events at the Emergency Department (ED) are still under investigation. The present study is directed to analyze patients' baseline characteristics which could be associated with any outcomes.

Design and method: Visits to the ED were considered during a 2016 three-month survey. Inclusion-exclusion criteria were as follows: presence of any bleeding event and age <18. Clinical parameters, major-minor bleeding, site of bleeding, treatments, need of reversal treatment/transfusion and adverse outcomes were prospectively collected. Primary endpoint was the presence of major bleeding. Secondary were the composite of admission-death and the need of reversal treatment-transfusions

Results: Out of 155.320 visits, 2.592 patients were enrolled (mean age 64.9±20.3 year). Major bleedings account for 26%. Mean systolic arterial pressure was 138±28 mmHg, heart rate 81±15 b/min, haemoglobin 12.1±2.5 g/dL, creatinine 1.07±0.75mg/dL. Patients who were given antiplatelets or anticoagulants (393, 15%; 275, 11%) more

likely presented with major bleeding (171, 44%; 127, 46%; p<0.001). Overall, 179 patients received reversal treatment (108, 4%), transfusions (86, 3%), VitK(30, 1%); 59(22%) patients were given anticoagulants (p<0.001) and 43(11%) antiplatelets (p=0.049); 193(7%) need observation and 503(19%) admission. In-hospital death accounts for 3(1.2%) patients. Receiver Operator Characteristics analysis for major bleeding showed higher values of age (area 0.62, CI 0.59-0.66), creatinine (0.55, 0.52-0.59), systolic arterial pressure (0.53, 0.49-0.56) over anticoagulants (0.50, 0.48-0.54) and antiplatelets (0.51, 0.48-0.55). Age>65 (Odds Ratio, OR 6), major bleeding (OR 9), systolic arterial pressure (OR 1.10), antiplatelets (OR 2) were predictors of death at the univariate analysis; Age>65 (OR 2), major bleeding (OR 101), antiplatelets (OR 2) and female gender (0R 0.69) of the composite endpoint of death-admission. Age>65 (OR 1.04), major bleeding(OR 68), anticoagulants (OR 4), warfarin (OR 5) were predictors of reversal treatment-transfusion at the univariate analysis.

Conclusions: Up to 2% of population presents with bleeding events to the ED. Older age was predictor of death; older age, major bleeding and female gender predict the primary endpoint; while major bleeding, use of warfarin the composite of reversal treatment-transfusion. Older age, creatinine, systolic arterial pressure were associate with major bleeding.

P555

Prognostic value of hyperglycaemia and inflammation in patients with acute coronary syndrome

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Background: The prognostic significance of hyperglycaemia in patients with acute coronary syndrome (ACS) remains elusive. Different indices of impaired glucose metabolism, other than plasma glucose itself, are used to understand its prognostic role. The relationship between hyperglycaemia and inflammation in this acute clinical situation has also to be better determined.

Purpose: To elucidate the role of different hyperglcaemic indices (HI) and inflammatory markers for one- and five-year survival.

Methods: The study included 255 patients with ACS, admitted to the Clinic of Cardiology, University Hospital "Alexandrovska" between February 2009 - December 2010. Coronary angiography was performed in all patients. HI for acute (admission and fasting glycaemia), persistent (mean glucose, hyperglycaemic index - HGI, time average

glucose – TAG) and chronic hyperglycaemia (estimated average glucose – eAG and glycated hemoglobin - HbA1c,) were estimated by formulas. HbA1c was measured by NycoCard at admission and in six months. TNF-alpha and MMP-9 were assessed by ELISA method; CRP was measured by immuno-nephelometric method. All the indices for inflammation were assessed both at admission and six months later. A correlation analysis between HI, markers for inflammation, one- and five-year survival was performed.

Results: HI - mean glycaemia (p=0,041), HGI (p=0,009), TAG (p=0,007); inflammatory markers (TNF-alpha at admission (p=0,039), MMP-9 at 6 months (p=0,044) correlated with one-year survival. None of the investigated markers alone has shown an independent association with five-year survival (p=0,61). But, the combination between HGI and MMP-9 (at sixth month) in the multivariate analysis predicted five-year survival (p=0,027).

Conclusion: HI (mean glycaemia, HGI, TAG) and inflammatory markers (TNF-alpha at admission, MMP-9 at 6 month) may be used as prognostic markers for short-term survival, but seem unreliable for long-term prognosis.

P556

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

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Background: Postprandial hyperglycemia is well-known risk factor for cardiovascular events. However, long-term outcomes in patients with postprandial hyperglycemia newly diagnosed after percutaneous coronary intervention (PCI) in acute coronary syndrome (ACS) has not been much researched.

Purpose: The purpose of this study is to compare two-year outcomes after PCI for ACS in patients with impaired glucose tolerance (IGT) and DM to ones 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%. Two-year outcomes after PCI were compared between the patients with IGT and DM, and normal glucose tolerance. The primary endpoint was hospitalization for cardiovascular events.

Results: Out of consecutive 108 patients, 78 (72%) had postprandial hyperglycemia. Average follow up period was 672 days. The mean 1, 5-anhydroglucitol was not significantly different between 2 groups. The incidence of hospitalization tends to be greater in patients with postprandial hyperglycemia than normal glucose tolerance, however, not significantly different (hazard ratio 2.59, 0.88-11.00, p=0.09).

Conclusion: Patients with postprandial hyperglycemia tend to have more incidence of hospitalization for cardiovascular events after PCI for ACS than normal glucose tolerance.

P557

Long-term survival of patients underwent postinfarction left ventricular free wall rupture repair: a 17-year single centre experience

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Background: Left ventricular free wall rupture (LVFWR) is a catastrophic complication following acute myocardial infarction (AMI), with an estimated incidence of 0.2-7.6% and despite demonstrated improved clinical outcome, post-AMI LVFWR still accounts for 24-61% of in-hospital disease-related mortality.

Purpose: This study aimed to identify risk factors for morbidity and mortality in patients affected by left ventricular free wall rupture and to evaluate the long-term follow-up.

Methods: This is a retrospective study of 35 patients who underwent surgery for LVFWR between January 2000 and December 2016 at our institution.

Results: The mean age of patients was 68.3 years. The in-hospital survival was 65.7% (n = 23), and 13% of survived patients presented with cardiac arrest. The following characteristics were associated with in-hospital mortality at univariable analysis: pre-existing hypertension (P = 0.02), need for inotropes (P = 0.02) and cardiac arrest at presentation (P < 0.0001), cardiopulmonary resuscitation (P = 0.004), preoperative extracorporeal membrane oxygenation (P = 0.004), technique of LVFWR repair (P = 0.013), operation on extracorporeal membrane oxygenation (P = 0.005) and postoperative extracorporeal membrane oxygenation (P = 0.001). In the multivariable analysis, cardiac arrest at presentation was an independent predictor of in-hospital mortality (odds ratio 11.7, 95% confidence interval 2.352–59.063; P = 0.003). The overall

mean postoperative follow-up was 8.3 ± 1.3 years. Overall survival rates at 5 and 10 years were 53.2 ± 8.6% and 49.1 ± 8.9%, respectively (Fig. 1A). Among the survivors, only 6 (26.1%) patients died during follow-up with a 5-year and 10-year overall survival rate of 80.9 ± 8.7% and 74.7 ± 10%, respectively (Fig. 1B).

Conclusions: These data suggest a trend towards long term benefit in patients surviving high-risk surgery for LVFWR repair. Considering the high lethality of LVFWR, the urgency and complexity of the primary surgical intervention early diagnosis and prompt surgery play a key role in the management of this complication.
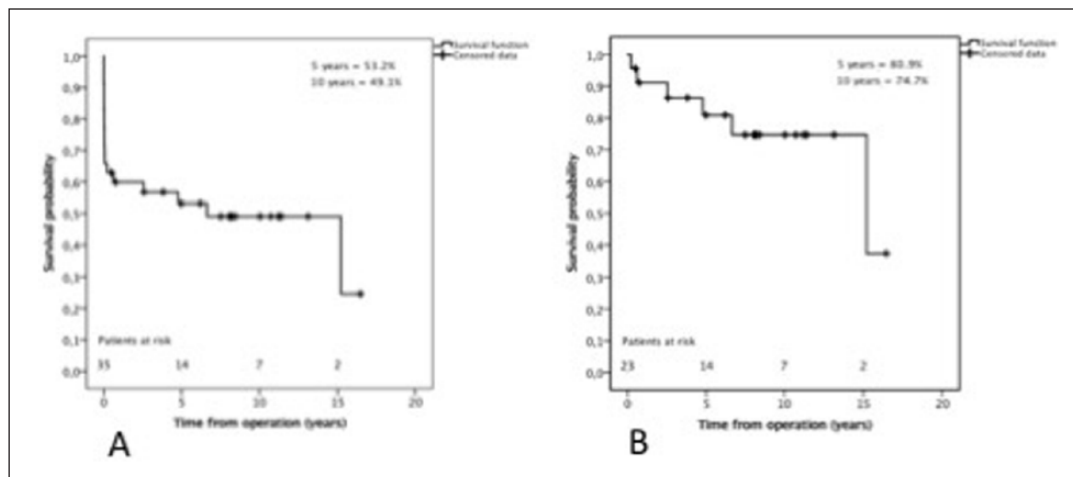
Fig 1

Moderated Poster Session 9 - Imaging/Intervention/Devices Monday, 05 March 2018 - 10:00 - 11:00

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The prevalence of coronary anomalies in a single center of Korea: origination, course, and termination anomalies of aberrant coronary arteries detected by ECG-gated cardiac MDCT

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Background: Coronary anomalies are rare congenital abnormalities often found incidentally on conventional coronary angiography (CCA) or coronary CT angiography (CTA). They may result in various clinical outcomes. CCA is invasive and not able to demonstrate all coronary anomalies in detail, especially those with complex courses. Multidetector computed tomography (MDCT) enables visualization of the origin and course of coronary arteries. The objective of this study was to investigate the prevalence of origin and termination coronary artery anomalies and the course of these anomalies in patients in a single center in Korea.

Methods: To diagnose coronary anomalies, the angiographic data of 8,864 consecutive patients undergoing 64- or 320-MDCT from September 2005 to November 2011 were analyzed retrospectively.

Results: Among the 8,864 patients, 103 (1.16%) had coronary anomalies. Ninety (87.4%) patients had origin and distribution anomalies, and 13 (12.6%) patients had a coronary artery fistula. The most common anomaly (41, 39.8%) was an anomalous origin of the right coronary artery (RCA). Of these, three patients received a coronary artery bypass graft.

Conclusions: The prevalence of coronary anomalies in a single center of Korea was 1.16%. The incidence and patterns of coronary artery anomalies in our patient population were similar to those of previous studies.

Table 1. Prevalence of coronary anomalies.

Coronary anomaly	Number of patients (n=103, 1.16%)	Anomaly incidence among 8864 patients (%)	Constituent ratio among 103 cases (%)
RCA from LAS	41	0.463	39.8
LCX from RAS	5	0.056	4.9
LMCA from RAS	1	0.011	1.0
Absent left main trunk	10	0.112	9.7
RCA and conus branch arising separately	7	0.080	6.8
Single coronary ostium	1	0.011	1.0
High takeoff			
RCA	9	0.102	8.7
LMCA	6	0.070	5.8
RCA and LMCA	2	0.023	1.9
Commissural	4	0.045	3.9
Duplication of arteries	4	0.045	3.9
Coronary artery fistulas			
RCA-PA	1	0.011	1.0
RCA-RA	1	0.011	1.0
LAD-PA	6	0.070	5.8
LAD-RCA	1	0.011	1.0
LCX-bronchial artery	1	0.034	1.0
RCA-pulmonary artery and LAD-pulmonary artery	3	0.070	2.9

Origin and course of the anomalies of the left main coronary artery (LMCA) from the right sinus of Valsalva (RSV). Volume rendering image showing the LMCA arising from the RSV (A). It depicts the long LMCA branching into the left circumflex artery at the proximal interventricular groove and the RCA arising normally from the RSV. The curved multiplanar reconstruction image (B) shows the opening of the LMCA, acute angle take-off of the RSV from the aorta, and the interarterial course between the ascending aorta and the pulmonary artery (PA).

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Regional two-dimensional strain analysis compared to visual regional wall motion abnormality assessment in non-ST elevation acute coronary syndrome

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Background: Visual assessment of regional wall motion abnormalities (RWMA) on echocardiography represents the current standard in assessing the coronary artery disease (CAD) induced changes in myocardial contractility. Although it has been proven to predict long-term outcomes it's hard to rely on in acute situations due to the patient dependent variance in image acquisition quality and interoperator variability. It has been shown that 2D strain (2DS) is a sensitive indicator for sub-clinical myocardial injury due to various agents, but for detecting CAD sensitivity of regional 2DS has not been thoroughly evaluated.

Purpose: To assess the value of regional 2DS performed early in patients with non-ST elevation acute coronary syndrome (NSTE-ACS) for predicting presence and localization of ischemia-inducing stenosis and compare it with RWMA.

Methods: We performed a retrospective analysis of patients admitted from January 2013 till December 2015 with the diagnosis of NSTE-ACS. Exclusion criteria were no coronary angiography, known prior CAD, no echo in 24 hours prior to angiography and image quality not adequate for 2DS

analysis. Total of 123 patients were included. 4 clinicians blinded to laboratory and ECG results performed 2DS analysis of regional longitudinal peak systolic strain (LPSS) according to the 18-segment model, and RWMA were cathegorized according to the wall motion score guidelines, as interpreted by the clinician performing the original echo.

Results: We found significant correlation of flow limiting stenosis, defined as a narrowing of >70% on angiography, with LPSS decrease for all three coronary vessels. For LAD sensitive were mid and apical anterior, mid anterolateral, apical anterolateral, anteroseptal and inferoseptal (all P < 0.0001), as well as mid anterolateral (P=0.003), mid inferoseptal (P=0.008), apical inferior (P=0. 01) and apical inferolateral (P=0. 001). For RCA sensitive were basal (P < 0.0001) and mid inferior (P=0.02), and basal inferolateral (P=0.01). For LCx sensitive were basal (P=0.001) and mid anterolateral (P=0.003), as well as basal (P < 0.0001) and mid inferolateral (P=0.008). PRWMA shows good predictive power of stenosis in LAD and LCx, but not in RCA. However, LPSS was more precise overall (mean sensitivity 75.6% vs 39.5%, P < 0.001) and regionally (Figure 1), and significant difference was present even after accounting for potentially confounding factors like arterial hypertension, smoking, alcohol, atrial fibrillation, valvular disease, age or prior medical therapy.

Conclusion: We have shown that there is significant correlation between a decrease in LPSS and localization of significant stenosis in patients with NSTE-ACS, and it is significantly more accurate in detecting ischaemia-induced myocardial contractility loss than visual assessment of RWMA. Our findings imply that regional 2DS should be employed as a suplementary tool during echo assessment of patients with NSTE-ACS.
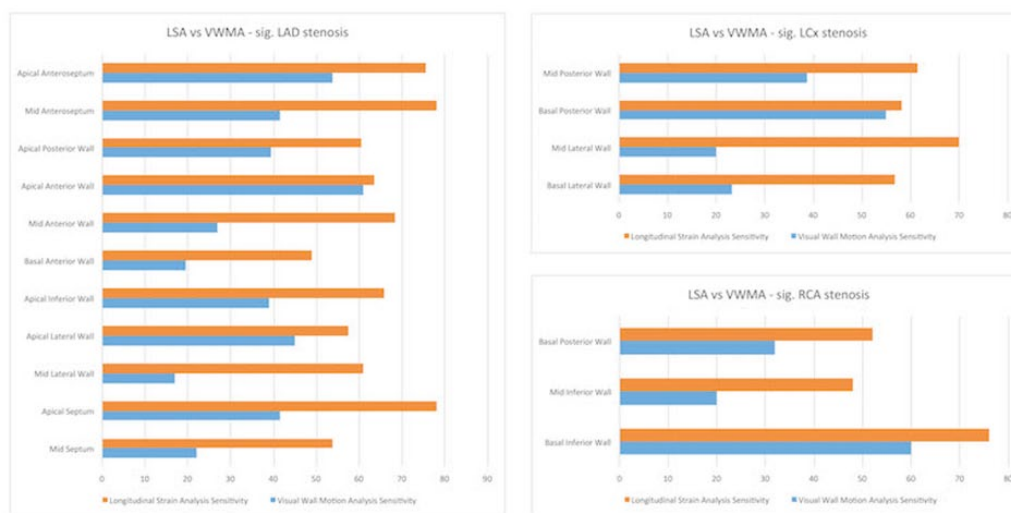
Regional 2DS vs RWMA sensitivity

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Estimation of pulmonary capillary wedge pressure by transthoracic echocardiography in mechanically ventilated patients: comparison tissue doppler imaging with color M-mode doppler propagation flow

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Introduction: The estimation of pulmonary capillary wedge pressure (PCWP) is critical in patients under shock or post cardiac surgery. The pulmonary artery catheter (PAC) Swan-Ganz is the gold standard technique but remains invasive. Echocardiography using tissue doppler imaging (TDI) indices or color M-mode doppler flow propagation velocity (Vp) provides a good estimation of PCWP; but the data are scarce for patients under mechanical ventilation (MV). One study including mechanically ventilated patients showed a very good estimation of PCWP by TDI (ratio of early diastolic mitral velocity E to early diastolic velocity of the annulus mitral E': E/E'), but most of the datas were obtained by transesophageal echocardiography.

The purpose of this study is to assess PCWP by transthoracic echocardiography (TTE) by measuring 2 combined indices largely studied: E/E' and E/Vp (ratio of early diastolic mitral velocity to Vp) in patients under MV.

Methods: We conducted this prospective study in September 2017 in Stanford Hospital Cardiovascular Intensive Care Unit with the approval of our Institutional Review Board. The included patients were under MV with a PAC. The exclusion criteria were age under 18 years, pace maker, mitral valve repair, severe mitral regurgitation or stenosis, and absence of echocardiographic window. Echocardiograms were performed and read by a trained cardiologist, and the PCWP was assessed by an independent critical care physician in the same time, both blinded of their respective findings. The results were read a second time later by the same cardiologist and a junior echocardiographer. The clinical characteristics of patients were recorded. Different echocardiographic parameters were assessed: left ventricular ejection fraction (LVEF) in 4 chambers, mitral inflow velocity (E,A, E/A), deceleration time of E wave (TdE), tissue Doppler imaging on lateral (E'lat), septal (E'sep), anterior (E'ant) and inferior (E'inf) mitral annuli and the color M-mode doppler flow propagation velocity (Vp). We calculated the ratios E/Vp and E/E' for each mitral annulus.

Results: Twenty patients were included with a mean age of 54±9 years, whom 70% men. Ninety percent were post cardiac surgery, in sinus rhythm (90%) with a mean heart rate at 94±12 beats per minute. One quarter of patients had no inotrope or pressor. The Apache 2 score was 11±3.

The positive end-expiratory pressure was 6,8±1,2 mmHg. The mean LVEF was 52±5% and the PCWP measured at 13±1,8 mmHg. There was no correlation between PCWP and E/A, TdE or combined indices from TDI (E/E'ant, E/E'sep, E/E'lat, E/E'inf). There was a significative correlation between E/Vp and PCWP (r=0,7, p < 0,001) and between Vp and PCWP (r=0,5, p < 0,05). The intra- and inter variability were respectively 8% and 19% for E/Vp, and 8% and 14% for Vp.

Conclusion: Based on a small study, E/Vp measured by TTE appeared to be a reliable and reproducible non invasive parameter to estimate PCWP in patients under MV.

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Infections of cardiovascular implantable electronic devices: is there any role for a conservative management?

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Background: Transvenous Lead Extraction (TLE) is the gold standard treatment for infections of Cardiovascular Implantable Electronic Device (CIED). While indications for TLE are expanding, patients with CIED infection are becoming older, with higher burden of comorbidities and frailty thereby challenging this invasive approach. Thus, in selected patients, a conservative management might be considered.

Purpose: To examine the outcome of patients with suspected CIED infection treated by standard TLE as compared to a conservative approach (i.e. only removal of pulse generator but not of the leads), exploring the safety (mortality) and efficacy (recurrences) of conservative management.

Methods: From 2010 to 2016, (n=82, mean age 63 years) consecutive patients with suspected CIED infection were prospectively enrolled at our Institution. According to current guidelines, all patients underwent transesophageal echocardiography and blood coltures, and were evaluated for TLE. In case of refusal or contraindications to TLE, patients received a conservative treatment (i.e. only pulse generator removal with same side replacement). Multivariable analysis were adjusted for sex, age, heart failure, creatinine clearance and the presence of endovascular infection.

Results: Among all patients, 5 (6%) refused TLE, 5 (6%) were classified as high-risk surgical patients, and 4

(5%) had cancer associated with a poor prognosis. After team discussion these 14 (17%) patients were treated conservatively. Blood coltures were positive in 14 (20%) patients treated with TLE, and in 1 (7%) patient subjected to the only removal of pulse generator. No one of the conservatively treated patients had definite or suspected infective endocarditis. The median follow-up was 27 (11-41) months. In multivariate analysis patients subjected to conservative management had statistically significant higher risk of infection recurrences compared with those treated with TLE (incidence 43% vs 4%, respectively; HR 18.91, 95% CI 2.90-123.12, p=.002) (Figure 1). The median (IQR) time to recurrent infection in patients managed conservatively was 6 months. No difference in all-cause mortality was observed between the two groups (HR 1.54, 95% CI: 0.49-4.77, p=.45) (Figure 2).

Conclusion: In patients with suspected CIED infection not eligible for TLE, conservative management with only removal of pulse generator is associated with a higher risk of recurrences without an increase in all-cause mortality. This option should be considered as an alternative to complete CIED removal only in selected patients deemed at high risk for a TLE procedure.
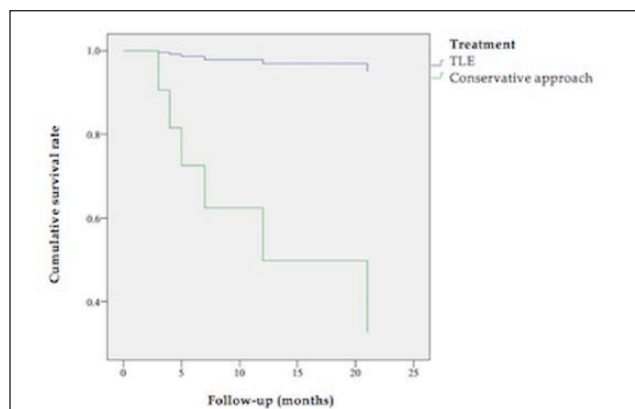
Figure 1. Cox regression for the risk of infection recurrence (multivariate analysis)
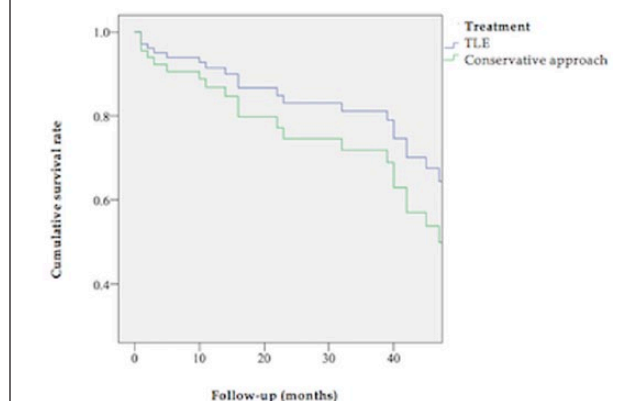
Figure 2. Cox regression for the risk of mortality (multivariate analysis)

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Hemodynamic impact of a new pulsatile mechanical circulatory support in high-risk coronary stenting

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The pneumatic pump is a 17F bi-directional catheter with an inlet tip, an integrated two-way valve and a connector to a membrane pump. Transfemoral access requires a 19F expandable or re-collapsible sheath. Driven by a helium-circuited Intra-aortic Balloon Pump (IABP) console, blood is removed from the Left Ventricle (LV) in systole and ejected in the aorta during diastole. Pulsatile support can reach up to 2L/min, depending on heart rate and loading conditions. Herein we illustrate LV unloading in a 70-years old patient undergoing high-risk PCI during which a 7F conductance catheter provided Left Ventricular (LV) Pressure-Volume (PV) loops. At 1:1 support, the pneumatic pump provided an average output 1.28 ± 0.04 L/min. The native Cardiac Output (COen) decreased by 33% from its pre-support value of 4.21L/min. Reductions of 17% were noted in Total Systemic Resistance, 15% in end-systolic Wall Stress (WS) and 14% in the Pressure-volume Area (PVA).

In ischemic cardiomyopathy, oxygen supply is reduced and often leads to ischemic events when facing demand variations. In this context, LV unloading reduces filling pressures, WS, Myocardial Oxygen Consumption, chamber stiffness, apoptosis and infarct size, while increasing CO. Furthermore, it reduces Microvascular Resistance thus improving myocardial perfusion. In the present study, reductions in Emax, ESP and +dP/dtmax suggest a decrease in contractility, while the reduction in PVA points to a decrease in metabolic demand. Optimization of ventricular-arterial coupling is also evidenced by lower end-systolic WS and Ea/Ees ratio.

Our case illustrates LV unloading after pump activation. Consistency of these findings will be further assessed in the upcoming PULSE trial (Clinicaltrials. gov NCT03200990).

Figure 1: (1A): baseline PV-loops. (1B to 1E): Pre (left) and post (right) procedural angiograms of the LAD and RCA. (1F): left and downward shifting with pump activation. (1G and 1H): effect on PVA and CO. (1I): Schematic illustration of the used pump. Emax: Maximal Systolic Elastance; V30: Compliance at 30mmHg; PVA: Pressure-volume Area; LVAD: left-ventricular assist device; CO: Cardiac Output; DO: Device Output; COen: native CO. PCI: percutaneous coronary intervention.
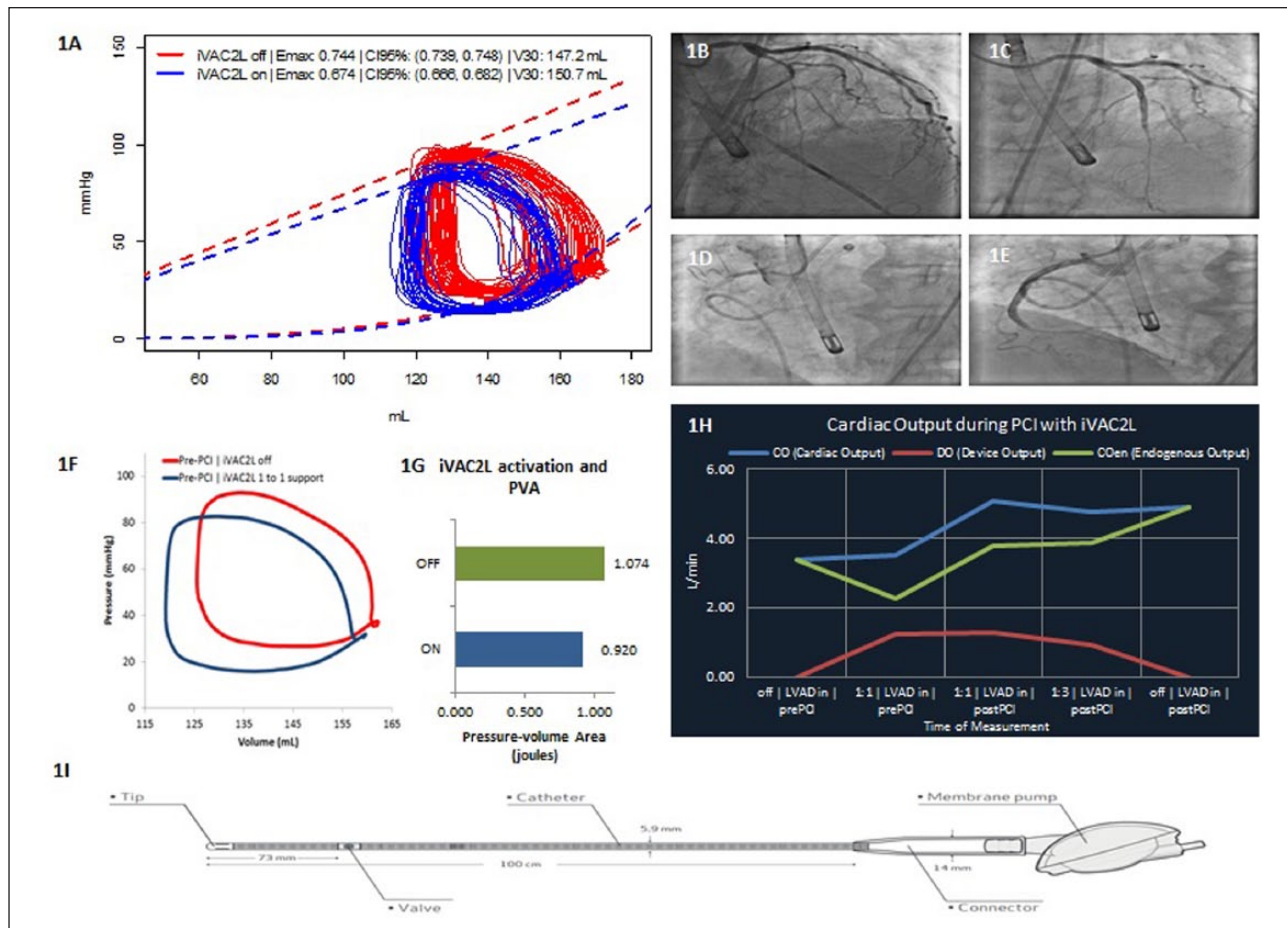
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High risk left main/LAD PCI coronary stenting using left radial artery access and Impella 5.0 ld abiomed support: a case for direct aortic access

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On behalf of: Hackensack Meridian Heart Vascular Hospital

The patient is a 68 y/o man with recent diagnosis of advanced lung CA. He is a heavy smoker with hypertension, dyslipidemia, COPD and advanced occlusive aortoiliac PVD. He developed unstable angina

ad non ST elevation MI after a CT- guided lung biopsy which was complicated by CHF. The LVEF wa reduced to 25%.

CTA identified occlusion and severe disease in the right subclavian , iliac and femoral arteries along with a 5 cm infrarenal AAA (Fig 1).

Cardiac cath and coronary angiography identified severe 90% LM stenosis with severe mid LAD, and CTO of mid RCA and OM circumflex arteries (Fig 2). Right heart cath showed PA 49/20 with CI > 1.8 l/m2 and MVO2 49%.

High risk intervention was considered to the LM and LAD coronary vessels with plan for MCS support and central aortic LVAD access. The patient was evaluated for his stage IIIB lung cancer and deemed treatable with chemo-RT and no lung resection.

In Hybrid intervention OR, a small upper sternotomy was done after securing left radial artery access. The ascending aorta was screened. Using a partial clamp a 10 mm Hemashield graft was sewn (Fig 3.) A 5.0 LD ABIOMED IMPELLA was then introduced and positioned 3.5 cm below the aortic annulus using TEE guidance. LVAD support was initiated. ACT was maintained aroudt 250 sec. Coronary stenting was then s safely done to the LM (4.0 x 15 mm Muli-Link Vision) and LAD (3.0 x 18 mm Medtronic Integrity). Completion angiography and IVUS (Volcano Eagle Eye) confirmed excellent result (Fig 4). Dual anti-platelets were uploaded. LVAD support was weaned and the patient tolerated MCS support explant and chest closure.

Hybrid MCS support for complex interventions has been recently expanded to complex coronary and valve trans-catheter procedures. Direct aortic access is a times needed for prohibitive and malignant vascular disease. Impella 5.0 LD or standard CPB can be easily done as described as bridge to intervention. LVAD or bi-VAD support can be

maintained to recover patients with option for primary or delayed chest closure. Low threshold levels of anticoagulation with IMPELLA or heparin-bonded CPB circuits offer less bleeding risk during recovery. Finally, ECMO upgrade is an easy transition to patients in need for both cardiac and pulmonary support.
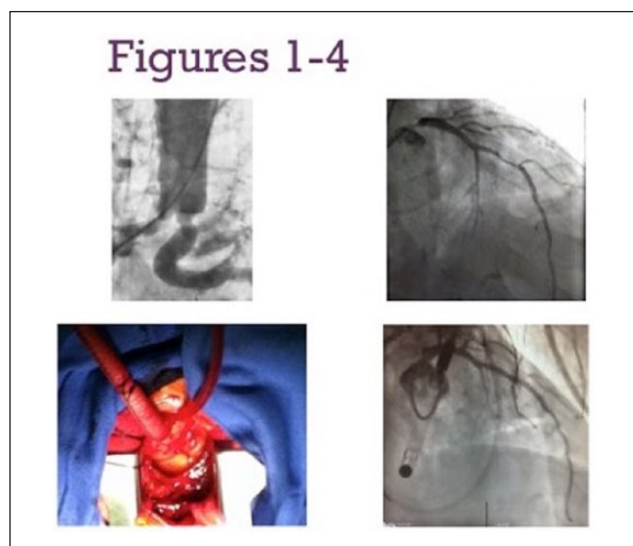
1: CTA. 2: LM 3:IMPELLA 5 LD 4: LM post

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Left atrial mass formation after percutaneous coronary intervention in a patient with prior coronary bypass graft surgery

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Coronary artery perforation is a rare but potentially life-threatening complication of percutaneous coronary intervention, which can result in intramural hematoma, left atrial inflow and outflow obstruction and cardiac tamponade.

We describe a case of a Caucasian 67-year-old male with a previous history of coronary bypass surgery who presented with worsening dyspnea few hours after a seemingly uncomplicated PCI to the right coronary artery (RCA) for chronic total occlusion (CTO).

Transthoracic echocardiography showed a solid mass occupying the entire left atrium and interfering with left ventricular filling; pericardial effusion of moderate size was also present. The large masse's size gave reason for compression on posterior mitral valve leaflet with subsequent increased mean transvalvular gradient (7.5 mm Hg), i.e. causing functional mitral stenosis.

Echocardiography before angioplasty was not available. Oncologic consult was inconclusive and oncomarkers negative. Although noninvasive multimodality imaging (CT scan and MRI) concluded for possible hematoma without active bleeding, determining the masse's nature was fundamental.

Open heart surgery was scheduled and a large hematoma arising from left atrium wall was drained without complications. Subsequent imaging studies showed enlarged left atrium with a residual mass localized within postero-lateral wall, no longer interfering with atrial filling, along with pericardial effusion.

Patient recovered well. On pre-discharge cardiac imaging further reduction in atrial hematoma was documented, as well as right-sided pericardial effusion of unchanged size.

Coronary perforation is a rare complication of PCI, and the subset of patients developing an intramyocardial hematoma is even rarer.

In the case we present, although careful revision of the available information concerning the procedure, a clear cause-effect explanation for the intramural hematoma was not recognized. However, a perforation caused by the intracoronary wire is actually the most conceivable. Alternatively, an intracoronary wire may have caused a dissection to a very distal branch of the postero-lateral branch of the RCA slowly progressing into the posterior wall of the atrium, thus provoking the formation of the hematoma.

Echocardiographic exam should always be performed before angiography, since it can help in distinguishing new onset lesions from unknown, preexisting ones. Beside helping in early detection of PCI complications, echocardiography is fundamental for rapid diagnosis in case of new onset symptoms after angioplasty, too.

CT scan and MRI can orientate toward the most likely diagnosis and exclude active bleeding.

Surgery can be lifesaving in case of large masses causing inflow or outflow obstruction and essential in histologic detection.
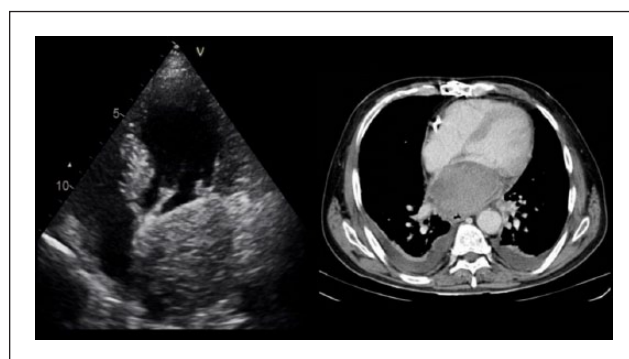
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How useful is the neutrophil gelatinase associated lipocalin for evaluation of kidney function after contrast angiography?

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Background: Neutrophil Gelatinase Associated Lipocalin (NGAL) is known as early marker of contrast-induced acute kidney injury (CI-AKI). However in the cases of chronic kidney disease (CKD) there is no consensus achieved on the expected levels of serum NGAL.

Purpose: The aim of our study was to evaluate the role of NGAL as marker of kidney impairment after contrast exposure in patients with different stages of CKD.

Methods: The high risk patients with estimated glomerular filtration rate (GFR) less than 90 mL/min/1.73m2 undergoing coronary angiography and/or angioplasty were enrolled in the study. Blood samples for serum NGAL and serum creatinine (sCr) were collected baseline at the day before, at 4th and 24th hours after contrast exposure.

Results: The study included 58 patients in two main groups – with preserved kidney function (GFR >60 ml/min/1.73 m2) (n=45, 77.6%) and patients with severe CKD (GFR 30-60 ml/min/1.73 m2) (n=13, 22.4%). From the first group 16 (27.6%) patients had no changes of sCr or NGAL and served as controls. CI-AKI was observed in 9 (15.5%) subjects with preserved GFR and NGAL significantly increased in the first 4 hours after contrast administration. The mean absolute increase of NGAL at 4th hour was > 17.5 ng/ml or relative > 25% compare to baseline values (p = 0.014). The levels at 24th hour were also higher than baseline (respectively 123.02±75.54 ng/ml versus 89.77±38.16 ng/ml, p = 0.046). In 20 patients (34.5%) with preserved kidney function were registered similar levels and dynamic of NGAL as CI-AKI group with significant increase in the first 4 hours. At the same time sCr didn't reach high enough values in order to accept diagnosis CI-AKI and we therefore named this group as "sCr (-)/NGAL (+)". In the patients with severe CKD baseline values of NGAL were significantly higher than all other groups (156.46±36.50 ng/ml, p<0.001). Between 4th and 24th hour NGAL had relative increase more than 13.5% in this group. Normal values of NGAL had excellent correlation with GFR baseline and at 24th hour. The increased levels of NGAL at 4th hour correlated significantly with GFR at the same time point either in patients with preserved kidney function or severe CKD (R -0.845 and R -0.718, p<0.01 respectively). In patients with preserved kidney function

calculated area under the curve (AUC) was 0.711 (95% CI 0.536-0.885; p=0.034) for power of NGAL to detect acute kidney injury at 4th hour after contrast exposure at cut-off point of 89.45 ng/ml. In patients with severe CKD AUC was 0.981 (95% CI 0.938-1.000; p<0.001) at cut-off point of 115.6 ng/ml for diagnostic power of progressive kidney disease.

Conclusions: Our findings suggest that NGAL is good marker for early detection of CI-AKI in patients with preserved kidney function. It also has excellent power to detect subclinical CI-AKI in the same group. In CKD serum NGAL showed baseline higher levels and had slower increase after contrast administration.

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Single center experience in the acute management of septic patients with hemodynamic instability caused by low HR and requiring cardiac pacing

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High grade AV block/severe sinus node dysfunction/slow AF requiring cardiac pacing is not a rare phenomenon in elderly patients with sepsis. The management of this group of patients is always a big challenge. The usual approach in such cases is the insertion of temporary pacing wire. But the necessity of the prolonged antibiotic therapy (2-5 weeks) very often limits using of the mentioned technique due to the different reasons (risk of catheter dislocation, necessity of bed rest with consecutive rapid reduction in muscle mass, increased risk of pulmonary embolism and urinary catheter-associated urinary tract infections, ICU/CCU delirium).

Aim of our study was to evaluate the safety, efficacy and outcomes of the "bridging strategy" - insertion through the subclavian vein (external puncture) of permanent PM RV lead fixed to the skin and connected to the outside fixed permanent PM generator (VVI), see picture.

In the period from February 2017 to May 2017 3 consecutive septic patients (M/F % 100/0, mean age 85±4,36 yrs, range 82-90 yrs) admitted to our department with complete AV block and hemodynamic instability were underwent to the "bridging strategy". Two patients had sinus rhythm, one - permanent AFib. The mean duration of the procedure was 2,7 ± 0,29 min, fluoroscopic time 31 ± 2,52 sec. Mean PCT admission level was 40,5 ±40,15 ng/ml, range 2,8-82,7 ng/ml. Two patients had positive blood culture (ESBL-producing

E. coli and Peptostreptococus spp), the blood culture of the third patient was negative. Antimicrobial therapy was started immediately after admission (initially empiric, then guided by microbiological results). All patients after initial, short period of bed rest were able to perform their typical daily physical activity. The mean duration of antimicrobial treatment before contralateral permanent PM implantation was 16±7 days (range 9-23 days). After negativization of inflammation markers (PCT, CRP, ESR, WBC) and blood culture a new contralateral PM was implanted followed by bridging lead extraction. All patients at the moment of new contralateral device implantation were pacemaker dependent. All patients had normal systolic function of LV (EF>50%). No major/minor complications were observed. Patients were seen within 4-7 weeks after hospital discharge, none of them has sign and/or symptoms of systemic and/or local infections.

Our results demonstrate the feasibility, safety and efficacy of such approach for prolonged temporary cardiac pacing in septic patients. Especially this technique could be useful for the treatment of the group of patients with indications for long-term antimicrobial therapy to avoid long period of bed rest.

Outside fixed PM for "bridging strategy"

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Pacemaker-guided pharmacological treatment of glossopharyngeal neuralgia with syncope introduction

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An 80-year-old woman was admitted to the hospital with a 2 days history of syncopal attacks, preceded with intermittent sharp and severe pain in the right pharynx, during 5 to 25 seconds that radiating to the ipsilateral ear.

Pain had started 2 months earlier, with progressive intensity and frequency since 2 weeks before, with more than 100 episodes daily, without circadian rhythm variability, but so intense that woke up the patient during the sleep. The pain was trigged by swallowing, chewing and talking.

At the emergency department, she had syncopal episodes associated with an asystole period lasting more than 6 seconds with low escape beats, associated with arterial hypotension. Between these episodes, she was in sinus rhythm with no abnormalities in electrocardiography.

Her medication history was unremarkable for negative chronotropic drugs.

Due to severe sinus bradycardia and asystole, during the pain episodes, a temporary transvenous pacemaker was placed to prevent syncopal episodes.

During the first days of hospital stay, the patient had recurrence of cervical pain and, in course of pain attacks, she had transient symptomatic hypotension with bouts of systolic drops pressure over 40 mmHg but no more syncopes were verified.

Both physical and neurological examination, blood tests and echocardiography were normal. Both cranial computer tomography (CT) scan and cervical angio-CT did not reveal any signs of glossopharyngeal nerve impingement.

In the absence of syncope recurrence with temporary pacemaker (and despite the vasodepressor component) with pain paroxysms, it was decided to implant a permanent dual-chamber pacemaker.

After glossopharyngeal neuralgia (GPN) associated with cardiac syncope was diagnosed, the patient started on 200mg carbamazepine, twice daily, with clinical improvement.

The dose was uptitrated to 600 mg daily and she was asymptomatic at the discharge. At 6 months of follow-up, the patient remained asymptomatic, without pain or syncopal episodes. Pacemaker interrogation revealed pacing rates <1%.

Glossopharyngeal neuralgia is a rare facial pain syndrome (represents only 0.2–1.3 % of the facial pain syndromes). More rarely (in 2% of GPN cases), it can be associated with reflex syncope.

The requirement of pacemaker for patients presenting with a potentially amendable cardioinhibitory reflex source is still controversial. Due to the rarity of this condition, the performance of randomized controlled trials to assess the impact of pacemaker implantation in this specific population seems to be unlikely. Thus, the best medical source for medical knowledge relies on observational data and anecdotal case reports. Hereby we present the outcome of a case that combines this rare association: glossopharyngeal neuralgia with syncope, that received medical therapy with anti-epileptic medication and pacemaker implantation.

Sinus bradycardia and asystole period

Moderated Poster Session 10 - Acute Coronary Syndromes and others Monday, 05 March 2018 - 10:00 - 11:00

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Advanced clinical simulation: new skills for critical care training

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Introduction: Clinical simulation as a teaching tool is growing in recent years. The possibility of training non-technical technical skills, effective communication and teamwork in unreal environments and repeatability is a powerful learning tool that should be incorporated into the current training in critical care.

Methods: Initially during 2015 we analyzed the competences that could require training in order to improve patient-care by our resident physicians. After the reflection phase, 4 different scenarios were created to simulate situations that could be encountered by physicians in emergency or critical care settings, such as AHF, acute respiratory failure, acute myocardial infarction and cardiac arrest. From April 2016 to April 2017, 24 students were trained for 5 hours and the individual experience of each student was analyzed.

Results: 100% of the students evaluated the activity as very good or excellent. None of the participants had previous experience in the use of medical simulation. 96% of students believe that simulation improves clinical skills, fluency, and communication among team members in decision making. 87% showed that the simulation could also improve technical skills.

Conclusion: Advanced clinical simulation implementation during the learning process of young physicians in emergency and critical care situations is well received and is an excellent tool for improving clinical and teamwork skills before, during and after the training period.

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Female sex is an independent risk factor for coronary microvascular dysfunction (CMD) in patients presenting to emergency department with chest pain

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Background: Coronary microvascular dysfunction (CMD) i.e. disease of the small vessels of the heart is an alternate cause of angina, affecting up to 2 million patients in the U.S. Evidence is sparse regarding sex-specific socio-demographic and clinical profile of patients with CMD in the emergency department (ED) setting.

Methods: In a prospective observational study, we assessed low-moderate cardiac risk patients admitted to an ED observation unit with chest pain. Patients that ruled out for myocardial infarction underwent dynamic 3D Rb-82 cardiac PET/CT for assessment of perfusion, calcification and coronary flow reserve (CFR). Patients with CMD were identified as those with impaired CFR (< 2 corrected for rate pressure product or < 2.5 uncorrected) and no evidence of coronary artery disease (CAD) or calcification. Exclusions were: age ≤30 years, hemodynamic instability, infarction, hypertensive crisis, heart failure or dialysis. Baseline socio-demographic and clinical characteristics were documented. Relationship between sex and CMD diagnosis was examined using logistic regression model.

Results: Among 195 chest pain patients (male=95 [30%], female=136 [70%]) undergoing cardiac PET between February 2014 and October 2015, 81 (42%) had CMD. Sixty-six (81%) patients with CMD were female and 15 (19%) were male. Women were 3 times more likely to have CMD than men (Adjusted OR: 4.2; 95% CI 1.8, 9.6) after controlling for age, race, ethnicity, hypertension, diabetes, smoking, dyslipidemia, obesity and family history of premature CAD. Women with CMD were slightly older than men (mean age=52 vs. 48), Hispanic (25% vs 7%), current smokers (17% vs 0%), have dyslipidemia (41% vs 27%) and a history of migraines (30% vs 13%). Women were also less likely to have hypertension (62% vs 73%) and thyroid disorders (10% vs. 26%) than men, although these differences were not statistically significant (p>.05).

Conclusion: Coronary microvascular dysfunction is an important cause of angina to consider in ED patients with recurrent chest pain. Among symptomatic ED patients ruled out for CAD, female sex was an independent risk factor for CMD.

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Thrombopoietin and platelet function in patients with ST-segment elevation myocardial infarction undergoing percutaneous coronary intervention

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Young platelets are associated with increased aggregation and adverse outcomes in patients with coronary artery disease. The mechanisms involved in the regulation of platelet turnover in patients with ST-segment elevation myocardial infarction (STEMI) under severe pharmacological antiplatelet "intervention" are still vague.

The purpose of the study was to evaluate impact of thrombopoietin level on platelet aggregation and secretion under pharmacological suppression in patients with ST-segment elevation myocardial infarction.

Materials and methods: We enrolled 40 STEMI patients and 10 practically healthy volunteers as a control group. Blood samples were obtained from STEMI patients within 18 hours since clinical manifestation [1], after PCI [2] and on the 7th day [3]. Antiplatelet therapy consisted of aspirin and ticagrelor in standard regimes. Thrombopoietin (TPO), stromal cell-derived factor 1 (SDF1) and D-dimer were measured by ELISA. Platelet aggregation and secretion were assessed by impedance and luminescence aggregometry using ADP (10 mcM) and collagen (2 mcg/mL).

Results: In 57.14% TPO level exceeded 250 pg/mL (TPO high). No significant 7days TPO dynamics was detected (ANOVA Chi Sqr. P level = 0.564) in both STEMI groups. STEMI patients with high and low level of TPO were similar according to ADP induced platelet aggregation and secretion. In patients with low TPO level, parameters of initial collagen induced aggregation were significantly higher (i.e. maximal Amp 5 (3; 9) Ohm vs 2 (1; 5) Ohm, p = 0.0451), as well as MPV 8.25 (7.45; 9.30) fL vs 7.05(6.00; 8.20) fL, p = 0.034. There were no significant differences in collagen induced aggregation [3] (p = 0.435). TPO [1] and SDF1 [1] correlated with collagen induced secretion of platelet (R = 0.423, p < 0.05).

Conclusion: In STEMI patients, thrombopoietin was inversely associated with collagen induced platelet aggregation and platelet turnover parameters. Dual antiplatelet therapy realizes in normalization of platelet function despite initial thrombopoietin level.

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Glycated hemoglobin levels and acute coronary syndromes - an useful predictor of clinical outcome?

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Background: The quality of glycemic control in diabetic patients is directly related not only to the severity of coronary artery disease (CAD) but also to the survival chance after an acute coronary syndrome (ACS). Glycated hemoglobin (HbA1c) is an excellent screening tool for identification of glycemic levels in the previous 12 weeks of its measurement. However, the role of HbA1c in the prediction of CAD severity and clinical outcomes of diabetic ACS patients is yet to be clarified.

Purpose: To evaluate the relationship between in-hospital HbA1c levels and the severity of CAD in a cohort of diabetic patients admitted for ACS.

Methods: We prospectively obtained data from diabetic patients admitted for ACS in a coronary intensive care unit. All patients were submitted to coronary angiography. Patients were stratified in 2 groups based on the median percentage of HbA1c (≤6.5% "Low" and >6.5% "High"). The severity of CAD was measured by the number of diseased coronary vessels with ≥50% stenosis. The severity of CAD, comorbidities and in-hospital mortality were compared between the 2 groups.

Results: A total of 1225 patients were included. Mean patient age was 66.6 ± 11.7 years in the "Low" HbA1c group and 65.8 ± 11.1 in the "High" HbA1c group, p=0.322. In our sample 71.1% (n=873) of patients were male. A greater prevalence of arterial hypertension and dyslipidemia was observed in the "High" HbA1c group (78.7% vs. 86.3%, p=0.001 and 82.1% vs. 88%, p=0.01, respectively). It was also noted a higher prevalence of active smoking in "Low" HbA1c group (16.7% vs. 11,9%, p=0.018). The severity of CAD was significantly higher in the "High" HbA1c group (1.91 ± 1.2 vs. 1.76 ± 1.1, p=0.017). We verified a significant increase in the mean number of diseased vessels as HbA1c levels increased (p=0.002). After multivariate analysis GRACE score (p < 0.001), maximum Killip-Kimball class (p=0.019), left ventricular ejection fraction (p < 0.001), maximum C-reactive protein level (p < 0.001), maximum HbA1c level (p=0.026) and maximum serum creatinine level (p < 0.001) were found to be independent predictors of CAD severity. The mortality rate of our sample (deaths/1000 admitances) was 23.67, with no significant difference between both groups.

Conclusions: The severity of CAD was greater in diabetic ACS patients presenting with HbA1c >6.5%. HbA1c may be an useful predictor in the context of ACS and can be used to better tailor in-hospital management of these patients.

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Identifying AMI in the prehospital phase: Point of care troponin greatly improves the diagnostic and prognostic predictions of Prehospital ECG's

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Purpose: Prehospital biomarker measurement may improve diagnosis and prognostic classification of patients with suspected AMI. We studied whether prehospital point-of-care troponin T (POC-cTnT) measurements improved the ability, after prehospital ECG recordings, to identify patients with AMI as well as predicting prognosis.

Methods: We measured POC-cTnT in the ambulance and recorded an ECG in 850 consecutive patients with symptoms of AMI. The remains of the prehospital blood sample were saved for later high-sensitivity troponin (hs-cTnT) analysis. The ECG was stored and later analysed independently by two cardiologists. The diagnostic properties of the ECG changes alone, an elevated POC-cTnT above 50ng/L, an elevated prehospital hs-cTnT value above the 99th percentile cut point of 14ng/L, and combined models of ECG changes + troponin were calculated. The added value of using prehospital troponin was estimated using reclassification statistics. The prognostic properties of +/− ischemic changes in combination with +/− elevated troponin were demonstrated by constructing Kaplan-meier curves.

Results: 183 patients (21.5%) had an AMI, 109 with NSTEMI and 74 with STEMI. 107 patients had non-specific ischemic ECG changes (12.6%) and 79 had ST-elevation (9.3%). The diagnostic properties are displayed in the table. Adding elevated troponin to any ischemic ECG changes increased the AMI sensitivity from 53.6% to 69.9% for POC-cTnT > 50ng/L (IDI = 0.07, rIDI = 0.46, NRI = 0.66, $p < 0.001$ for all) and 91.4% for hs-cTnT > 14ng/L (IDI = 0.12, rIDI = 0.71, NRI = 0.96, $p < 0.001$ for all). There was no association between ischemic ECG changes and long term mortality (Log rank, Chi2 $p = 0.86$) whereas adding elevated POC-cTnT values above 50ng/L (Figure) and hs-cTnT above 14ng/L greatly improved prognostic prediction, log rank Chi2 $p < 0.001$ for both.

Conclusion: Addition of prehospital point-of-care troponin-T to conventional prehospital ECG analysis, significantly improves diagnosis of AMI and predicts a poor outcome. Prehospital point-of-care troponin may be used to select high-risk patients for triage directly to advanced cardiac care facilities.

Table 1. Diagnostic properties.

Diagnostic properties of ischemic ECG changes, elevated prehospital troponin and combinations for the diagnosis of AMI

	ECG Ischemia	POC-cTnT > 50ng/L	hs-cTnT > 14ng/L	ECG + POC-cTnT	ECG + hs-cTnT
Sensitivity	53.6	39.3	80.0	69.9	91.4
PPV	53.3	68.6	39.8	53.8	38.8
Specificity	87.0	95.0	67.6	83.4	59.4
NPV	87.1	85.0	93.0	90.9	96.1
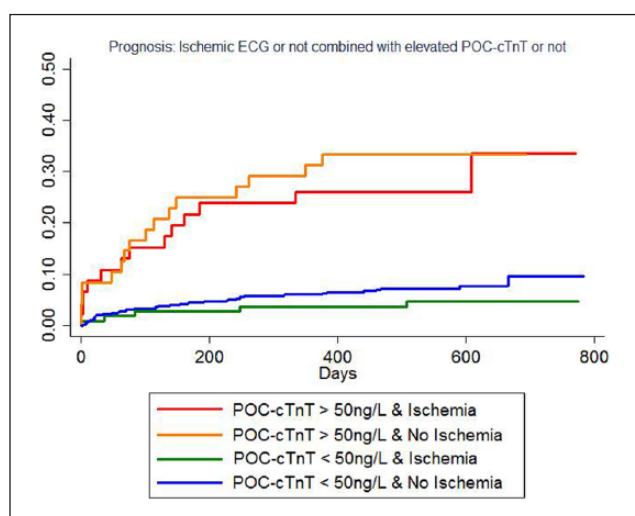
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Antiplatelet effects and pharmacokinetics of uncrushed and crushed ticagrelor after semi-urgent CABG

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Introduction: Based on the PLATO–trial and its sub-studies, ticagrelor is indicated for all patients with an acute

coronary syndrome (ACS), including those undergoing coronary artery bypass grafting (CABG). Some of these patients are not awake or not able to swallow tablets and receive crushed tablets through a nasogastric tube.

Purpose: The first aim of the study was to evaluate the platelet function analyser (PFA) closure time (CT) in CABG patients treated with crushed ticagrelor. The second aim of the study was to determine plasma concentrations of ticagrelor and its main active metabolite AR-C124910XX.

Methods: We included 20 patients after semi-urgent CABG. Ticagrelor was stopped in patients at least 72h before surgery, or was started for the first time after the surgery. From the first postoperative day, the patients received twice-daily 90mg. The first 1 or 2 tablets, were crushed, given through a nasogastric tube. The next tablets were swallowed with water. Measurements of CT were done at 0, 2, 4, 8, 12, 24h and at day 4+ 4h. Platelet inhibition was tested with a PFA activated by Adenosine Di Phosphate (ADP). When testing platelet inhibition by ticagrelor, an ADP cartridge is used and the CT should be longer than 106 seconds. Plasma concentrations were determined at 30min, 1, 2, 4, 8, 24h and day 4+4h. Plasma concentrations were measured after protein precipitation, by using liquid chromatography with mass spectrometry detection.

Results: At day 4, the median CT was >300s. In 84% of the patients, the PFA showed platelet inhibition at day 4. The difference in the proportion of patients with platelet inhibition at day 4 was significant different from day 1 (p=0.012). (cfr. table)

For ticagrelor, the median time to peak plasma concentration (Tmax) was 100h [100;100] for a median Cmax of 857.0ng/ml [496.8; 1157.5], the geometric mean was 810.0ng/ml (631.2- 1039.4). For the metabolite of ticagrelor, AR-C124910XX, median Tmax was 100h [43;100] for a Cmax of 251.0ng/ml [173.0; 396.5]. The geometric mean for the metabolite was 243.5ng/ml (185.0- 320.6).

Conclusions: At day four of therapy 84% of the patients showed a CT longer than 106s, meaning full platelet inhibition by ticagrelor. At day 4 all patients reached the peak plasma concentration. These findings are comparable to pharmacokinetic studies with ticagrelor in healthy volunteers.

Table 1. Platelet Function Analyser Closure Times.

	0h	2h	4h	8h	12h	24h	day 4 +4h
Closure Times (S)	60 [48;179]	>300 [81;>300]	>300 [104;>300]	257 [122;>300]	>300 [108;>300]	>300 [236;>300]	>300 [129;>300]
% of patients with CT >106s (p-value)	26.3%	70% (0.03)	80% (0.006)	75% (0.024)	75% (0.012)	85% (0.006)	84% (0.012)

s=seconds CT=Closure timep calculated with Wilcoxon Signed Rank test, Bonferroni corrected
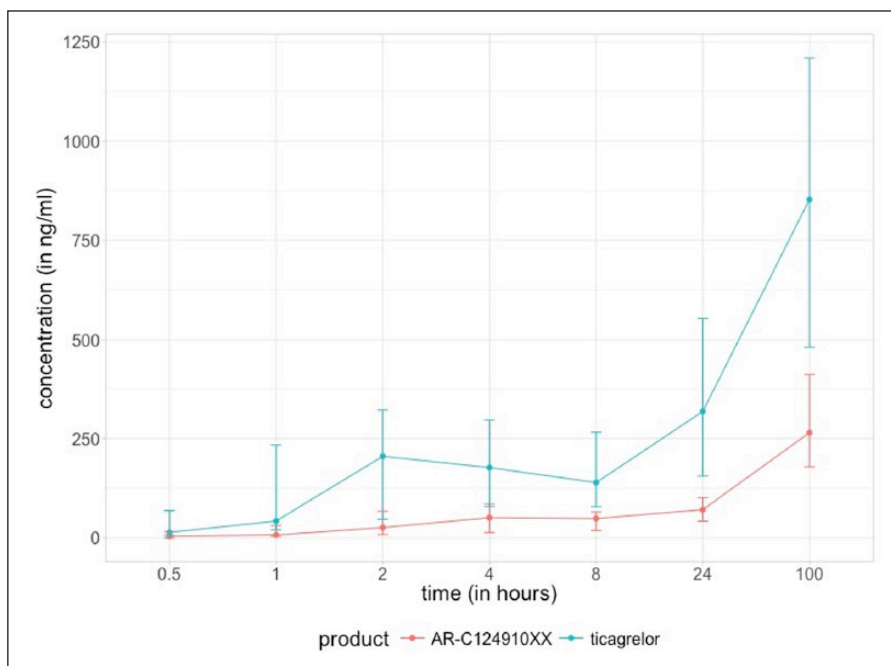
Concentrations ticagrelor & AR-C124910XX

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Prognostic use of soluble fms-like tyrosine kinase-1 and placental growth factor in patients with coronary artery disease

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Background: Angiogenic factors have a crucial role in progression of atherosclerosis and thus might allow for risk stratification in patients with acute coronary syndrome (ACS) or stable angina (SAP). We analysed placental growth factor (PlGF) and its endogenous inhibitor soluble fms-like tyrosine kinase-1 (sFlt-1) in terms of clinical outcome in patients with ACS or SAP, both shown to be predictive for outcome in recent studies.

Purpose: PIGF is a platelet-derived protein, which might be responsible to increase the inflammatory process in atherosclerosis. A potential endogenous opponent of PlGF is soluble Flt-1. Flt-1s expression is increased during ischemia and thus represents an early response as repair mechanism in this setting. Both biomarkers therefore might be important in acute coronary syndrome or progression of atherosclerosis

Methods: The cohort included N=2130 subjects (N=1096 SAP, N=752 ACS and N=282 without coronary artery disease; CAD) of the AtheroGene cohort with reported 85 cases of cardiovascular mortality during follow-up and a median duration of 3.9 years.

Results: In Kaplan-Meier curve analysis PlGF in rising thirds was not predictive regarding outcome (p=0.54), the same was shown for sFlt-1 (p=0.44). In a multivariable Cox regression anaylsis for the fully-adjusted model including the traditional risk factors, gender, age, renal function and NT-proBNP, PlGF had a hazard ratio (HR) of 0.8 (p=0.18) and sFlt-1 a HR=1.0 (p=0.8). The recently recommended ratio PlGF/sFlt-1 had a HR=0.89 (p=0.37). Receiver operating characteristic (ROC) curve analysis showed only a modest area under the curve (AUC) regarding the outcome for PlGF, sFlt-1 and the ratio PlGF/sFlt-1 with AUC= 0.51,0.52 and 0.48 respectively.

Conclusion: This cohort, including stable and unstable coronary artery disease, could not show a prognostic role for PlGF, sFlt-1 and the ratio PlGF/sFlt-1 to identify patients with cardiovascular mortality during follow-up. Our results point out that angiogenesis is a delayed response that might not be suited to establish prognosis in acute cardiovascular care.

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Predictors of late cardiogenic shock and its prognostic impact in patients with ST-elevation myocardial infarction

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Background/aim: There are data suggesting that primary percutaneous coronary intervention (pPCI) reduces the incidence of late cardiogenic shock (CS) in patients with ST-elevation myocardial infarction (STEMI). The aim of this study is to analyse the incidence and predictors of late CS and its prognostic impact in patients with STEMI treated with pPCI.

Method: We analysed 2603 consecutive STEMI patients. Patients were considered to be in CS when fulfilling following criteria: systolic blood pressure <90mmHg for more than 30 minutes or the need for vasopressor/inotropic therapy; signs of end-organ hypoperfusion; and reduced ejection fraction (EF) <40%. Patients were divided in three groups: no CS, CS at admission and CS after admission (late CS). The follow-up period was 6 years.

Results: CS was registred in 150 (5.8%) patients; among them 33 (22%) patients had CS on admission and 117 (78%) patients had late CS. As compared with patients without CS, patients with CS on admission and patients with late CS had higher 30-days (1.5%, 12.1% and 72.5%, respectively) and 6-year mortality (4.9%, 18.2% and 80.8%, respectively), Figure 1. Independent predictors for late CS development were: heart failure on admission (Killip class II and III)- HR 3.99 (95%CI 2.21-7.95, p < 0.001), (lower) EF- HR 1.03 (95%CI 1.02-1.05, p < 0.001), postprocedural flow TIMI<3- HR 2.73 (95%CI 1.31-5.78, p < 0.001) and baseline creatinine clearance <60ml/min/m2- HR 2.03 (95%CI 1.14-3.63, p=0.016). In Cox regession model CS on admission was an independent predictor for 30-day mortality only (HR R 3.27, 95%I 2.01-4.97, p < 0.001), while late CS was an independent predictor for 30-day (HR 16.03, 95%CI 9.98-28.90, p < 0.001) and 6-year mortality (HR 6.63, 95%CI 4.45-10.67, p < 0.001).

Conclusion: In this study CS was registered in around 6% of patients and most of them develop CS after admission. Irrespective of the timing of the CS mortality rate was high, but only late CS was an independent predictor for long-term mortality

Figure 1.

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Temporal trends and improvements of prognosis following non ST elevation myocardial infarction, 2003-2014

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International studies report a decline in mortality following non–ST-elevation myocardial infarction (NSTEMI). Whether this is due to lower baseline risk or increased utilization of guideline-indicated treatments is unknown.

Purpose: Determine whether changes in baseline characteristics of patients with NSTEMI are associated with improvements in outcomes.

Methods: Data on patients with NSTEMI were obtained from CARDIOCHUS ACUTE CORONARY SYNDROME REGISTRY (Coronary Care Unit; University Clinical Hospital) between September 1, 2003, and June 30, 2014 (final follow-up, September 30, 2015). Data available included baseline demographics, clinical risk (GRACE risk score), along with pharmacological and invasive coronary treatments. We divided patients according to hospital admission date, group 1 (2003-2008) and group 2 (2009-2014). Median follow up was of 5, 28 ± 2, 68 years. Multivariate analysis using Cox's regression model was employed for endpoint mortality all causes and heart failure.

Results: 3009 patients represent the NSTEMI sample with an average age of 68 years. There were no significant differences in cardiovascular risk factor or in the GRACE score (120 vs 118; p = NS). Not there were differences between the levels of haemoglobin, creatinine, glucose and ventricular ejection fraction. The early intervention coronary percutaneous was 15% in patients of period 2003-2008 vs 25% period 2009-2014, p<0.0001. Intrahospital mortality was significantly lower in group 2 (6% vs 4.2%;

p < 0.0001) as were mortality of any cause (33.2% vs. 21.4%; p < 0.0001) and long term failure heart (19.2% vs 13.7%). A higher revascularization rate was observed in group 2 (50% vs. 60%, p< 0.001) along as greater use of ACEI, statins and the new antiplatelet agents (ticagrelor and prasugrel).

Multivariate analysis displayed that when adjusted by age, sex, early percutaneous intervention, GRACE score, and cardiovascular treatment, the temporality (2009-2014) was an independent prognostic factor (HR 0.86 CI 0.75-0.98; p < 0.04).

Conclusions: Among hospitalized patients with NSTEMI in the CARDIOCHUS ACUTE CORONARY SYNDROME REGISTRY there is improvement in mortality and heart failure (2003 to 2014) being significantly associated with increased choice of early invasive coronary strategy (<24 hours) and use of cardiovascular pharmacotherapy.
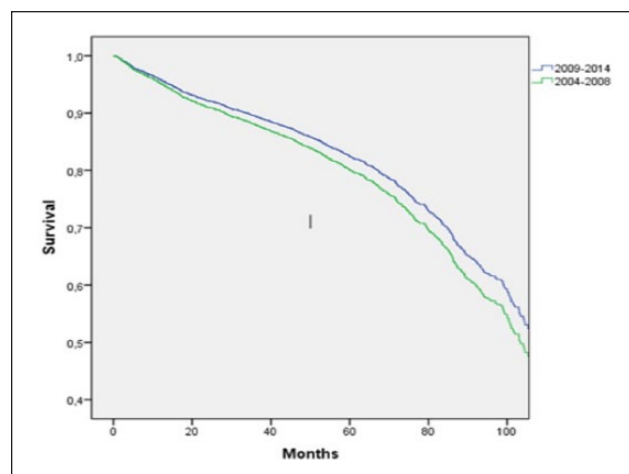
survival Curves Cardiochus

General intensive care in the cardiac patient: Update 2018 Monday, 05 March 2018 - 11:00 - 12:30

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Endothelial dysfunction in resuscitated cardiac arrest (ENDO-RCA): Safety and efficacy of low-dose prostacyclin administration in post-cardiac-arrest-syndrome patients

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Background: Cardiac dysfunction and shock is prevalent after resuscitated out-of-hospital-cardiac-arrest (OHCA) and a major cause of early mortality. An increasingly recognized prognostic factor is the ischemia-reperfusion injury secondary to the restoration of the blood circulation. Patients resuscitated from cardiac arrest display evidence of endothelial injury as part of their post cardiac arrest syndrome (PCAS), which is associated with poor outcome. Recent randomised controlled trials have revealed that treatment with infusion of prostacyclin reduces endothelial damage.

Purpose: To investigate if infusion of low-dose prostacyclin (1ng/kg/min) improves endothelial integrity in PCAS patients compared to standard therapy

Methods: A randomized, placebo controlled double-blind investigator-initiated pilot trial. Patients were randomly assigned 1:2 to either to the active treatment group (48 hours of prostacyclin infusion, 1 ng/kg/min) or to the placebo group (saline infusion). Endothelial activation and damage were evaluated (soluble thrombomodulin (sTM), sE-selectin, syndecan-1, soluble vascular endothelial growth factor (sVEGF), soluble vascular endothelial cadherin (sVEcad) and nucleosomes) along with sympathoadrenal over activation (epinephrine, norepinephrine) from baseline to 48 hours post-randomization.

Results: 50 patients were randomized, 44 patients completed 48 study drug infusion (per protocol). Baseline demography, co-morbidities and clinical characteristics on admission were comparable in the two treatment groups. The median (25th-75th percentile) time to study drug initiation was 176 (143-223) minutes. When baseline corrected, sThrombomuduline as the primary biomarker of interest (a molecular marker of endothelial cell injury), displayed a group effect (p=0.045) with lower levels in the prostacyclin group at the 48-hour primary endpoint model. However, prostacyclin infusion did not significantly influence other biomarkers of endothelial activation and damage (sE-selectin, syndecan-1, sVEGF, sVEcad, Nucleosomes) or sympatho adrenal overactivation (epinephrine, norepinephrine). There was neither a significant difference between the prostacyclin and placebo groups in 30-day mortality (Log rank p=0.53 (Hazard Ratio 0.71 (0.22-2.3) p=0.57)) nor in 30-day poor neurological outcome and death measured by (cerebral performance category scale (CPC) and modified Rankin scale score (p=0.15). Relative risk for poor neurological outcome and death in the prostacyclin treatment group was: CPC 1.9 (0.9-4.2) and mRS 1.9 (0.9-4.2). No significant differences between groups were found with regard to adverse events (p=0.7).

Conclusions: Among OHCA patients, the administration of low-dose prostacyclin appears safe. As hypothesized, sTM (a marker of endothelial cell damage) declined during prostacyclin infusion displaying an overall significant difference between groups at the 48-hour endpoint model, though underpowered to translate into clinical outcomes.

Soluble biomarkers reflecting endothelial activation and damage in 44 (per-protocol) patients randomized to prostacyclin (1 ng/kg/min) or placebo (0.9% saline) during and 48 h after cardiac arrest. Medians with interquartile ranges are shown for patients receiving active (light grey) versus placebo (dark grey bars) therapy: (a) soluble thrombomodulin (ng/ml).). Overall, groups were compared by baseline corrected repeated-measures analyses using a means model, including group, time-point, and group × time effects. *Significant difference (P< 0.05) from baseline within a given group analyzed by Wilcoxon signed-rank test.

Figure 1. sTM

Poster Session 5 - Pulmonary embolism, Arrhythmias and Sudden Cardiac Death, Imaging, Acute Aortic Syndrome Monday, 05 March 2018 - 09:00 - 12:30

Case reports

P619

The heart inside the heart

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[1]Hospital Dr. Nélio Mendonça, Cardiology, Funchal, Portugal

On behalf of: Pavia CARe researche

Case Description: MS, 69 years old caucasian female, with past history of Hepatitis C (finished 24 weeks of Ledipasvir 90mg and Sofosbuvir 400mg with negative viral load since the 12th week of treatment), Bjork-Shiley 31 Mitral mechanical prosthesis implanted 15 years before and persistent atrial fibrillation. Medicated with acenocumarol, digoxin, furosemide and spironolactone.

Patient admitted through the Emergency Department with a history of 3 months long progressive exertion dyspnea. Since the previous week with dyspnea and fatigue at minimal exertion.

Upon observation patient was hemodynamically stable, apiretic, 95% O2 saturation. Lung sounds clear. A rude proto-mesossistolic grade II/VI murmur was heard upon the left sternal border and apex. Painful deep palpation of the right upper abdominal quadrant, with slightly enlarged palpated liver.

ECG: atrial fibrillation, 110 bpm, monomorphic ventricular ectopic beats

Blood tests: Hemoglobin 8 g/dL, Mean Globular Volume 66 fl, Brain-Natriuretic Peptide 122 pg/ml, Alfafetoprotein 94.2 ng/ml ($\uparrow$), CA 125 348.2 U/ml($\uparrow$)

Transthoracic Echocardiogram ensued displaying good left ventricular systolic function, minimal intra-valvular leak and a "heart-shaped" 6 cm wide heterogeneous mass in the right atria (Picture 1. A and B).

Computed tomography showed that the mass was 7.5x6.1cm wide and was contiguous with the IV hepatic segment (Picture 1. C). Also, an enlarged, dysmorphic and multinodular liver was seen, along with portal vein thrombosis and peritoneal carcinomatosis (Picture 1. D). Lung involvement with multiple small nodular metastasis was evident.

Abdominal magnetic resonance imaging confirmed the diagnosis of a Stage 4 Hepatocellular carcinoma.

Palliative chemotherapy ensued, but the patient died at 2 months of follow up.

Conclusion: This clinical case illustrates an exquisitely rare etiology for a "curiously-shaped" mass in the right atria in a patient with cured type C hepatitis. Hepatocellular carcinoma (HCC) is a common malignancy, but cardiac involvement is rarely present and predicts a poor prognosis. Malignant tumors of the right atria are mainly extra-cardiac, and may manifest a blood-spread metastasis. Contiguous tumors from the upper or inferior vena cava are exquisitely rare.
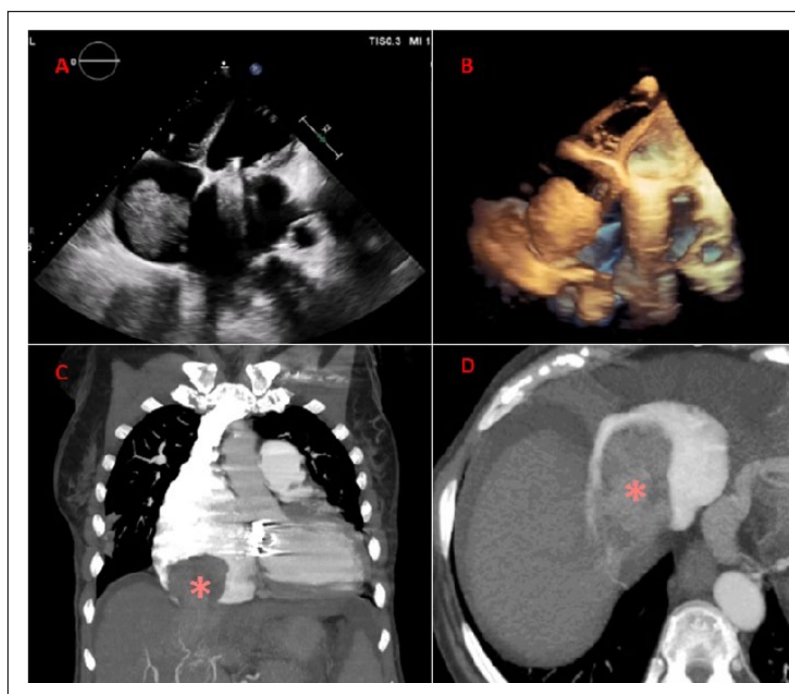
Picture 1

P620

When a red eye hides a severe heart disease

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A 73-year-old man, with clinical history of surgical aortic valve replacement by a mechanical prosthesis valve (MPV) due to symptomatic severe stenosis, was admitted in our Emergency Department with complaints of pain, redness and decrease of visual acuity of left eye associated to fever, anorexia and weight loss with 3 weeks of evolution. At clinical examination, he was hemodynamically stable, febrile and prosthetic metallic sounds were audible. Blood tests revealed increased systemic inflammatory parameters.

Given the systemic infectious/inflammatory process in a patient with MPV, a transthoracic echocardiogram (TTE) was performed, which showed an aortic bidisc MPV with mean gradient 33 mmHg, maximum velocity 3.87 m/seg, LVOT VTI/aortic VTI ratio 0.31 and moderate intraprosthetic regurgitation. Transesophageal echocardiogram (TEE) also demonstrated paravalvular oedema of the aortic root posterior wall compatible with an abscess. By suspicion of prosthetic valve endocarditis (PVE) manifested with endogenous endophthalmitis, blood cultures were collected and empiric antibiotic therapy was started, which has been replaced by benzylpenicilin guided therapy after Streptococcus dysgalactiae spp. isolation.

During hospitalization, there were multiple complications. On day 3, the patient had sudden onset of left central facial paresis and ipsilateral, grade 2, hemiparesis, confirmed as being a cardioembolic acute ischemic stroke. On day 21, despite therapy optimization, the patient maintained daily fever, high inflammatory parameters and ocular inflammatory signs. That is why he underwent evisceration eye surgery, with subsequent systemic infection control. Re-evaluation TEE showed the presence of a pseudoaneurysm in the aortic root posterior region extending for one third of valve circumference and with communication with LVOT.

After 6 weeks of guided therapy, the patient was submitted to cardiac surgery with replacement of aortic MPV for a bioprothesis and exclusion of the pseudoaneurysm. Immediate postoperative TEE and pre-discharge TTE showed aortic bioprothesis well positioned and normal functioning.

This clinical case illustrates a PVE caused by Streptococcus dysgalactae, a Group C or G streptococci, an uncommon cause of this cardiac infection, with only a few cases published in the literature. Additionally to the aetiological agent, this case is particular owing to its initial presentation with endogenous endophthalmitis, a rare ocular infection, described as complicating mainly infectious endocarditis caused by Group A or B streptococci. In short, the described clinical case aims to demonstrate the importance of the recognition of extra-cardiac manifestations of infectious endocarditis, the identification of rare aetiological organisms and the control of persistent bacteremia focus, while emphasizing the diagnostic and follow-up applicability of the several echocardiographic modalities (TTE, TEE and perioperative) in this serious disease.
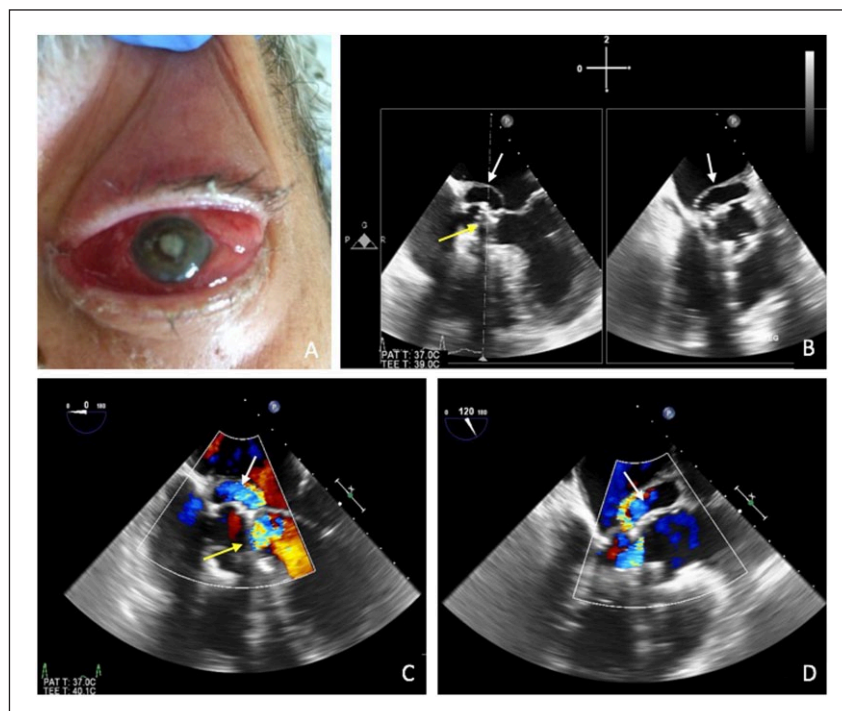
Local and systemic complications

P621

Role of 2-dimensional speckle tracking echocardiography in improving diagnosis of coronary artery stenosis in stable angina pectoris patients

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Background: conventional echocardiography at rest provides little information regarding the presence of CAD, Longitudinally orientated myocardial fibers are located subendocardially, the area most susceptible to ischaemia, that is why measurements of longitudinal motion and deformation may be the most sensitive markers of CAD using (2DSE) The aim of this study was to determine if 2DSE performed at rest can enhance the sensitivity of exercise test and if it can predict the presence of coronary artery disease in patients with stable angina pectoris.

Methods: our study included (120) subjects suspected to be stable angina pectoris patients presented for evaluation of chest pain at the University Hospital between December 2013 and December 2015, The patients were classified according to coronary angiography results in to two groups: Group (A): 40 patients with normal coronary angiography as a control subjects, Group (B): 80 patients with significant coronary artery disease.

Results: There was statistically significant difference between the two groups as regard E wave, A wave, E/A ration, DT, Em and E/Em, there was statistically significant difference between the two groups as regard SLSS and GLS 17 and GLS 12, there was statistically significant difference between the two groups as regard SLSr and Sr17and Sr 12, there was statistically significant difference between the two groups as regard ST segment deviation during stress ECG, exercise capacity (METs) and Duke Score,;in this study we found that strain parameters at BA, BAS, MA, MIS, MAS, AI and AL segments were found to be significant predictor of LAD stenosis and BP and MP were found to be significant predictor of LCX stenosis and BI was found to be predictor of RCA stenosis, also we found that strain rate parameters at BA, MA, MAS, AI, AL and apex segments were found to be significant predictor of LAD stenosis, and BL, BP and ML were found to be significant predictor of LCX stenosis and BI and MI were found to be predictor of RCA stenosis, the diagnostic performance of the exercise test was significantly improved by GLS17 in terms of a significant increased AUC for the exercise test in combination with GLS17

Conclusion: In patients with suspected SAP, GLS assessed by 2DSE at rest is a predictor of significant CAD and significantly improves the diagnostic performance of exercise test, and capable of identifying which coronary artery is stenotic.

P622

Streptococcus dysgalactiae isolated pulmonary valve infective endocarditis with pulmonary embolism in a newly diagnosed human immunovirus deficiency patient

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Introduction: A previously healthy 29–year-old air steward, presented to our institution with 1 week of intermittent fever associated with pleuritic chest pain, dark urine, 2kg weight loss in the preceding month and admitted to multiple unprotected sexual contacts. On arrival, he was septic, hypotensive with elevated jugular venous pressure, and a grade 3/6 diastolic decrescendo murmur over the 2nd left intercostal space and lower left sternal border respectively. He was commenced on ionotropic support and was further managed in High Dependancy Unit In view of possible acute right heart failure

Identification of the problem, procedures, patient management: Electrocardiography and Chest x ray were unremarkable. Initial bloods basic investigations revelas elevated inflammatory markers. Two initial blood culture specimens obtained at admission grew streptococcus dysgalactiae. Transthoracic echocardiography [Figure 1A and 1B] showed a pulmonary valve vegetation of 4x4 mm with turbulent flow seen at the right ventricular outlet by colour Doppler and peak pressure gradient estimated at 59 mm Hg. The pulmonary artery systolic pressure and left ventricular ejection fraction was 35 mmHg and 67% respectively. Transesophageal echocardiography shows pulmonary valve prolapse with very eccentric jet of severe pulmonary regurgitation. An echodense and mobile mass of 4 mm x 4 mm and area of 2.30 cm2 was found attached to the pulmonary valve. CT thorax showed pulmonary septic emboli with several spiculated opacities were in seen bilateral upper and middle lobe of the lungs and some showing internal cavitation [Figure 2A and 2B]. The HIV Ag-Ab returns positive and the CD4 count was noted to be 386 and HIV viral load was 4.72 log (524400 copies). Benzyl penicillin intravenously was commenced on day 2 of admission. Ionotropic support was ceased on day 4 admission and patient was then transferred to general ward. As patient preference for medical treatment, he completed a 6 – week course of intravenous antibiotic without further complication.

Diagnosis: Streptococcus Dyslagalactiae infective endocarditis in insolated pulmonary valve prolapse in a newly diagnosed human immunodeficiency patient

Conclusions and implications for clinical practice: IE predominantly affects left-sided heart valves, with isolated pulmonic valve IE being distinctly rare. Therefore a high index of suspicion is required to identify pulmonary valve IE should initial investigation is unremarkable and this mandates a low threshold for further cardiac imaging. We report the first known case of isolated native pulmonary valve prolapse with IE due to streptococcus dysgalactiae to illustrate the complexities of diagnosis

Figure 1 A; Pulmonary valve prolapse seen on transesophageal echocardiography

Figure 1B; Vegetation seen attached to pulmonary valve

Figure 2A

figure 2B

Figure 2A and 2B; CT thorax showing septic emboli and cavity lesions
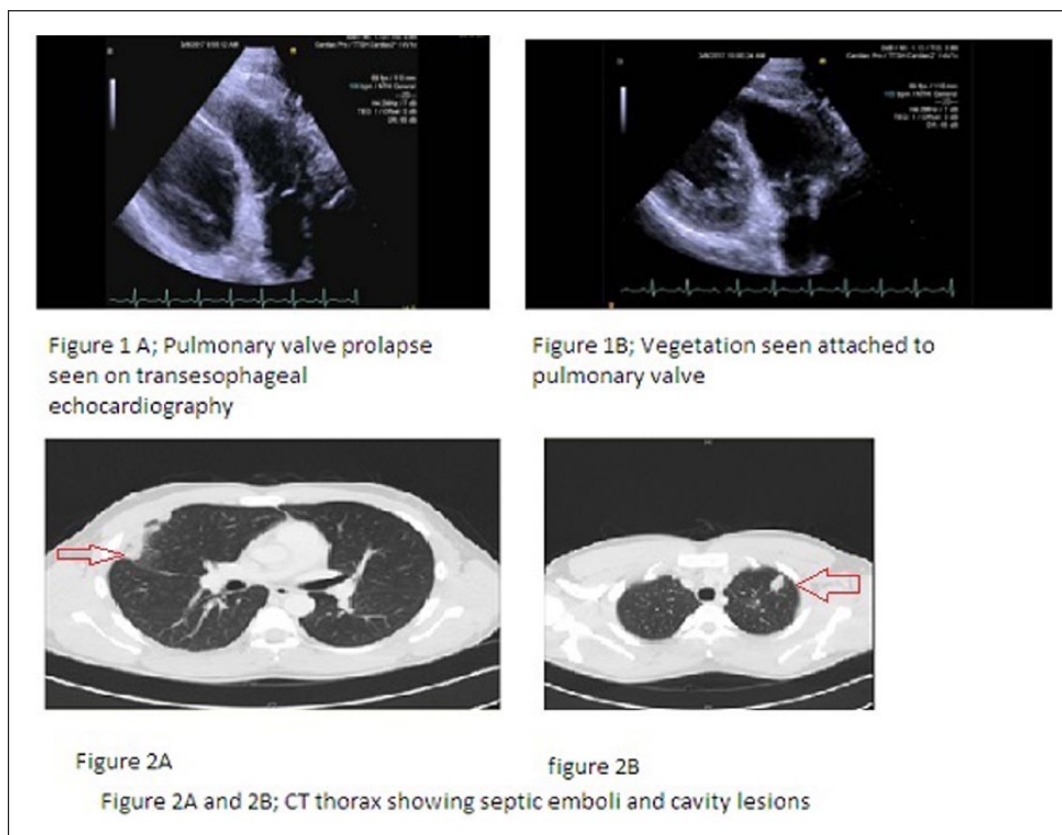
Figure 1 and 2

P623

A cardiac tumour as an incidental finding on transthoracic echocardiography

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We present a case of a 60-year-old caucasian male with past medical history of arterial hypertension, dyslipidaemia, obesity and smoking and with no family history of cardiovascular disease. Due to a 2 months history of atypical chest pain he performed a transthoracic echocardiography (TTE) that showed no wall motion abnormalities and normal systolic function of both left and right ventricles. In TTE it was also visible a large mobile and isoechogenic mass located in lateral wall of left atrium with 4.6 cm2 area, without signs of mitral valve obstruction. It was admitted to our hospital to further evaluation of this mass. At admission he was asymptomatic, without symptoms of dyspnoea, orthopnoea, anorexia, fever and weight loss. At physical examination he was hemodynamically stable, in apyrexy, with normal cardiac and pulmonary auscultation and without cutaneous abnormalities. Blood tests did not reveal significant changes.

To better characterize this finding, a transoesophageal echocardiography (TEE) was performed and revealed an oval, isoechogenic and heterogeneous mass located in the left atrium, with regular surface and maximum size of 2.7 cm, attached by a 9 mm pedicle to the lateral wall of left atrium, that prolapses into the left ventricle through the mitral valve during diastole, without causing obstruction to its opening (mean gradient 2 mmHg, maximum velocity of 1.03 m/s). TEE also showed normal pulmonary venous

return. These echocardiographic findings were suggestive of a cardiac myxoma.

Considering the TEE findings suggestive of a benign tumour, absence of symptoms and absence of both physical examination and laboratory analysis abnormalities suggestive of malignancy, it was decided not to perform a thoraco-abdominopelvic computer tomography.

The patient was submitted to cardiac surgery and the mass was excised.

Myxoma is the most common benign primary cardiac tumour and occur most commonly in the left atrium, arising most often from the fosse ovalis in the interatrial septum. Sporadic myxomas represent the large majority and tend to occur in middle-aged women as isolated lesions. In 7% of cases, myxomas are familial.

Cardiac myxomas have variable echocardiographic features. Most of them are globular in appearance, have a regular and smooth surface and size ranging from 4 to 8 cm in diameter. Their echogenicity is usually not homogeneous, frequently with areas of echolucency. The degree of mobility depends on the size of the tumour and it is important to identify the site of the tumour attachment to ensure that the tumour does not involve the valve leaflets and to exclude the possibility of multiple masses. Postoperatively, complete excision should be documented by echocardiography.
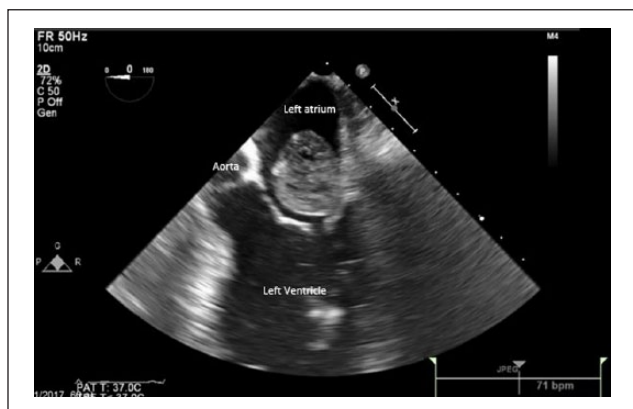
P624

Acute ischemic stroke in young woman: what relation with heart?

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1- We present a case of young woman with 39 years old, smoker, who presents on emergency with signs and symptoms of acute ischemic stroke (AIS), without cardiac symptoms (including chest pain) or fever, only have a cervical pain with 4 days. She refer that have some stress on work. On physical examination blood pressure was 110/70 mmHg, heart rate 85 cpm, cardiac auscultation rhythmic, with no bruit. Pulmonary auscultation, vesicular murmur present, without alterations. No edema on inferior limbs.

Brain computed tomography present multiple bilateral ischemic lesions.

In the laboratory tests was evident an elevation of high sensitivity troponin (18,6 ng/ml, normal cut off <0,017 ng/dl) and the electrocardiogram showed sinusal rhythm with diffuse ST-T elevation with inverted T wave on inferolateral derivations.

2- The echocardiography shows contractility abnormalities (apical akinesia, median hipokinesia) and an intraventricular apical thrombus No valvar disease or shunts were seen.

In the angiography, no significant epicardic coronary lesions were identified.

In the magnetic resonance imaging (Heart MRI, Image 1) was observed apical akinesia, with adherent thrombus with 20mm. T2 enhanced signal was seen the in ventricular septum suggestive of edema. Gadolinium late enhancement, with transmural extension on apical segment and intra myocardium focal points on septal and inferior walls was also identified. Late enhancement wasn't suggestive of Takotsubo syndrome, and its distribution wasn't suggestive of myocardial ischemia.

3- The possible differential diagnosis before perform echocardiography was cardiac alteration secondary to AIS secondary to embolic endocarditis ,paradox embolism or intraventricular thrombus secondary to acute coronary syndrome (ACS), Takotsubo syndrome or myocarditis.

4- The main question was to find the cause of multiple bilateral cerebral ischemic lesions, suggestive of cardiac origin. With the evidence of an intraventricular thrombus and apical akinesia was mandatory to exclude an ACS with angiography. After coronary disease rule out, heart MRI was essential to differentiate Takotsubo syndrome from myocarditis.

5- We present a case of advanced myocarditis, with initial presentation of AIS, and no chest pain.

This case strengthen importance of electrocardiography, assessment of myocardial necrosis biomarkers and echocardiography on patients with an unexpected AIS.
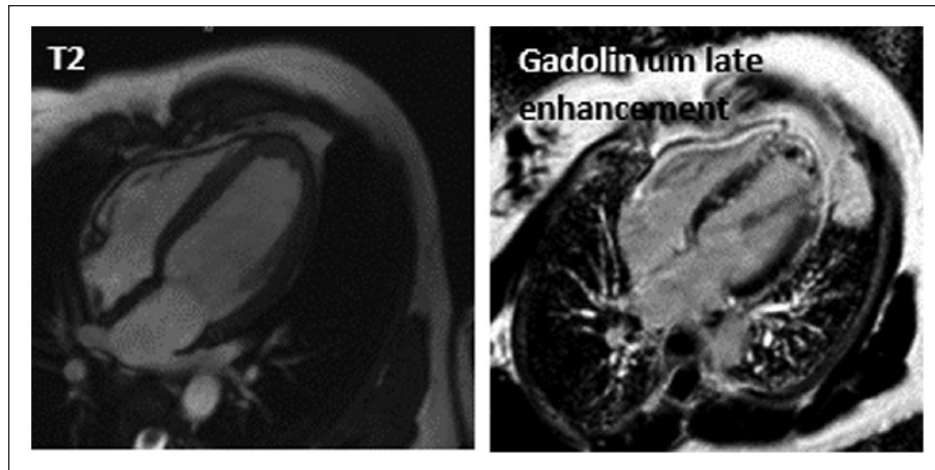
Image 1- Heart MRI

P625

Recurrent ventricular fibrillation and cardiac arrest in a young male secondary to Brugada ECG pattern induced by hypokalemia

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Brugada syndrome (BS) is an inherited autosomal condition which can cause syncope and sudden death in young patients with structurally normal heart. Brugada phenocopy (BrP) is a term describing conditions inducing the Brugada-like pattern of electrocardiogram (ECG) manifestations in patients without true BS. Hypokalemia has been observed as a predisposition to BrP. We report a case of 38-year-old male presented with recurrent VF and cardiac arrest secondary to Brugada ECG pattern induced by hypokalemia.

A 38-year-old male was brought to Emergency Department (ED) after having a witnessed collapse at work. He denied chest pain or shortness of breath. However, he recalled feeling tired and dizzy before losing consciousness. He has no family history of sudden death or coronary artery disease at young age. His general and systemic examinations were normal apart from dehydration and slightly low systolic blood pressure of 95/60 mm Hg. In ED, he had a monitored witnessed arrest; the cardiac monitor showed ventricular fibrillation. CPR started immediately, and he was successfully resuscitated using 200 J of D/C shock which resulted in the termination of VF and restoration of spontaneous circulation (ROSC).

His ECG post-ROSC showed sinus rhythm, prolonged QT interval and RBBB pattern in V1, V2 with ST elevation suggestive of Brugada type 1 pattern [Figure 1]. Cardiac troponin showed minor rise and fall, serum electrolytes showed significant hypokalemia with serum potassium 2.2 mmol/L. He was managed in CCU with Amiodarone bolus followed by maintenance infusion to prevent further ventricular tachycardia/ fibrillation and was started on Potassium infusion to correct hypokalaemia in CCU with cardiac monitoring and serial checking of serum potassium. Coronary angiogram was done given rise and fall in his troponin level, history of cardiac arrest and ST elevation in V1 and V2, and this was normal. His Echocardiogram showed normal biventricular size and function, no regional wall motion abnormalities and normal heart valves structure and function. There were no further episodes of cardiac arrhythmias. His serum potassium normalized over 48 hours of potassium supplementation. ST elevation in V1, V2 showed gradual normalization with correction of Hypokalemia [Figure 2, 3, 4]. He was discharged well after 72 hours and given a leaflet that explains how to avoid hypokalaemia and advised for ICD implantation.

Hypokalemia has been observed as a predisposition to BrP as in those cases with hypokalemic periodic paralysis, diarrhea, consumption of licorice and hyperaldosteronism. It is well documented that low potassium levels in the blood could predispose to prolonged QT interval and several ventricular dysrhythmias. However, less is known about the influence of hypokalemia on inducing Brugada ECG pattern, and it's been speculated that low potassium could contribute to the ST-segment elevation as in Brugada syndrome and occurrence of VT/VF as in this case.
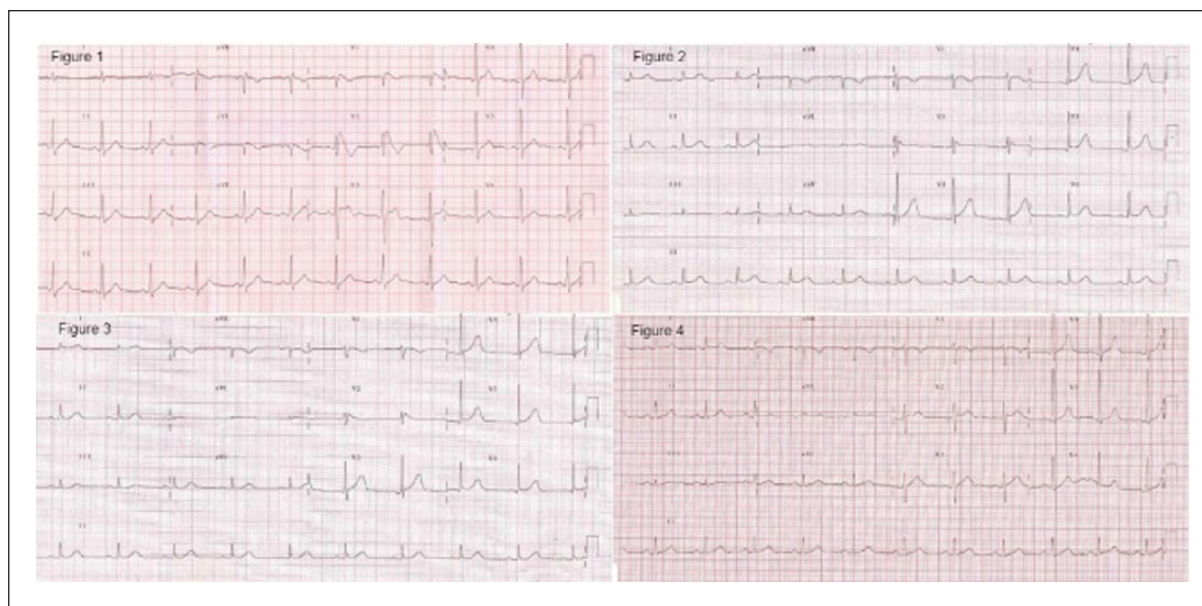
Serial ECG (Figure 1 to 4)

P626

Cardiac involvement with lymphoma, an unusual presentation

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A 69-year-old female patient with previous medical history of dyslipidemia and headaches with 1 month of evolution presented to the emergency department with sudden-onset palpitations and pre-syncope. She had no chest pain history. On physical examination, she was hypotensive and the heart rate was 190 bpm, she also had palpebral ptosis and oftalmoparesia. The 12-lead electrocardiogram (ECG) revealed a wide-complex tachycardia with righ-bundle brach block morphology. Given the haemodynamic instability, a successful electrical cardioversion was performed. The post cardioversion ECG showed normal sinus rhythm with T wave abnormalities in DI and aVL. The analytical study showed a mild normocytic anemia and a discrete elevation of myocardial necrosis markers.

An head CT was also performed, showing an abnormal mass within the sphenoid body. Given the results, the patient was referred for endoscopic transsphenoidal biopsy.

A transthoracic echocardiography (TTE) revealed normal left and right ventricular functions, small posterior pericardial effusion and thickening (maximum diameter 20mm) of the basal segments of the inferior and posterior wall who were also hypokinetic. The affected myocardium also had an heterogenic texture, suggesting a myocardial mass.

A cardiac magnetic resonance was performed for better morphological and tissue characterization. The affected segments showed T1 and T2 isointense signals and first-pass perfusion imaging showed intramyocardial hyposignal also involving the mid/basal segments of the anterior wall. All the previous segments showed an intense heterogenous late gadolinium enhancement. With the results of the endoscopic transsphenoidal biopsy, the diagnosis of cardiac envolment by non-Hodgkin B cell lymphoma was made. The patient was then transferred for the Hematology department for additional study and treatment initiation.

Discussion: Here we describe a rare case of non-Hodgkin lymphoma heart involvement presenting with monomorphic ventricular tachycardia. Ventricular arrhythmias in this context are unusual.
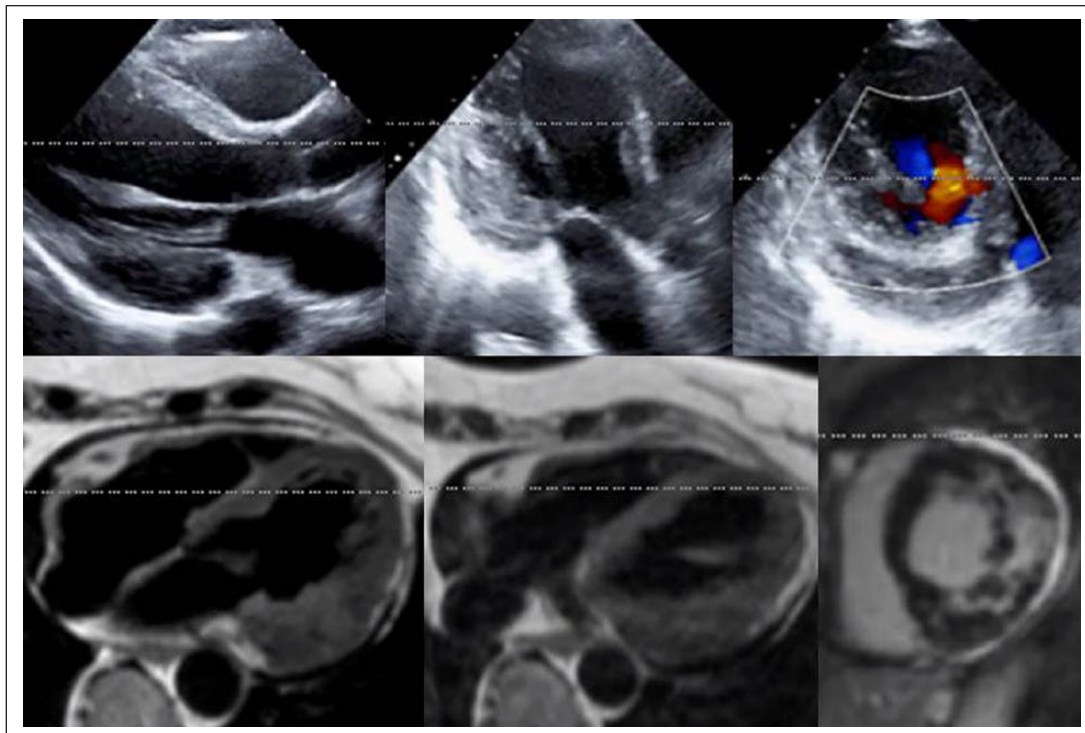
Echocardiography and CMR.

P627

Bitachycardia revealing myocarditis

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Introduction: the bi-tachycardia, defined by the simultaneous occurrence of supraventricular tachycardia and ventricular tachycardia in the same patient, is a phenomenon rare. It usually occurs in patients with poor left ventricular function or receiving digitalin therapy. Apart from these two situations, double tachycardia is fortuitous. Few cases are reported in the literature. It is frequently a combination of intra-nodal reentry tachycardia and infundibular ventricular tachycardia. We report a case of double tachycardia associating ventricular tachycardia and atrial fibrillation.

Observation: Mr F.A., aged 31 years, with a history of sympathectomy because of hypersudation, was followed at the external consultation for paroxysmal palpitations without the notion of dyspnea or chest pain.

Clinical examination was unusual.

The electrocardiogram showed an ACFA at 100 bpm with an isolated left ventricular extrasystole.

The 24h rhythmic holter showed episodes of TACFA at 15O bpm with some polymorphic TVNS.

In transthoracic echocardiography, LV was non-enlarged, non-hypertrophied with conserved LVEF, no valvulopathies, and no PAH. The SLG was at -15.7%. Coronary angiography was normal.

The assessment was supplemented by a cardiac MRI which showed an appearance of myocarditis sequelae.

The diagnosis was myocarditis associated with double tachycardia. The patient was placed under beta-blocker with good progress.

Conclusion: The diagnosis of double tachycardia is a real challenge for electrophysiologist rhythmologists, since supraventricular tachycardia can be translated electrically by tachycardia alternating fine QRS and broad QRS with a functional branch block. After ischemic heart disease, myocarditis and DAVD are known etiologies of bi-tachycardia.

P628

Indapamide induces RVOT ventricular tachycardia

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A 44-year-old woman attended our Emergency Department because of the sudden onset of rhythmic and intermittent palpitations unrelated to effort, associated with dizziness but without chest pain or shortness of breath. Her medical history revealed only a previous diagnosis of essential hypertension treated with perindopril 10 mg/day and lercanidipine 10 mg/day, with the recent addition (two days before admission) of indapamide 2.5 mg/day.

Physical examination, chest X-ray and laboratory tests were normal except for mild hypokalemia (3.4 mEq/L). ECG showed: a normal sinus rhythm without significant repolarisation abnormalities, QTc of 420 msec interrupted by frequent monomorphic ventricular ectopic beats with left bundle branch block morphology, and positive R waves in the inferior leads associated with recurrent episodes of non-sustained ventricular tachycardia (230 bpm, max 10 seconds) with the same morphology of ventricular ectopic beats, thus suggesting an origin from the right ventricular outflow tract.

Rapid magnesium infusion completely stopped the arrhythmias for several minutes, but the patient was admitted to our ICU because of arrhythmic relapse. Intravenous lidocaine was started with high-dose potassium and magnesium supplementation. Indapamide therapy was discontinued with reduction of arrhythmic burden in the first 24 hours. After lidocaine was stopped the introduction of beta-blocker therapy with metoprolol led no further arrhythmic episodes. Cardiac MRI revealed no pathological findings. The patient was discharged healthy three days later.

The right ventricular outflow tract (RVOT) is the site of origin of the most common type of ventricular tachycardia (VT) occurring in patients without organic heart disease.

Indapamide is a diuretic with direct electrophysiological effects on the ionic currents involved in cardiac repolarisation. It has been shown to block the slow component of delayed rectifier potassium currents (IKs). We hypothesise that this effect primarily targets M cells, without significantly affecting the other cells (as has been previously demonstrated in the case of other similar drugs) and this may explain the normal QT observed at baseline. M cells are mainly present in the RVOT and are more likely to have prolonged action potentials in comparison with those in other parts of the ventricle. This is at least partially due to the smaller contribution of the slowly activating component of the Iks, thus making them the primary targets of agents that prolong action potentials and induce triggered activity by early after-depolarisations (sensistive to lidocaine and magnesium). In our case, we assume that, indapamide played an important role in the genesis of ventricular tachycardia originating from the RVOT. A long arrhythmic follow-up with the possible tapering of the beta-blocker has needed to confirm the suspected of primary role of indapamide in the genesis of arrhythmia.

P629

Intermittent preexcitation causing multiple types of tachyarrhythmias

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Introduction: Preexcitation refers to early activation of the ventricles due to impulses bypassing the AV node via an accessory pathway. Tachyarrythmias can be facilitated either by the formation of a reentry circuit involving the accessory pathway, which defines atrioventricular reentry tachycardias (AVRT), or by direct conduction from the atria to the ventricles via the accessory pathway, causing atrial fibrillation.

Case Presentation: A 75-year-old male with persistent palpitations associated with shortness of breath was brought to the emergency department (ED) by the Ambulance. The patient had a past medical history of type 2 diabetes mellitus, hypertension. He also had several episodes of paroxysmal atrial fibrillation and paroxysmal supraventricular tachycardia (PSVT), medically converted to sinus rhythm.

At the admission, the heart rate was 200/min, blood pressure 130/80 mmHg and temperature 36.7°C. There were no other specific symptoms/signs noted by history taking and physical examination. Laboratory investigations revealed troponin elevation, without creatine kinase (CK) or creatine kinase-MB (CK-MB) elevation. Other parameters such as renal function, liver function and electrolytes were in normal value range.

Initial ECG revealed SVT with 224 bpm. In order to relieve the symptoms two doses of adenosine (6 mg) were given intravenously and PSVT was temporary converted to sinus rhythm. After a few minutes the patient complained of progressive heart palpitations and a new ECG revealed paroxysmal atrial fibrillation with narrow QRS complex with a rate of 100 bpm, followed by a short episode of atrial fibrillation with wide QRS complex containing delta waves. The last rhythm rapidly converted to a wide complex tachycardia (221 bpm) with a left bundle branch block morphology, without hemodynamic instability. This was proven to be an antidromic atrioventricular reentrant tachycardia (positive Brugada and Vereckei criteria for supraventricular tachycardia, presence of preexcitation, previous PSVT in medical history). The patient received amiodarone intravenously, with conversion to sinus rhythm

(70 bpm), revealing positive delta waves in DI, aVL, but without a short PR.

Transthoracic echocardiography visualized moderate mitral regurgitation, a preserved left ventricular ejection fraction (LVEF), moderate tricuspid regurgitation and mild pulmonary hypertension.

A coronary angiography was performed in order to exclude myocardial ischemia in the context of elevated serum troponin associated with a wide complex tachycardia, but no signs of coronary artery disease were found.

Because the patient refused the electrophysiological study (EP), he was discharged 3 days after, with antiarrhythmic and anticoagulant therapy.

Conclusion: This case emphasis the possibility that intermittent preexcitation causes multiple forms of arrhythmia with good response to medical therapy.
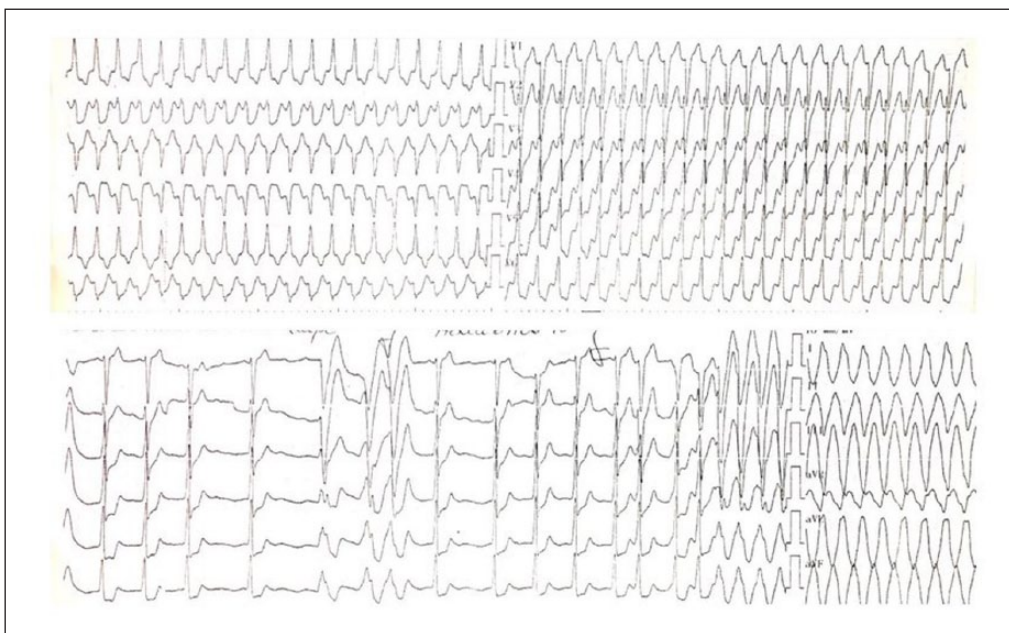
ECG on admission

P630

Sudden cardiac death (and successful resuscitation) in a patient with persistent left superior vena cava, dilated coronary sinus and wolff-parkinson-white syndrome

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Introduction: Atrial fibrillation (AF) occurring in a patient with Wolff-Parkinson-White syndrome (WPW) has the potential to develop into life-threatening ventricular fibrillation (VF) via a rapidly conducting accessory pathway. Sudden cardiac death (SCD) may be the first presentation of previously asymptomatic patients.

Case Presentation: A 31-year-old man with no personal or family medical history was found unresponsive by his partner. Preceding events included a two-week history of fatigue, but no chest pain, syncope or shortness of breath.

Initial recorded rhythm was VF. He received 70 minutes of cardiopulmonary resuscitation (CPR) and multiple attempts at defibrillation prior to return of spontaneous circulation (ROSC). An electrocardiogram (ECG) performed following ROSC showed sinus rhythm (SR) at 60bpm with hyperacute ST segments in leads V1–V3 and aVR with reciprocal changes in V4–V6. Further ECGs showed pre-excitation raising the suspicion of WPW (figure 1.A). A transthoracic echocardiogram (TTE) demonstrated a mildly dilated left ventricle with severe global systolic impairment (visual estimate of left ventricular ejection fraction (LVEF) 10-15%). The right ventricle was mildly dilated and mildly impaired. Coronary angiography demonstrated no flow-limiting lesions.

Patient Management: He was commenced on venous-arterial extracorporeal membrane oxygenation (VA-ECMO) therapy for cardiogenic shock (CI 0.9L/min/m²) and transferred by air to a quaternary cardio-thoracic intensive care unit (ICU). A CT chest performed on admission showed a persistent left superior vena cava

(PLSVC) draining into a significantly dilated coronary sinus. Cardiac function progressively improved allowing de-cannulation from VA-ECMO on day 7. Electrophysiology studies performed on day 8 confirmed the presence of an accessory pathway in the left lateral orientation of the mitral annulus which was successfully ablated from within the PLSVC. Following ablation the patient remained in SR with no evidence of pre-excitation on his ECG (figure 1.B).

On day 10 he was repatriated to his local ICU for ongoing care and was successfully weaned from mechanical ventilation on day 11. Following extubation he complained of visual impairment bilaterally but was otherwise neurologically intact. He remains under the care of his local cardiologists who have referred him for cardiac MRI and family counselling.

Conclusion: Pre-excited AF degenerating into VF cardiac arrest in patients with an accessory pathway is a rare but well known cause of SCD. The risk of AF is increased with congenital abnormalities such as the PLSVC and dilated coronary sinus in this patient, which can act as a source of ectopic activity. This case demonstrates a positive patient outcome due to prompt pre-hospital resuscitation and recognition of cardiogenic shock, referral to a specialist centre for VA-ECMO, comprehensive cardiovascular assessment and catheter ablation.
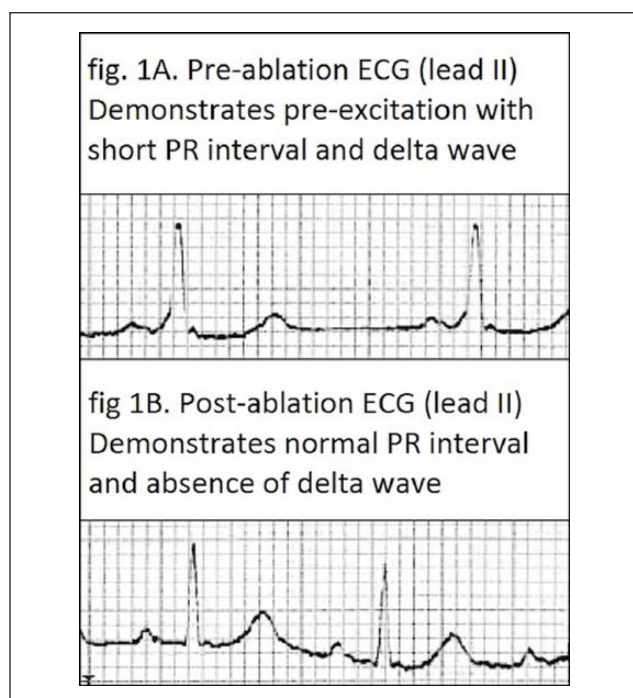
Figure 1a,1b: Pre and post-ablation ECGs

P631

The progression of low-voltage area in left atrium after pulmonary vein isolation in a case of stroke and recurrent atrial fibrillation

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Background: There are some reports that the existence of fibrosis or low-voltage area in the left atrium is related not only to the outcome of atrial fibrillation (AF) ablation but also to the risk of cerebrovascular events. However, there are still few reports on the progression of low-voltage area.

Case report: A 71 year-old otherwise healthy female acutely developed aphasia. National Institutes of Health Stroke Score (NIHSS) was 16. Magnetic resonance imaging demonstrated an acute occlusion of the left middle cerebral artery (MCA). She was given intravenous tissue plasminogen activator, followed by immediate reperfusion of the MCA with mechanical thrombectomy. Post procedure, the patient recovered fully to an NIHSS of 0. Her electrocardiogram revealed persistent AF. The AF reverted to sinus rhythm after taking antiarrhythmic drug. Three months after the stroke, the patient underwent pulmonary vein isolation by irrigated radiofrequency ablation. Electroanatomic voltage map of her left atrium revealed the existence of low-voltage (<0.5mV) area on anterior wall. Sinus rhythm was maintained without antiarrhythmic drug after the initial ablation. However, the recurrence of persistent AF occurred 9 months after the ablation. Termination of AF was not obtained by taking antiarrhythmic drug and the patient underwent the repeat ablation for recurrent AF. The reconnection of any pulmonary vein was not seen. Voltage map in sinus rhythm revealed that the size of low-voltage area at the second ablation session was larger than the first session. The distribution of low-voltage area was not only in the anterior wall but also spread to the septum. Low-voltage–guided substrate modification was performed on the second session.

Conclusion: The low-voltage area of the left atrium can progress dramatically within the course of a year, even though sinus rhythm is maintained. The expansion of the low-voltage area can be one of the factors that make the maintenance of sinus rhythm difficult.
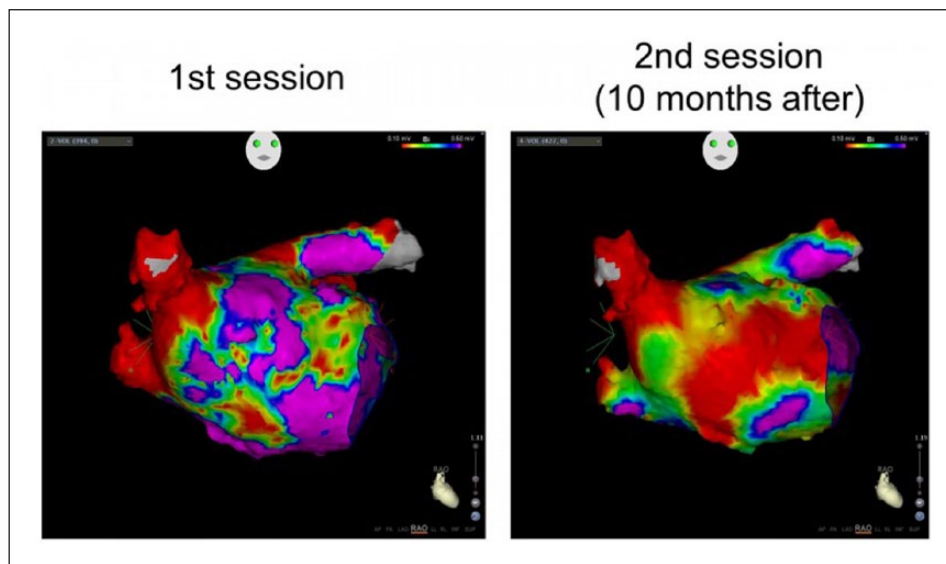
Voltage map of the left atrium

P632

Syncope after mitral valve replacement - more than an usual atrioventricular block

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We report the case of a 47-year old male who had undergone mechanical mitral valve replacement (MVR) and tricuspid valve repair due to mitral valve prolapse and flail with severe mitral regurgitation and low left ventricle ejection fraction. One week after surgery, he presented to the emergency department with syncope. He was hemodynamically stable but with bradycardia. Physical examination showed no other relevant findings except for a low grade murmur on the lower left sternal border on cardiac auscultation. A complete atrioventricular (AV) block was documented on electrocardiogram and a dual-chamber pacemaker was implanted. Because of the recent surgery and new-onset murmur, a transthoracic echocardiogram (TTE) was performed. It showed a turbulent jet at the highest portion of the interventricular septum, with a peak systolic gradient of 108 mmHg. A transeophageal echocardiogram (TEE) confirmed this finding, revealing an high-velocity jet originating from the upper membranous septum and directed toward the right atrium. There were no prosthesis dysfunction and no vegetation was seen.

The diagnosis of a left ventricular to right atrial communication as a complication of mitral valve replacement surgery was made, with complete AV block as its form of presentation.

Since the patient had no signs of heart failure and given the risk of the surgical intervention, the decision was to maintain close medical supervision. He is still asymptomatic after 6 months of follow-up, but the defect is still evident on echocardiogram.

Left ventricular (LV) to right atrial (RA) communications (Gerbode type defects) are rare types of ventricular septal defects, usually of congenital origin. Although rare, these defects have been described in relation to bacterial endocarditis, traumatism, myocardial infarction and valvular surgery, namely mitral valve replacement. Clinical presentation varies from asymptomatic to significant circulatory overload and ultimately death. Acquired LV-RA shunts can be associated with conduction abnormalities, particularly complete AV block, which may be the initial presentation of this defect. Nowadays, with the progressive increase of valvular procedures performed, it is important to always bear in mind an LV-RA shunt when a complete AV block occurs in a patient with a recent valvular surgery.

Transthoracic echocardiogram with LV-RA shunt on apical 4-chamber view (A) and parasternal short axis view (B); transesophageal echocardiogram with LV-RA shunt on apical 5-chamber view 0º (C) and 4-chamber view (D)
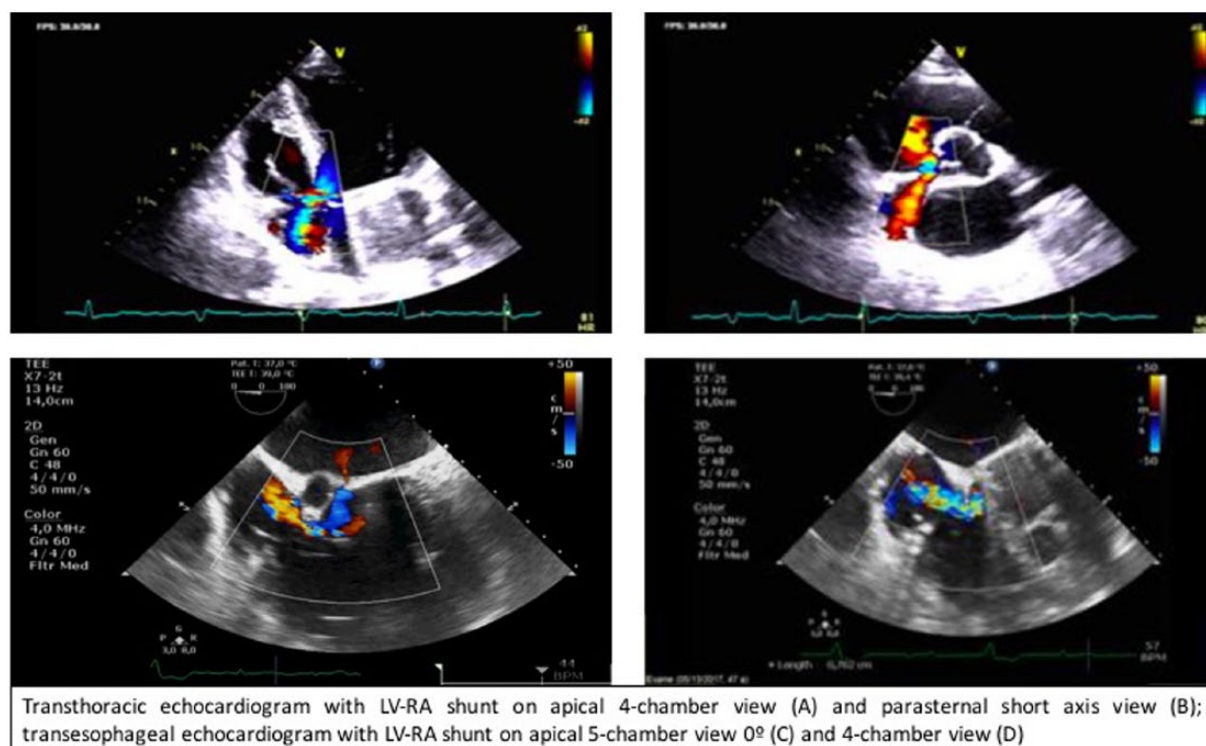
TTE and TEE images

P633

Infective endocarditis presenting as complete heart block

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We present a case of a 78 year-old caucasian male, with past medical history of transient ischemic attack, arterial hypertension, dyslipidaemia, former smoker and history of alcohol consumption of 50g/day, that was admitted to our centre due to high-grade fever of 24 hours duration, without other symptoms associated.

Observation was remarkable for hypotension (arterial pressure of 83/37 mmHg), systolic heart murmur at cardiac auscultation and bibasilar rales at pulmonary auscultation. Laboratory analysis revealed leucocytosis with neutrophilia, serum creatinine of 1.7 mg/dL, with normal C-reactive protein level.

Electrocardiography at admission showed Mobitz I second-degree atrioventricular block with intermittent periods of third-degree atrioventricular block, with narrow complex escape rhythm and heart rate of 53 bpm.

During hospitalization, blood cultures isolated a methicillin-sensitive Staphylococcus aureus and specific antibiotic therapy was started.

A transthoracic echocardiography was performed and showed a hyperechogenic mass without erratic movement at the aortic level of the parasternal short axis view as well as a moderate aortic stenosis.

To better characterize these findings and to evaluate the presence of endocarditis, a transoesophageal echocardiography was performed and revealed mitral-aortic intervalvular fibrosa abscess, a left ventricular outflow tract-right atrial fistula and a vegetation adherent to ventricular surface of anterior leaflet of the mitral valve with 9 mm.

Patient evolved with permanent complete atrioventricular block, with heart rate of 38 bpm, and a provisory pacemaker was implanted. Despite all these complications, he remains hemodynamically stable and is still waiting for a cardiac surgery.

The authors would like to emphasize the importance of exclude endocarditis in patients with Staphylococcus aureus bacteraemia and complete atrioventricular block, before permanent pacemaker implantation, being of crucial importance the echocardiography performance in the evaluation of these patients. In this case, echocardiography identified infective endocarditis with complications like abscess and fistula.

Complete heart block is an infrequent complication of infective endocarditis. A transthoracic echocardiography and a transoesophageal echocardiography have a key role in evaluating complications of infective endocarditis and in guiding its management.
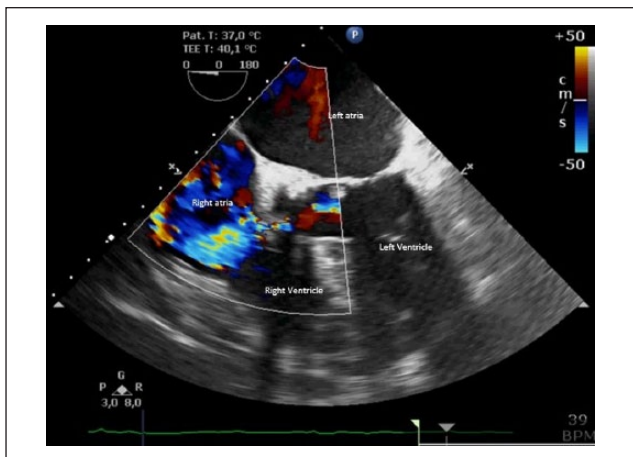
Abscess, fistula and vegetation

P634

Sailing in troubled waters: the key role of ECMO circulatory support in arrhythmic storm

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A 75 years-old male with a history of ischemic heart disease was transferred to our hospital due to slow ventricular tachycardia (VT). He had a severely depressed left ventricular ejection fraction due to a silent anterior myocardial infarction ten years before with a subsequent extensive ventricular remodelling and anterior aneurysm formation, and received an implantable cardioverter-defibrillator (ICD) as primary prevention. The year before admission he suffered an appropriate shock. Coronary angiography showed a critical stenosis of the right coronary artery that was successfully treated with a drug-eluting stent. He received treatment with amiodarone, carvedilol, lisinopril and eplerenone.

He consulted for functional class decline during the last ten days. An ECG revealed a slow VT, with a rate under the programmed ICD detection zone (180 b.p.m.). External cardioversion was performed, norepinephrine and amiodarone were initiated, and the patient was referred to our centre. At the moment of arrival he was hemodynamically unstable. He presented a recurrence of slow VT (120 b.p.m) needing a new external cardioversion. He underwent sedation but had repetitive arrhythmic episodes. Procainamide infusion was started and amiodarone was stopped. Coronary angiography was not repeated, assuming that the underlying mechanism of the arrhythmia was myocardial scarring, the patient did not present angina and no elevation of troponin occurred. He was intubated and

intra-aortic balloon pump was inserted, but multiple organ failure occurred. Due to electrical and hemodynamic instability, a percutaneous venoarterial extracorporeal membrane oxygenation (ECMO) was implanted. The patient underwent electrophysiological study under ECMO support. He presented incessant VT at the moment of entering the electrophysiology laboratory, and several episodes of ventricular fibrillation requiring shocks. Three different morphologies of sustained VTs were induced, and three areas of pathological late potentials were identified, all at the edge of the aneurysm site. These zones were treated with extensive RF ablation, until termination of the tachycardia, with no inducibility after performing induction protocol. The patient had a progressive clinical recovery that enabled ECMO support weaning and extubation. Several days later, non-sustained ventricular arrhythmias recurred so a new endocardial and later epicardial procedure were done with a successful outcome. He received treatment with oral amiodarone, and did not present new arrhythmic episodes in the long term.

Clinical implications: VT causing cardiogenic shock is associated with high mortality. Substrate ablation may be the only effective treatment, but incessant VT may make the procedure challenging due to hemodynamic instability. Pre and intra-procedural VA-ECMO support allows lengthy and complex procedures preventing from hemodynamic deterioration and enabling clinical stabilization in the post-procedural period.
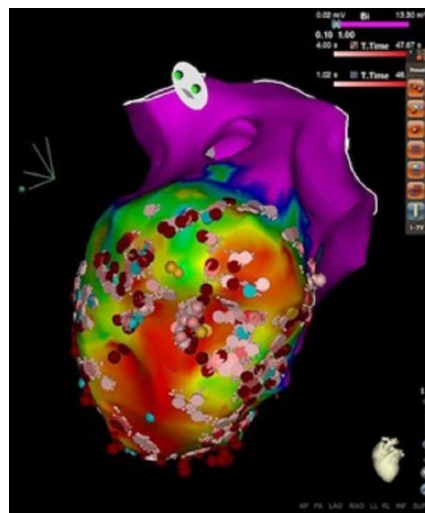
Electroanatomic voltage mapping

P635

Cardiac arrest in a patient with fever: a case report

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We report the case of a 52-year-old male patient without significant prior personal or familial history.

Nine months before he was admitted to the hospital due to pneumonia. There was a history of syncope in the emergency department (ED).

The patient remained asymptomatic for the next months, until the returned to the ED due to back pain and fever (38.7° C). Pneumonia was again diagnosed, and he was discharged home medicated with antibiotics and analgesics.

He returned the following day due to malaise, diarrhoea and visual disturbances. In the ED he had a seizure, and was found to be in cardiac arrest in ventricular fibrillation (VFib). After defibrillation and orotracheal intubation he was admitted in the ICU.

The laboratory evaluation showed leucocytosis (35.300 x109) with neutrophilia (92.9%), and elevation of inflammatory markers (C-reactive protein 33.05 mg/dl, procalcitonin 7.13 ng/ml, erythrocyte sedimentation rate 59 mm/h), high-sensitivity troponin T (793 ng/l) and NT-proBNP (2760 pg/ml). There were no significant further changes.

The initial ECG was considered normal, but the ECG on the following day showed incomplete RBBB with elevation of the J point and saddleback ST-segment elevation of 2 mm in the right precordial leads.

TTE immediately after defibrillation showed diffuse hypokinesia with reduced LV ejection fraction but the re-evaluation TTE was normal. Cardiac MRI was performed, and excluded myocarditis and arrhythmogenic right ventricular cardiomyopathy. Coronary angiogram was also normal.

The patient was started on ceftriaxone with resolution of fever and normalization of the inflammatory markers. He was extubated in less than 24 hours. There was no recurrence of arrhythmic events.

Since the occurrence of VFib with fever is highly suggestive of Brugada syndrome (BS), a flecainide test was performed, with induction of Brugada type 1 pattern (figure A before flecainide; figure B after flecainide). The patient was discharged after implantation of an ICD for secondary prevention.

After two months of follow-up the patient is asymptomatic, and free of arrhythmic events. Genetic test was performed and is under way.

In patients who survived sudden cardiac arrest several differential diagnoses have to be considered, including myocardial ischemia, cardiomyopathies, myocarditis, and channelopathies.

About 5% have no clinically identified cardiac abnormality. About half of these cases are thought to be due to BS. Personal, familial, and epidemiologic history may suggest this condition, but a low index of suspicion is usually necessary. Both in patients with an ECG showing Brugada type 2 or type 3 patterns or with a normal ECG, drug challenge with a sodium channel blocker, such as flecainide, should be performed to confirm the diagnosis.

Patients with BS and prior cardiac arrest have a class I indication for ICD implantation. Genetic testing is appropriate specially when the index patient has descendants.
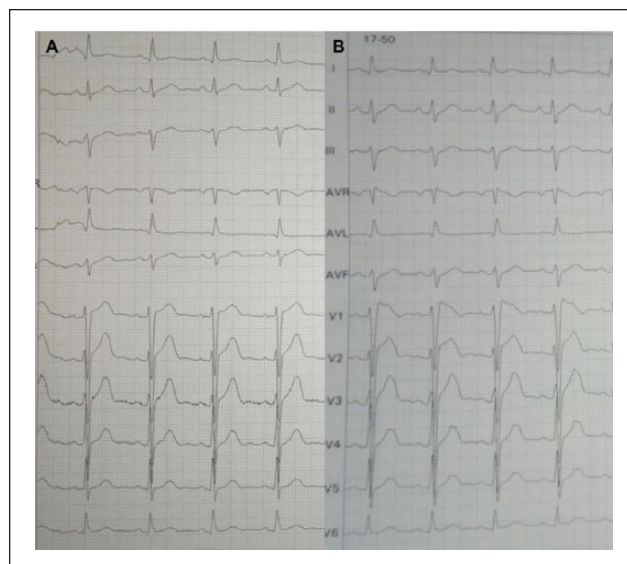
P636

Arrhythmogenic right ventricular cardiomyopathy - when arrhytmias are difficult to manage

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Introduction: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is characterized by atrophy of right ventricular (RV) cardiomyocytes and its replacement by adipose or fibroadipose tissue. It predominantly affects males and the diagnosis is more frequent between 15 and 35 years. Clinically, the presentation form is usually by ventricular tachyarrhythmias or right ventricular failure. The baseline ECG may show isolated T wave inversion in V1 to V3, complete right bundle branch block (RBBB) or epsilon wave pattern in the precordial anterior leads.

Imaging tests have a variable sensitivity and cardiac magnetic resonance imaging (CMR) may show an increase in adipose tissue and regions with late patchy enhancement, similar to that observed in myocarditis.

Clinical Case: The authors describe a clinical case of a 20-year-old patient with a history of recurrent syncope and palpitations for 3 years. In that time, it was performed a CMR that revealed alterations suggestive of myocarditis, without ARVC criteria. He was also submitted to focus ablation of right ventricular arrhythmia and then medicated with amiodarone and bisoprolol. He was recently admitted to a Cardiology Department in the context of successful reanimation of a cardio-respiratory arrest in ventricular fibrillation. Gasimetry had hypokalemia of 2.9 mEq/L, the ECG revealed sinus rhythm with RBBB pattern and non-specific changes in ventricular repolarization. The echocardiogram showed apical dilation of the RV. During hospitalization, the hypokalemia was corrected and sotalol therapy was used, with poor response, and the previous therapy was reintroduced. Subsequently, he repeated the CMR, which evidenced aspects compatible with ARVC and a ICD VDD was implanted. In the follow-up, he presented several episodes of ventricular arrhythmic storms, some interpreted by the ICD as supraventricular tachycardia, which forced its reprogramming. The electrophysiological study was also repeated and a new ablation of focus of right ventricular arrhythmia was performed.

Discussion / Conclusion: The ARVC creates in the myocardium areas of low voltage that predispose to ventricular arrhythmias by reentry. Ablation has a recurrence rate of more than 50% given the continuous remodeling of the RV. The existence of severity criteria is an indication for ICD implantation, since sudden cardiac death is the leading cause of death in these patients. Over time, the defibrillation threshold increases and the occurrence of intractable arrhythmias may be an indication for cardiac transplantation.

P637

Intra-aortic balloon pump as a treatment of acute mitral regurgitation

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Acute mitral regurgitation (AMR) causes an elevation in left ventricular filling pressures as well as an elevation in left atrial pressures and it also decreases anterograde cardiac ejection volume. Intra-Aortic Balloon Pump (IABP) is known to reduce the after load and thus, helps to increase anterograde cardiac eyection.

We present a case of AMR treated with an IABP until surgery was performed.

A 74 years old man was brought to the emergency room of a third level hospital. He had dyslipemia, chronic obstructive pulmonary disease and was a former smoker. Two days before, he had had chest pain that lasted a few hours. The morning that he arrived at the hospital he had chest pain and dyspnea. His oxygen saturation was 63%, he was taquichardic and had normal blood pressure. An EKG revealed an elevated ST segment in inferior leads. He was intubated and mechanical ventilation was instaured as well as deplective treatment. Emergency coronary angiography was performed showing a suboccluded right coronary artery (RCA). RCA angioplasty was performed and a drug eluting stent was implanted.

At his arrival to ICU, his blood pressure was decreasing as well as his oxygen saturation along with an increase in heart rate and lactate. A transesophageal echocardiogram was performed showing an acute mitral regurgitation secondary to posteromedial papillary muscle rupture. An intra-aortic balloon pump was implanted with rapid improvement of hemodynamics parameters: the blood pressure and oxygen saturation improved and lactate and heart rate decreased.

He underwent mitral valve replacement 5 hours later without signs of hypoperfussion and with less need of oxygen.

IABP can be a vital part of the initial treatment of AMR and it can be used as a bridge to surgery which it can not always be performed at time zero.

IABP decreases after load and, in patients with AMR, this helps to improve anterograde stroke volume or "efective cardiac output" and decrease retrograde stroke volume (decreasing pulmonary edema). In this case, the IABP allowed the patient to encounter an emergency mitral valve replacement in a better haemodynamic condition which is key to a succesfull cardiac surgery.
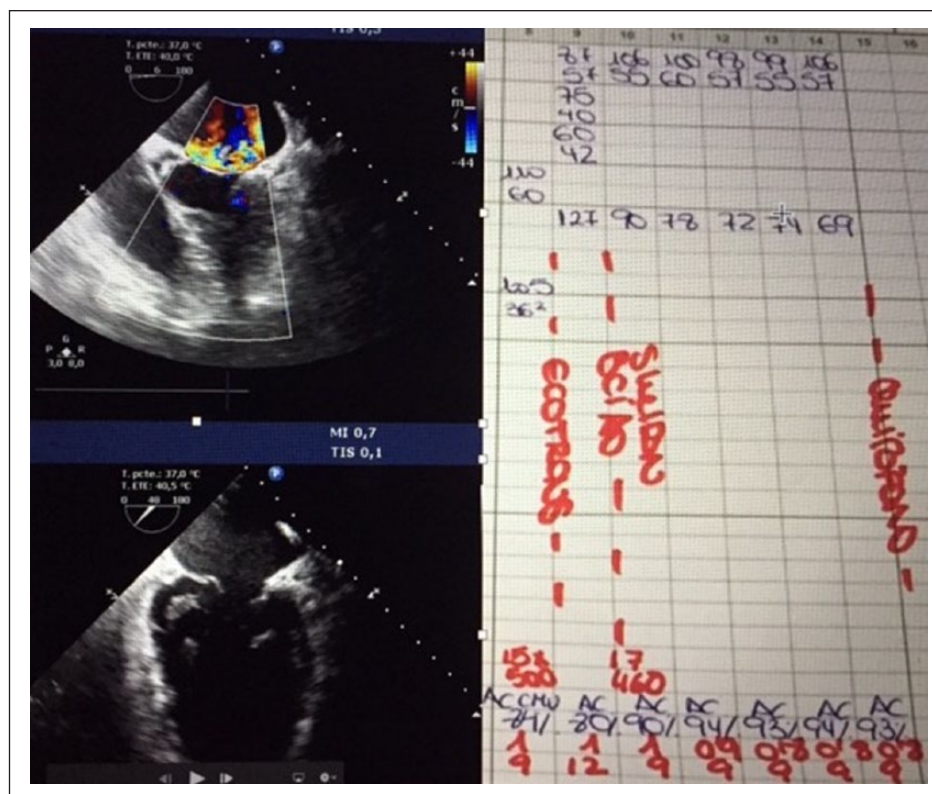
P638

Transcatheter aortic valve ventricular migration: an emergency transapical explantation laparoscopic technique

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Introduction: Transcatheter aortic valve replacement (TAVR) has emerged as an alternative to surgical replacement for surgery high-risk patients. Outcomes have improved, however, the rate and severity of complications remains substantial. Prosthesis dislocation during TAVR is rare but severe. It can be managed effectively but requires conversion to emergency cardiac surgery with sternotomy, aortic cross-clamping and aortotomy. We report a case of ventricular migration of the Edwards Sapien valve following transapical TAVR avoiding the conversion to a median sternotomy to explant the embolized valve.

Case Report: An 82-year-old woman with severe aortic stenosis and 30% preoperative EuroSCORE. After heart-team evaluation she was referred to TAVR. The aortic annulus was 24 mm in diameter according to the TEE performed pre-TAVR, requiring a 26-mm prosthesis.

Periprocedural TEE showed TA prosthesis in a "too low" positioning with incomplete sealing of the annulus and severe paravalvular aortic regurgitation, followed by hemodynamic deterioration and cardiogenic shock. A second transapical valve–in–valve procedure was decided. Before complete deployment of the second valve through the same wire, the first valve was observed to have embolized into the left ventricle. Inmediately, a second aortic valve implantation was performed successfully and percutaneous femoral extra-corporeal circulation was instituted. Ascendra aortic heart replacement system was interchanged to a valved port-access laparoscope. A laparoscopic clamp was used to crush the valve in order to decrease the size and to facilitate removal through the apex. Apical closure was obtained by tying the two purse-string sutures and the addition of two additional 2-0 pledgeted prolene sutures. Total extracorporeal circulation support time was 40 min. The patient was transferred to the ICU in a stable hemodynamic condition.

Discussion: Treatment of a malpositioned valve depends on the type of implanted prosthesis, the site for final deployment, and the hemodynamic consequences of malpositioning. Ventricular migration might require emergency surgical removal but, as these case shows, transapical acces may offer the advantage of more precise control of the device and better management of complications. The optimal treatment strategy for complications has not been defined and the initial experience in isolated cases may be

helpful, especially in the management of patients with life threatening complications. The TA access may also allow an innovative technique to recapture the embolizated valve using a laparoscopic trocar.

Conclusions: Advances in TAVR have been primarily as a result of a multidisciplinary approach by the 'heart team' enabling improved patient selection and optimal management strategies. Reporting complications and their technical solutions should be expanded to maximize their utility to improve the outcome of patients undergoing this procedure.

P639

Arrhythmogenic right ventricular dysplasia with virus persistence in myocardium

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Nowadays cardiomyopathies (CM) are large group of non-coronarogenic deseases which leads to development and progression of heart failure. Its` diagnostics demands from physician more profound examination in clinical practice using new methods and data. In this article we show a clinical case of Arrhythmogenic Right Ventricular Dysplasia (ARVD) with virus persistence in myocardium. The case describes a 43-years-old man with hypertensive heart disease and furunculosis medical history. He was admitted to the hospital with complains of tachycardia episodes without physical activity connection. Physical examination did not define any deviances. Clinically left bundle branch block, diastolic dysfunction with diffuse hypo- and akinesia and EF 37% were revealed. Patient was underwent invasive coronary angiography with endomyocardial biopsy and it showed no atherosclerosis of coronary arteries but fatty replacement of the right ventricle`s myocardium and antigen VP1 enterovirus expression. MRI did not confirm inflammatory. As we had criteria of ARVD genetic tests (133 genes sequencing panel) were performed, however, hereditary cardiomyopathy was excluded. In spite of all these ambiguous findings we established diagnosis of ARVD. After 6 months antiviral and antihypertensive therapy clinical studies showed a positive dynamic: no hypo- and akinesia, EF 54%, LBBB on stress (125 watt); but diastolic dysfunction persisted. Implantation of cardioverter defibrillator was not realized because of the patient`s choice. This clinical case showed that though we have modern invasive and non – invasive methods of diagnostics the establishment of diagnosis is difficult yet. The symptoms are not specific that is why diagnosis of CM makes in majority cases when different adverse events appears. For ARVD it is leading to

heart failure progression, life – threatening arrhythmia appearance and sudden cardiac death. In spite of we have well – defined ARVD criteria sometimes we can`t make a definite conclusion CM case. That is why specialists should give a lot of attention to this group of diseases for the prescription of correct therapy.
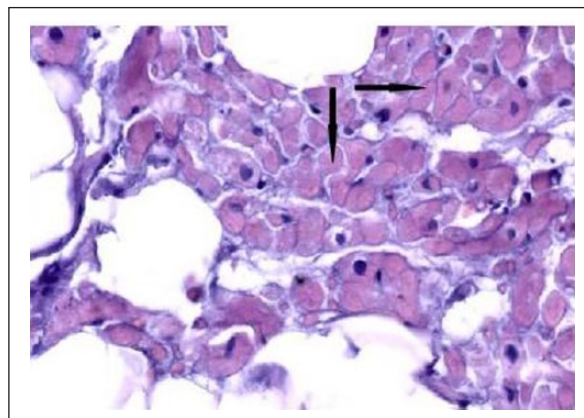
Fatty cells

Arrhythmias and Sudden Cardiac Death

P640

Clinical and demographic differences between patients with positive and negative troponin who consulted with supraventricular tachycardia and thoracic pain in emergency services

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Introduction: Supraventricular tachycardia (SVT) are one of the most important causes of cardiac pathology worldwide and ischemic heart disease continues to be the leading cause of death worldwide, accounting for 13% of all deaths. The presentation of SVT associated with chest pain implies that it is necessary to rule out an acute coronary syndrome (ACS).

Objectives: To compare clinical and sociodemographic characteristics between patients with positive and negative troponins and between patients with and without coronary lesions, who consulted for chest discomfort and supraventricular tachycardia to the emergency department.

Methods: Retrospective review and analysis of clinical records of emergency admission of the Clinical Foundation between 2010 and 2014. We analyzed patients admitted with electrocardiographic documentation of tachycardia,

thoracic discomfort, troponin I measurement, and coronary anatomy, or studies of induction of ischemia.

Results: Patients with troponin positivity had a higher heart rate 145.5 bpm (SD = 33.2) vs 133.5 bpm (SD 25.9), a lower diastolic pressure 73.6 mmHg (SD = 14.9) vs 79.7 mm Hg (SD = 15.0) and a higher prevalence of known coronary disease. Patients with coronary lesions had a higher proportion of male patients 79.3% vs. 20.7%, higher prevalence of coronary artery disease 41.4% vs 11.8%, dyslipidemia 44.8% vs 21.2%, at least one cardiovascular risk factor 89.7% vs 67.7% and troponin positivity was statistically significantly higher in patients with lesion 79.3% vs 31.2% p < 0.001.

Conclusion: Patients with supraventricular tachycardia and chest pain who presented in the emergency room had a greater finding of coronary disease when they were men, dyslipidemic, with a history of coronary disease, and positive troponin.

P641

Usefulness of the martin scale to predict adverse events at 365 days in patients with syncope

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Introduction: The martin scale has been used to predict adverse events in patients with syncope. The objective of our study was to evaluate the performance of this scale at 365 days.

Methods: We evaluated adult patients attending the emergency room with syncope

Results: A total of 211 patients were included. The average age of the population was 63.2 + 20.9 years. Most of the patients in the study were female (56%). Almost half of the patients had an electrocardiogram abnormality (47.39%). The most frequent outcomes are syncope recurrence and the need for cardiovascular intervention; mortality is around 6%. In patients with score 0 the mortality was 0%. In patients with score 4 the mortality was 16.6 %. Although syncope recurrence is more frequent in high-risk patients risk a constant relationship with the increase in the score on the scale was not shown. The need for cardiovascular intervention presented a similar behavior to mortality with an exponential increase as the scale score increased.

Conclusions: The Martin scale allows stratification of patients and identify those who may benefit from further study

P642

Characteristics of ventricular arrhythmias in young patients: does age make a difference?

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Introduction: Ventricular arrhythmias (VA) are one of the main causes of sudden cardiac death (SCD) in the young. The occurrence of VA can be related to the presence of a structural heart disease and to several risk factors that are used to predict SCD in clinical practice. However, the factors that predispose to the development of VA in young patients are still incompletely understood.

Purpose: This study aimed to assess the characteristics and risk factors of VA in young (< 45 years-old) patients.

Method: We retrospectively evaluated clinical, biological, electrocardiographic (ECG and 24-hour Holter ECG) and echocardiographic data of young patients diagnosed with VA in our Cardiology Department from January 2013 to December 2014 and compared them to those of an equal number of patients aged ≥ 45-years old.

Results: There were 51 patients in each group (53% men), mean age 32±8 years vs. 63±10 years. Most young patients were symptomatic (n=45), with palpitations being the most common symptom (n=27). Their presence were associated more frequently with VA (p=0.009), while chest pain, dyspnea and syncope were not. Young patients had more often a structurally normal heart (80% versus 22%, p < 0.001, Cramers's V=0.56), idiopathic ventricular rhythm disturbances (p < 0.001, Cramer's Phi=0.53) and less complex VA than the control group (p=0.03, Cramers's Phi=0.29). There was no significant difference in arrhythmia burden according to gender distribution in any group (p≥0.05). Supraventricular arrhythmias were not associated with the occurrence of VA in the young, neither were the echocardiographic parameters - the left ventricular ejection fraction, left ventricular hypertrophy, the E/A velocities ratio, the pulmonary artery systolic pressure values and the presence of valvular heart disease (p > 0.05). There was a weak but statistically significant correlation between arrhythmia complexity and age (Cramer's V=0.28, p=0.032).

Conclusion: In patients < 45 years old, VA occur more frequently in the absence of a structural heart disease. Their presence is not linked to gender, echocardiographic parameters, or to the co-existence of supraventricular arrhythmias. Arrhythmia complexity increases with age.

P643

Transeosefageal ECHO during taking non-antagonists of vitamin K: excess labor or additional information?

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Most of the thromboembolic complications associated with atrial fibrillation (AF) is associated with thrombosis of the left atrial appendage. Before a planned cardioversion blood clots in the LA appendix should be excluded, and to this end, traditionally used transesophageal echocardiography. For the treatment of intracardiac thrombus are currently employed as warfarin, and new anticoagulants. Regarding the use in medical therapy vitamin K antagonists (warfarin) there are certain time algorithms for conducting cardioversion, however, to date there is no unequivocal clinical information about thrombolytic effects of the new oral anticoagulants. In the clinical aspect of this issue is critical because every year a growing number of people with non-valve atrial fibrillation receiving the PLA and straightforward tactics for cardioversion in such patients on the background of the development of attacks of arrhythmia there.

In our clinic we conducted a transesophageal echocardiography 29patients with persistent atrial fibrillation (lasting longer than 7 days), treated with PLA. The purpose of the manipulation was to determine the presence of thrombosis of left atrial appendage in these patients with the subsequent determination of treatment tactics. Of the 22 patients, 4 (13,6%) received apixaban (3 persons at a dose of 5 mg / day, 1 person at a dose of 2.5 mg / day), 18 (63,6%) received rivaroxaban (9 persons in a dose of 20 mg\day, 9 in a dose of 15 mg / day) and 7 patients (21,8%) received dabigatran (3 persons in a dose of 300 mg / day, 4 persons at a dose of 110 mg / day and 1 person at a dose of 150 mg / day). When TE echocardiography of the 29 patients studied, 9 (17.8%) of the people were revealed thrombosis of the left atrial appendage, 11 (35,7%) identified the effect of spontaneous contrast in the lug and the cavity of the left atrium. Among patients with impaired hemorheology in the eye and the cavity of the left atrium 15 patients received rivaroxaban (4 people at a dose of 20 mg, 4 dose 15 mg), 5 persons were receiving dabigatran (at a dose of 220 mg and 150 mg dose). Among patients treated with apixaban, disturbances of hemorheology in Atria and left atrial appendage were not observed, perhaps due to small number of observations.

Thus, based on our observations, we recommend transesophageal echocardiography before planned cardioversion in all patients receiving new oral anticoagulants. The reason for this is accepting an unreasonably low doses of drugs in clinical practice.

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Cardioembolic stroke in a population of a district hospital: applicability of STAF score

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Introduction: Cardioembolic stroke is generally associated with higher morbidity and mortality and could be largely preventable, mainly if atrial fibrillation (AF) is present. In many patients with embolic stroke of unknown origin, scores like STAF (Score for the Targeting of Atrial Fibrillation) are useful to identify patients with higher risk of AF.

Purpose: To compare prognostic data and echocardiographic abnormalities between patients with cardioembolic stroke and stroke of unknown aetiology and to evaluate applicability of STAF score in the population studied.

Methods: We performed a retrospective study with patients admitted with ischemic stroke between July 2013 and December 2015, in Stroke Unity of Leiria Hospital Center. We evaluate prognostic and echocardiographic parameters in different groups according to stroke aetiology. STAF score was applied to this population and its ROC curve was evaluated. Statistical analysis was preformed using STATA 14.2 with a p-value of 0.05.

Results: A population of 280 patients with ischemic stroke was collected with a mean age of 75.1 years (SD, 12.6 years). According to TOAST classification, the most common subtype of stroke was cardioembolic stroke (33.2%). In-hospital mortality was 14.3%, with patients with cardioembolic stroke having significantly higher mortality, as well as greater morbidity, quantified by the degree of disability with mRANKIN score and the number of complications. Within patients with cardioembolic stroke, 36.6% had already known AF and only 1/5 of them were previously anticoagulated. 58.1% had newly diagnosed AF. 46.7% had left atrial dilation and valvular alterations described on the echocardiogram. Within the group of patients whose stroke etiology remained unknown (19.3%), 20% had frequent or very frequent supraventricular extrasystoles in 24h Holter and 65.3% presented at least one structural or functional abnormality with embolic potential in the echocardiogram. Also, these findings were not significantly different from those in the cardioembolic stroke group. The ROC curve for the STAF score in the group with cardioembolic stroke presented a reasonable discriminative power, with an area under the curve (AUC) of 0.83. However the cut-off value of 6 had higher sensitivity and specificity.

Conclusions: Cardioembolic stroke is very prevalent and is associated with elevated morbidity and mortality. In stroke of unknown aetiology, changes in echocardiogram are frequent and are not significantly different from the group with cardioembolic stroke. In this population, the STAF score has a good discriminative power in the identification of cardioembolic stroke, but the cut-off value of 6 is more discriminative. The follow-up of patients with stroke of unknown aetiology may corroborate these results and help to identify a better model for this population.

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The predictors of frequent recurrent atrial fibrillation in patients with arterial hypertension

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Background/Introduction: AF occurs in 1.2% people of the general Ukrainian population. The search for the predictors of the AF is interesting from both a scientific and a practical points of view.

Purpose: to determine the risk factors for frequent recurrent AF in patients with arterial hypertension (AH).

Methods: 146 patients with AH stage II with AF (males 68 (46.6%)) and 26 patients with AH stage II (males 11 (42.3%)) and 20 practically healthy persons (males 8 (40.0%)) were examined in Vinnitsa regional center of cardiovascular pathology. Mean age of patients with AH and AF was (61.2 ± 0.7) years and in group with AH (59.3 ± 2.2) years and in the group of practically healthy persons (39.6 ± 1.3) years. The duration of AF was (5,7±0,5) years. The frequency of AF attacks was (23,6±1,2) days.

Paroxysmal AF was in 56 (38.4%) patients and persistent AF was in 90 (61.6%) patients. 31 (21.2%) patients have vagal, 70 (47.9%) patients have adrenal and 45 (30.9%) patients have mixed variant of AF (by Coumel).

Results: Variational analysis of aldosterone (pg/ml) indicated the min value was 6 and the max - 470; the mean value - 135 ± 7.6; mediana - 121 and interquartile spectrum – 62 and 184. The level of aldosterone in group of AH and paroxysmal AF was significantly higher in comparison with the healthy group - 78 (66; 86) vs. 43 (30; 48) pg / ml, (p = 0.01). The level of aldosterone in group of AH and persistent AF was higher in comparison with the healthy group 140 (89; 215) vs. 43 (30; 48) pg/ml; (p < 0.0001) and higher in comparison with the group of AH 140 (89; 215) vs. 79 (54; 95) pg/ml; (p < 0.0001), as well as higher in comparison with the group of patients of AH and paroxysmal AF 79 (54; 95) vs. 78 (66; 86) pg/ml; (p = 0.0003). The level of aldosterone in patients with AH was higher compared with a group of healthy people - 79 (54; 95) vs. 43 (30; 48) pg/ml (p = 0.03).

Conclusions: Predictors of frequent recurrent AF are: aldosterone level, uncontrolled cource of AH, association of metabolic disorders (DM + BMI), GFR, episodes of pair and group SPB on the 24-hour ECG, the ratio of LA/LVDS by echocardiography.

Table 1. Predictors of frequent recurrent AF.

Predictors (p < 0,05)	Strength (%)	Critical Values
Level of aldosterone in pg/ml	42,8	>140
Presence of association of metabolic disorders (diabetes mellitus (DM) + Body mass index (BMI) > 30 kg/m^2), points(1; 0)	10,7	1
The value of GFR in ml/min/1.73m^2, calculated by the formula CKD-EPI	7,4	<58
Amount of episodes of pair and group supraventricular premature beats (SPB) during the day according to the data of the 24-hour ECG monitoring	8,1	>42
The ratio of left atrium (LA)/left ventricular diastolic size (LVDS) by echocardiography	11,4	>0,85

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Predictors of new-onset atrial fibrillation and atrial fibrillation with rapid ventricular rate during hospitalization after non cardiac surgery

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Introduction: Preoperative assessment of the patient before noncardiac surgery is common in the clinical practice. Patients (pts) who undergo noncardiac surgery may be at risk for atrial fibrillation (AF), not only intraoperatively but also during their recovery period.

Purpose: To analyse predictors of new-onset AF and AF with rapid ventricular rate during hospitalization after non cardiac surgery performance.

Methods: Retrospective study that included pts that performed a transthoracic or dobutamine echocardiography before noncardiac surgery during a 5 year-period (2012-2016). Were exclude pts that were not hospitalized after surgery. Were analysed pt medical history, echocardiographic parameters, medication and new-onset AF and AF with rapid ventricular rate occurrence during hospital stay. Univariate analysis was performed.

Results: Were included 123 pts: 69 (56%) were male, mean age of 69±13 years. 90 (73%) pts had arterial hypertension, 37 (30%) had diabetes and dyslipidaemia, 22(18%) pts had history of coronary artery disease and 20(16%) of AF.

Transthoracic echocardiography was performed in 112 pts (90%) and dobutamine echocardiography in 12 pts. 108 (88%) pts had preserve left ventricle ejection fraction (LVEF), 10 pts (9%) had right ventricle systolic dysfunction and 10 pts (9%) had at least a moderate valvular heart disease, mainly aortic stenosis.

In 100 (81%) pts was performed an elective surgery, in 4 (3%) pts an urgent surgery and in 19 (15%) the surgery was performed during hospital stay. 19 (15%) pts undergone a high-risk surgery, 79 (64%) pts an intermediate-risk surgery and 25(20%) a low-risk surgery. The main surgeries were performed by general surgery, followed by vascular surgery. The mean time of hospital stay was 11±10 days. During this period, 29(24)% pts were under beta-blocker therapy.

During hospital stay, 5 (4%) pts had an episode of AF with rapid ventricular rate and 2 (1.6%) pts had new-onset AF. This pts tended to stay more days hospitalized (10 vs 18 days, p=0.07).

Previous chronic renal disease (29% vs 3%;p=0.038), high risk surgery (16% vs 3%;p=0.047) and a lower TAPSE value (17 vs 21 mm; p=0.034) were associated with new-onset AF/AF with rapid ventricular rate during hospital stay. Active smokers pts (18% vs 3.6%, p=0.09) tended to have more episodes of new onset AF/AF with rapid ventricular rate.

Left atria volume, left ventricular ejection fraction, beta-blocker therapy and age weren't associated with post-surgery new-onsetAF or AF with rapid ventricular rate.

Conclusion: In our study, the incidence of new-onset AF or AF with rapid ventricular rate during hospital stay was low (5%), with pts with medical history of chronic renal disease, those submitted to a high-risk surgery and pts with lower TAPSE values in echocardiography having more of these episodes. Active smokers tended to have more new onset AF/AF with rapid ventricular rate.

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Oesil versus San Francisco - What is the best prognostic evaluation score in patients with syncope?

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On behalf of: ROAD Registry

Background: The use of risk scores in patients with syncope in Brazil is still poorly described. However, it can be determinant from a treatment perspective.

Purpose: Evaluate the relationship between the use of risk scores and mortality in syncope in Brazilian population.

Methods: Retrospective, unicentric and observational study with the objective of evaluating the relationship between the use of risk scores and mortality in syncope. We included 71 patients and evaluated the Oesil risk score and the San Francisco score. The evaluation of the scores according to the occurrence or not of death was performed by T-test (significant p < 0.05). The complementary analysis of the factors was made by ROC curve as a probability of death discriminator.

Results: The mean age was 69.4 years with 58.5% of males. Significant differences were found between patients who died or not, respectively, only in the mean value of the San Francisco score (3.0 + 0.89 vs. 2.02 + 0.73, p = 0.014). The areas under the ROC curve between scores and death were: Oesil = 0.581 (0.348-0.813) and; San Francisco = 0.785 (0.589 - 0.981). The best cutoff points to discriminate the risk of death were: Oesil = 2.5 points (sensitivity of 67% and specificity of 47%) and San Francisco = 2.5 points (sensitivity of 67% and specificity of 73%).

Conclusion: The San Francisco score was higher than the Oesil score in the evaluation of mortality in the Brazilian population and in a tertiary center of cardiology

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Depression after a cardiac arrest: an unpredictable issue to always investigate for

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On behalf of: Pavia CARe researches

Background: Depressive symptoms in cardiac arrest survivors are often present, but available data refers mostly to Northern Europe area and data about a possible correlation between OHCA characteristics and the onset of later depression are scarce.

Purpose: The aim of this study was double: to evaluate the incidence of depression in a population of Italian OHCA survivors and to investigate the association between depressive symptoms and OHCA characteristics.

Methods: We enrolled all the patients who suffered an OHCA between October 2014 and September 2016 in the Province of Pavia, Italy, discharged with good neurological outcome. Depressive symptoms occurring within two weeks after discharge were assessed through telephone-

administration of the Patient Health Questionnaire-9 (PHQ-9) by a clinical psychologist. The PHQ-9 is the 9-item short version of PHQ and it focuses on the main diagnostic criteria for depressive disorders. PHQ-9 score ranges from 0 to 27, with higher scores representing more severe depression. In particular, the threshold of 5 represents mild depression whilst a PHQ-9 score of 10 is associated with at least moderate depression.

Results: Out of a total of 43 eligible patients, 32 answered the telephone interview, completing the questionnaire: 12 subjects (37.4%) reported mild depression (PHQ-9 between 5 and 9) and 6 (18.7%) moderate depression according to PHQ-9 (PHQ-9 score $\geq$ 10). Only 33% and 50% of patients with mild and moderate depressive symptoms, respectively, were referred to the psychologist during hospitalization. All the twelve patients support the need for psychological support for cardiac arrest victims. PHQ-9 score did not show a statistically significant correlation with the time to ROSC (p=0.38) or with the duration of hospitalization (p=0.11). Moreover, OHCA characteristics were similar when comparing patients with a PHQ-9 $\geq$ 5 to those with a PHQ-9 <5 [residence location versus public location of the OHCA (p=0.74), cardiac arrest witnessed by EMS versus bystander (p=0.88), bystander CPR or not (p=0.72), use of AED by bystander (p=0.43), admission to ICU versus to Coronary Unit (p=0.19) and a STEMI cause of the cardiac arrest versus other causes (p=0.77)]. Similar results were reached comparing patients with a PHQ-9 $\geq$ 10 to those with a PHQ-9 score < 10.

Conclusions: The presence of depressive symptoms in cardiac arrest survivors is not negligible also in a Southern Europe population and may come out independently of cardiac arrest characteristics. Clinicians and cardiologists should pay more attention to screening for depression to improve its recognition and treatment.

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Optimizing blood pressure treatment goals during targeted temperature management: a method for double-blinded, randomized trials

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Background: Evidence regarding hemodynamic treatment goals in the intensive care unit (ICU) is relatively scarce. During targeted temperature management (TTM) after out-of-hospital cardiac arrest (OHCA), vasopressors and inotropic drugs are used to target a mean arterial blood pressure (MAP) of 65 - 85 mmHg. However, no randomized studies have investigated MAP-targets during TTM and clinical studies in other patient-groups in the intensive care unit, have been open label.

Purpose: The aim of this study was to develop and validate a method for blinded blood pressure target investigation for use in future clinical studies in the ICU.

Methods: We programmed blood pressure measuring modules (BP-modules) in order to display 10% lower or higher blood pressure values. In order to confirm this modification in vivo, we compared the modified BP-modules with standard BP-modules in 22 patients admitted to the ICU and who required continuous, invasive blood pressure monitoring. These data were illustrated in Bland-Altman plots at blood pressure levels from 50-130 mmHg.

Clinical evaluation studies: In order to confirm the method in a clinical setting, we did two parallel-group, randomized, controlled, double-blinded trials of comatose OHCA patients during TTM. One study of 50 patients (Trial 1) compared two groups with a 10 % difference of MAP-targets between the groups. The second study (Trial 2) of 50 patients compared two groups with a 20 % difference between the groups, thus the double separation of Trial 1.

Results: We showed that a separation of 20% in blood pressure can be achieved by offsetting one group by +10% and the other group by -10% over a clinically relevant range of blood pressures levels (figure). Results from Trial 1 showed an average MAP during TTM of 75±12 mmHg in the intervention group (control group: 70±9 mmHg (difference: 4.7±1.6 mmHg (p<0.01)). However, the average noradrenaline infusion rate was not significantly different (intervention group: 0.17±0.12 mcg/kg/min, control group: 0.15±0.11 mcg/kg/min (difference 0.03±0.03 mcg/kg/min, p=0.35)). Trial 2 showed a clinically relevant separation between groups regarding noradrenaline infusion rates of 0.07±0.03 mcg/kg/min, p<0.01.

Conclusion: The presented method is feasible, easy and practical when investigating MAP-targets in the ICU and permits double-blinding in future studies. The between-group separation in MAP was lower than expected in Trial 1, and no significant separation regarding noradrenaline-infusion rates was seen. Therefore a larger MAP-separation between groups is needed, as shown in Trial 2. This method could be an important tool in the optimization of hemodynamic treatment-goals in the ICU.
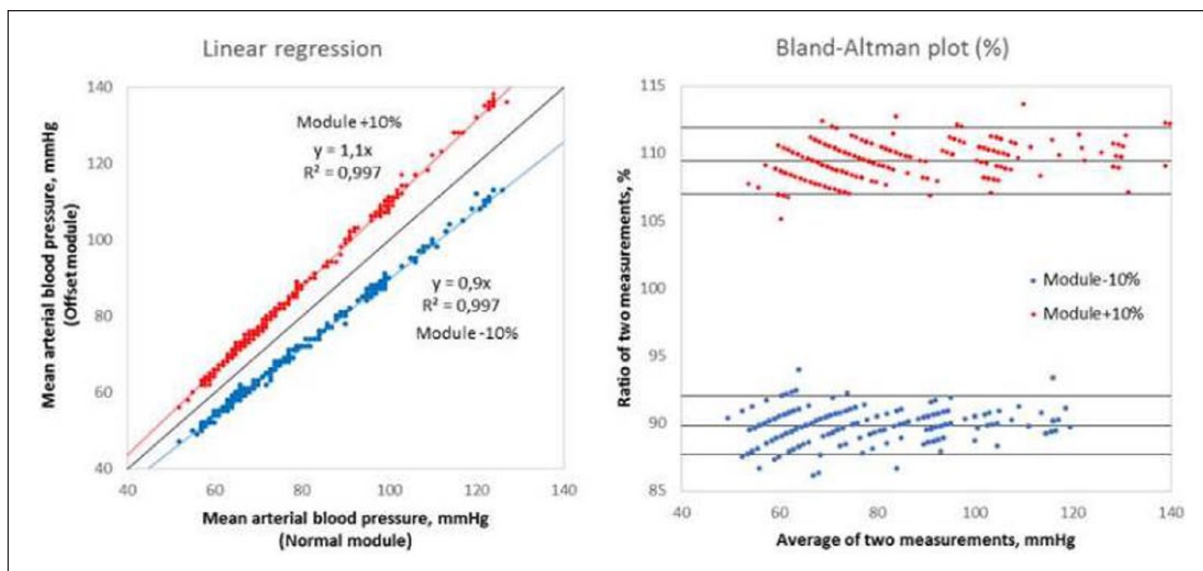
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AEDs use before EMS arrival: when survival become a matter of law and system

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On behalf of: Pavia CARe researches

Introduction: AEDs use before EMS arrival plays a key role in improving OHCA victims' survival. Data about AEDs use before EMS arrival in the Italian reality are limited, very often not recent and not presented according to the Utstein recommendations.

Purpose: We sought to assess the rate of AEDs using by lay rescuers before EMS arrival and its prognostic impact on out-of-hospital cardiac arrest (OHCA) victims also in our Italian Province.

Methods: We calculated the rate of AEDs used by bystanders before EMS arrival in the Utstein comparator group, namely OHCA witnessed by bystander with shockable first rhythm, using data of the Pavia CARe, a Cardiac Arrest Registry of a Province in Northern Italy which consists of 550000 inhabitants, from October 2014 to March 2017. For outcome analysis we considered only patients who received bystander CPR showing a shockable rhythm, excluded EMS-witnessed. Then we compared those who received the first shock by EMS (EMS group) and those who received the first shock before EMS arrival (PAD group).

Results: The rate of AEDs using by bystanders before the EMS arrival was 6.4% (9 on 140 patients of the Utstein comparator group). Considering outcome analysis, EMS group and PAD group consisted in 99 and 10 people respectively. The two groups were similar for age (66 ± 14 yrs for EMS group and 64 ± 12 yrs for PAD group, p=0.35) and sex (79.8% male in EMS group and 100% males in PAD group, p=0.2). The 30 days survival with a CPC 1 or 2 in the EMS group was significantly lower as compared to the PAD group [24 patients (24.2%) vs 6 patients (60%), p=0.02 respectively]. The mean time from the event to the first shock was significantly longer in the EMS group than in the PAD group (12:52 min ± 4:57 min vs 05:02 ± 01:21 p < 0.01).

Conclusion: The rate of AEDs using by bystander is too low if compared with other countries, despite the presence of 503 AEDs completely accessible in our province (1/1093 inhabitants) and a strength effort in training population on CPR and AEDs use. This is probably caused by the need of Italian laypersons of a certificate to use an AED. As a matter of fact, in those countries where the "Good Samaritan" law is present and all citizens can use an AED, the percentage of AEDs used before EMS arrival is by far higher (about 15-20% of cases or over). Moreover, in our Region laypeople, police officers and fire brigades are not alerted in case of an OHCA, unlike what happens in other European realities. In the light of this and of the confirmed pivotal role of early defibrillation we believe that it is necessary a revision of Italian law and system to respond to an OHCA to increase survival after an OHCA.

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Awareness and knowledge in basic life support and the use of public access defibrillation

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Background: A sufficient 'Chain of Survival' – including early call for help, early cardiopulmonary resuscitation and early defibrillation – represents the most beneficial approach for favorable patient outcome after cardiac arrest (CA). Despite increasing numbers of public access automated external defibrillators (AED) and interventions to increase public awareness for basic life support (BLS), the number of their use in real-life emergency situations remains low.

Methods: In this prospective population-based cross-sectional study, a total of 501 residents of Vienna (Austria) were randomly approached via telephone call between 08/2014 and 09/2014 and invited to take part of a standardized questionnaire to identify the public knowledge and awareness in BLS and AED use.

Results: We found that more than 52 percent of participants would diagnose CA correctly and would properly initiate BLS attempts. Of alarming importance, only 33 percent reported that they would be willing to perform CPR and 50 percent would use an AED device. There was a significantly lower willingness to initiate BLS attempts (male: 40% vs. female: 26%; p<0.001) and to use an AED device (male: 57% vs. female: 44%; p=0.004) in questioned female individuals compared to their male counterparts. Interestingly we observed a strongly decreasing level of knowledge and willingness for BLS assessment (-14%; p=0.028) and AED use (-19%; p=0.001) with increasing age.

Conclusion: We found an overall poor knowledge and awareness in BLS and the use of AEDs among the Viennese population. Both female and elderly participants reported the lowest willingness to perform BLS and use of an AED in case of CA. Especially tailored programs to increase the awareness and willingness among both the female and elderly community need to be considered for future educational interventions.

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Cardiac arrest center, One year experience of the Regional Hospital

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Introduction: Out-of-hospital cardiac arrest (OHCA) is one of the most common causes of death in the adult population in developed countries. Centralization of post-resuscitation care may improve the patients' prognosis. Expert statement of the Czech Society of Cardiology recommends the establishment of cardiac arrest centres using the infrastructure of existing tertiary cardiac centres. The introduction of this system in the region of Liberec started in April 2016. The aim of our work is to present the one year results compared to the results from previous years.

Methods: All patients treated in the Department of Cardiology of Regional Hospital after OHCA from 1st April 2016 to 1st April 2017 were enrolled consecutively. Neurological status and mortality were evaluated for the time period of 30 days from the day of admission. The data were compared to the registry of patients hospitalized in the same department after OHCA and successful resuscitation from 1st January 2013 to 31st November 2015.

Results: After the establishment of the Cardiac Arrest Centre, an increase of primarily transported patients of 39.5% (0.81 vs. 1.13 patient per week) was observed. There was a statistically significant increase in the proportion of patients with non-shockable rhythm (25.2 vs. 42.6%, p: 0.013). Despite this, the proportion of patients with cardiovascular etiology of cardiac arrest did not change (71.4 vs. 77.0%). There was also no reduction in the proportion of patients with acute coronary syndrome (47.6 vs. 44.3%). There was no statistically significant change of proportion of patients undergoing selective coronarography (63.9 vs 54.1%) and percutaneous coronary intervention (35.4 vs. 36.1%). There was an increase in 30-day mortality, which was not statistically significant (36.7 vs. 49.2%, p: 0.096). Most of the surviving patients (75.4 vs. 71.0%) were in a good neurological condition.

Conclusion: Centralization of post cardiac arrest care using previously established infrastructure is feasible in our region. Furthermore, it resulted in the increase of directly transported patients and led to the increase of the total number of patients admitted without increasing the proportion of patients with non-cardiac cause of OHCA. There was no significant change in mortality and neurological outcome.

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Targeted temperature management in patients after out-of-hospital cardiac arrest - comparison between intensive cardiac care units and intensive care units

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Background: Targeted temperature management (TTM) is the only method of neuroprotection in patients after out-of-hospital cardiac arrest (OHCA). Intensive Care Units (ICUs) are the most experienced in treating patients after OHCA. However, OHCA survivors are also treated in Intensive Cardiac Care Units (ICCUs) what is connected to immediate percutaneous coronary intervention (PCI) in myocardial infarction.

Purposes: The aim of this study is to assess course, outcomes and complications in the group of OHCA survivors treated with TTM in ICCUs and ICUs.

Method: Investigated population included 376 patients after OHCA treated in 29 centers that have joined Polish Registry for Therapeutic Hypothermia (PRTH) between January 2012 and December 2016. TTM Protocol was provided by PRTH and was based on European guidelines. Two main inclusion criteria were less than 8 points in GCS and return of spontaneous circulation (ROSC) after OHCA. We performed statistical analysis of data and compared treatment results in ICCUs (n=257) and ICUs (n=119).

Results: Mean patient age was 59,1 ± 12,9 years (80,1% were men). At baseline, there were no statistically significant differences between patients' characteristics. The first rhythms registered were in both groups VF/VT – 80,7% in patients treated in ICCUs vs 76,3% treated in ICUs (p=0,37). Non-VF/VT rhythms occurred at 19,3% vs 23,7% cases (p=0,37) respectively. There were no statistically significant differences between mean time from OHCA to the beginning of CPR (p=0,16) and mean time from the OHCA to the ROSC (p=0,87). Mean time from the OHCA to the target cooling temperature (33°C) was also similar (371 minutes in ICCUs and 430 minutes in ICUs, but close to being statistically significant, p=0,087). Mean cooling time was longer in ICCUs (30h) than in ICUs (24h), p=0,001. The prevalence of STEMI was higher in patients treated in ICCUs than in ICUs (53,4% vs 35,3%, p=0,002). PCI were more frequent in ICCUs patients (p=0,04). Pneumonia was more frequent in ICCU patients (12,9% vs 4,2%, p=0,009) and it was an independent factor of prolonged hospitalization (p=0,02). On admission neurological status evaluated in GCS was similar in both groups: 4 (3-5) points in ICCUs and 3 (3-6) points in ICUs (p=0,34). The difference in the end results of the hospitalization at ICCUs and ICUs was statistically insignificant in both neurological status and mortality rates. Good neurological outcome at discharge was present in 43,2% of patients in ICCUs vs 32% of patients in ICUs (Modified Rankin Scale 0-2, p=0,064), 19,6% vs 18,8% patients died, respectively (p=0,57).

Conclusion: Neither mortality rate nor neurological outcomes in patients after OHCA were different depending on the type of unit (ICCU/ICU). Pneumonia was more frequent in ICCU patients and lead to extended hospitalization. We found no differences in the treatment of OHCA survivors between ICCUs and ICUs.

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Long-term follow-up of out-of-hospital cardiac arrest survivors: the new challenge of cardiac arrest registries

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Background: The majority of out-of-hospital cardiac arrests (OHCA) registries provide a short follow-up limited to one month after the event. However, a long-term follow-up should be the ultimate goal of the treatment of OHCA survivors to better comprehend the long-term issues of these patients.

Purpose: We aimed to create a long term follow-up registry, based on the Utstein 2014 recommendations.

Methods: All the patients who suffered an OHCA in our Province (about 550000 inhabitants) were enrolled. The primary endpoint was the survival at 1 month, and the secondary endpoints were the survival at 6 month and then every year until 5 year.

Results: In the first 28 months (October 2014-January 2017) there were 1087 confirmed OHCA [male 59.8%; mean age of 74.2±15.2 years] in which CPR was attempted. The mean EMS response time was 11:35±5:11 mins. The vast majority of OHCA occurred at home (80.6%), than in nursing facilities (8.8%), in public location (8.6%) and in other location (2%). About 72% of OHCAs were witnessed (Bystanders 56.7%, EMS rescuers 16.1%). The rate of bystander CPR were 37.2%, whilst an AED was used before the EMS arrival in 1.8% of cases, with a shock delivered in 55% of them. Concerning the aetiology 93.9% were medical. The first rhythm was shockable in 17.4% (94.2% VF, 4.2% VT without pulse, 2.6% AED shockable), non-shockable 81.7% (61.4% asystole, 31% PEA and 7.6% AED non-shockable), unknown in 0.9%. According to 2014 Utstein recommendation we calculated the survival of different groups as presented in Table 1.

Conclusions: Our preliminary results point out that survival after an OHCA can change over time in all the Utstein categories. We have to look forward to improving patients' care.

Table 1. Survival of different groups according to Utstein style 2014.

		Total With FU completed	Survived event	CPC≤2 at 30d	CPC≤2 at 6m	CPC≤2 at 1y
EMS witn. included	All EMS treated	@ 30 days = 1087 @ 6 months = 959 @ 1 year = 796	n=182 (16.7%)	n=66 (6.0%)	n=50 (5.2%)	n=40 (5.0%)
EMS witn. Excluded	Shockable bystander witnessed	@ 30 days = 130 @ 6 months = 115 @ 1 year = 97	n=68 (52.3%)	n=33 (25.4%)	n=26 (22.6%)	n=21 (21.7%)
	Shockable bystander CPR	@ 30 days = 100 @ 6 months = 87 @ 1 year = 69	n=52 (52%)	n=29 (29.0%)	n=23 (26.4%)	n=18 (26.1%)
	Non-shockable witnessed	@ 30 days = 484 @ 6 months = 421 @ 1 year = 341	n=42 (8.7%)	n=1 (0.2%)	n=1 (0.2%)	n=1 (0.3%)

P655

NT-proBNP as a prognostic parameter in patients after cardio-pulmonary resuscitation for out-of-hospital cardiac arrest

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Background: The neurological outcome of patients after cardiopulmonary resuscitation is poor. Current guidelines recommend mild therapeutic hypothermia (MTH) for out-of-hospital cardiac arrest. So far, the identification of reliable biomarkers to facilitate prognostication in patients with MTH has proven difficult. B-type natriuretic peptide (BNP) is a prognostic marker in heart failure and is discussed as a potential marker of survival in patients after successful resuscitation. We therefore analyzed the serum values of NT-pro BNP, the biologically inactive part of BNP, which is known as a more stable and exact biomarker, in patients with successful resuscitation from out of hospital cardiac arrest.

Methods: 82 consecutive patients successfully resuscitated from out-of-hospital cardiac arrest and treated with MTH 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 NT-pro BNP were measured 0h and 6h after admission and daily for six days thereafter.

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±11 vs. 69±12 years, p<0.01), gender distribution was not different. 40 patients had VT/ VF as initial rhythm, whereas 31 patients had no shockable rhythm (asystole/PEA), in 11 patients the initial rhythm remained unclear. The cause of cardiac arrest was myocardial infarction in 28 (34%) patients, pulmonary embolism in 2 (2%) patients and hypoxia in 9 (11%) patients. NT-proBNP levels were significantly higher in patients with poor outcome than in patients with good outcome immediately after admission (median 399ng/ml vs. 2674 ng/ml, p < 0.001) and a significant difference between both groups was maintained through all time points. The maximum NT-proBNP levels in patients both with poor and with good outcome were reached after 6 days (the last measurement). The area under the ROC curve to predict poor outcome was 0.78 for NT-proBNP measured directly after admission.

Conclusion: Higher levels of NT-proBNP are associated with worse neurological outcome after cardiac arrest in patients treated with mild therapeutic hypothermia independent from the genesis of the cardiac arrest.

P656

Outcomes of in-hospital versus out-of-hospital cardiac arrest in a tertiary referral center

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Aims: Despite timely resuscitation cardiac arrest is still associated with a poor prognosis. We sought to define predictors of good neurological outcome by comparing clinical characteristics and outcomes in patients suffering from in-hospital (IHCA) versus out-of-hospital cardiac arrest (OHCA).

Methods: We retrospectively collected data of consecutive patients after cardiopulmonary rescuscitation (CPR) due to IHCA (non-monitored patients) and consecutive patients

after cardiopulmonary resuscitation due to OHCA transferred to our hospital between January 2015 and June 2017.

Results: A total number of 333 patients were analysed, 148 (44,4%) had IHCA, and 185 (55,6%) OHCA. There was no difference in distribution of gender or age beween IHCA and OHCA. Ventricular fibrillation or ventricular tachycardia as the first documented rhythm was more common in patients with OHCA (62,7% vs. 23%, p < 0.01). Survival to discharge with good neurological outcome (cerebral performance category (CPC) score 1 or 2) was 20,3% in IHCA versus 32,4% in OHCA (p = < 0.01). Survival with severe neurological deficits (CPC 3 and 4) was 0,7% in IHCA vs. 3,2% in OHCA (p < 0.01). Predictors of survival to discharge were presence of a shockable rhythm as first detected rhythm in IHCA and OHCA and bystander CPR in OHCA. Survival was worst when the initial rhythm was asystole – in IHCA (1.7%) as well as OHCA (6,5%).

Conclusion: Patients who suffer OHCA and are admitted to the hospital have a better prognosis than patients with cardiac arrest as in-patients. The higher percentage of shockable rhythms in the OHCA group is the main factor leading to better neurological outcomes and lower mortality.

P657

Arrhythmic storm after initiating sacubitril/valsartan

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Background: Sacubitril/valsartan (SV) is an angiotensin receptor - neprilysin inhibitor, a first-in-class drug for heart failure with reduced ejection fraction. We present six cases of ventricular arrhythmias shortly after SV initiation that required drug withdrawal.

Purpose: To describe the possible association of SV with arrhythmic storm in some patients.

Methods: Observational study. All outpatients that received SV were included. Since the beginning of SV commercialization in Spain (October 2016) till the day the last of our six patients started the drug (2nd June 2017) 108 patients have received SV in two hospitals of our area. All were included in the registry SUMA (Sacubitril/varsartan Usado Ambulatoriamente en Madrid – Sacubitril/valsartan Used in Outpatients in Madrid). Ventricular arrhythmia storm was defined as ≥2 episodes or defibrillator therapies in 24 h.

Results: From 108 patients that received the drug in our center during the same period 6 presented ventricular arrhythmic storm (5.6%). All were male. Baseline characteristics were similar in patients with and without arrhythmic storm, including age (69±8.9 vs. 65.6±12.0, respectively, p=0.49). SV was discontinued in all but one patient (case 6).

Conclusions: We report six cases of arrhythmic storm shortly after initiating SV that represent 5.6% of our patients with this drug. Further investigations regarding a potential proarrhythmic effect of SV are probably needed. Real-world studies should registry this event in the future.

Table 1.

Variables	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Age (years)	71	59	61	84	71	68
Left ventricular ejection fraction (%)	25	25	33	20	27	25
Coronary artery disease	Yes	No	No	Yes	No	Yes
Valvular heart disease	No	Yes	No	No	No	No
Renin-angiotensin system inhibitors (daily dose) prior to sacubitril/valsartan	Candesartan (6 mg)	Lisinopril (20 mg)	Enalapril (40 mg)	Enalapril (20 mg)	Lisinopril (5 mg)	Ramipril (10 mg)
Hospital admission in the previous six months	No	Yes (VT)	No	No	No	Yes (heart failure)
Implantable cardioverter defibrillator	Yes (secondary prevention)	Yes (primary prevention)	Yes (secondary prevention)	No	Yes (secondary prevention)	Yes (primary prevention)
History of ventricular arrhythmias/ablation (year of the last episode)	Yes (2007)	Yes (2016)	No	No	Yes (2015)	Yes (2015)
Antiarrhythmics previous to admission	No	No	No	No	Yes	Yes
Days of Sacubitril/Valsartan	7	44 (8 since dose titration)	135 (105 since dose titration)	93	84	6
Ventricular ablation during admission	Yes	No	No	No	No	No
Potassium level at admission (mmol/L)	4.2	3.7	3.2	4.4	3.7	3.7

Patients with ventricular arrhythmias after sacubitril/valsartan initiation.

P658

Predicting of sudden cardiac death after myocardial infarction. Role of post-infarction left ventricular remodeling and inflammation features

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The sudden death (SD) after myocardial infarction (MI) is an important issue, so this study was dedicate 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 1β, 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 significant differences in age, smoking, hypertension, diabetes were found. Number of male was 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% ± 13,6% against 56,5% ± 10,7%, p = 1*10-8), larger values of end-diastolic size (57,6 ± 8,6mm ± 6,6mm against 52,3 p = 2*10-7), end-diastolic volume (180 ± 125,8 ± 60,7ml against 38,4ml p = 2*10-5), end-systolic size (43,3 ± 12mm against 35.3 ± 7,8mm, p = 9*10-8), end-systolic volume of the left ventricle (93,9 ± 43,3ml vs. 53.1 ± 22 ml, p = 1*10-7) and left atrium (42.8 ± 4,7mm against 40.4 ± 5.3mm, 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 ± 0,5 109 / l vs. 1,8 ± 0,7 10 left ventricular akinesia / L; p = 0.03). On other parameters (IL 1β, IL-2, IL-6 and TNF-α, 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 (β = 1,09; OR = 2.99; 95% CI = 1,44-6,18; p = 0.003) LV end-diastolic dimension (β = 0,05; OR = 2.46; 95% CI = 1,07-2,68; p = 0.02), LVEF (β = −0,03; OR = 1.63; 95% CI = 0,40-1,75; p = 0.05) and a left ventricular akinesia (β = −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.beta, 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.

P659

Permanent pacemaker implantation after TAVI: clinical features and percentage of ventricular pacing

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Background: Transcatheter aortic valve implantation (TAVI) has become a less invasive technique for the treatment of severe aortic stenosis in high surgical risk patients. Postprocedural permament pacemaker (PPM) implantation due to bradyarrhythmias is frequently observed. The purpose of this research is to describe the clinical features and the percentage of ventricular pacing in patients with postprocedural permament pacemaker implantation.

Methods: Descriptive study of patients in whom TAVI was performed and required postprocedural permament pacemaker implantatio between January 2014 and Januray 2017, to determine epidemiological characteristics, prevalence of cardiovascular risks factors and percentage of ventricular pacing at the first follow-up 2-3 months after TAVI.

Results: 31 patients (48.4% males) in whom TAVI was performed required postprocedural permament pacemaker implantation, the mean age was 78.4±6.6 years. Before the procedure 26 patients were in sinus rhythm (SR), 1 had 1st degree atrioventricular block (AVB), the remaining were in atrial fibrillation (AF). Intraventriuclar conduction abnormalities (IVCA) were present in 8 patients (2 with RBBB, 2 with LBBB, 1 with LAFB and 3 with RBBB+LAFB). The prevalence of hypertension, DM and chronic kidney disease were 80.6%, 32.3% and 19.4%, respectively. The mean LVEF value measured by transthoracic echocardiography was 59±12.8%.

In 22 patients the TAVI was transfemoral, 3 subclavian and 6 transapical. The indications for PPM were persistent complete AVB in 19 patients (61.3%), Mobitz type II AVB in 3 patients (9.7%), new onset LBBB associated with 1° degree AVB in 7 patients (22.6%), asystole in 1 patient (3.2%) and severe symptomatic sinus bradycardia (SSSB) in 1 patient (3.2%).

The average percentage of ventricular pacing at the first follow-up 2-3 months after TAVI were 58.7±41.4%.

PM-dependency (intrinsic rhythm < 30 bpm) occurred in 14 patients (45.16%). Patients in whom the baseline ECG showed no impairment of intraventricular conduction had lower percentage of ventricular pacing (SR without IVCA 59±12.8%, AF without IVCA 29±35%, RBBB 97±2.8%, LBBB 67±45%, RBBB+LAFB 81.3±28.1%). Patient in whom the indication for PPM were advanced/complete AVB or asystole presented a higher percentage of ventricular pacing (complete AVB 65.2±40.6%, Mobitz type II AVB 70.6±50.8%, asystole 100%, LBBB+1°degree AVB 29.5±36.1%, SSSB 62%).

Conclusion: The patients in whom TAVI is performed are at risk of new-onset conduction abnormalities. The need for PPM is linked to the preexistence of IVCA, while patients without preexistence of IVCA have lower prevalence of PM-dependency, as well as lower percentage of ventricular pacing.

P660

Urgent pacing techniques in the XXI century: a longitudinal retrospective study

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Introduction: Widespreadness and improvements on definitive pacemaker implantation (DP) technique led to a decrease in temporary transvenous pacemaker (TTP) implantations. Furthermore, complications (Comp) of TTP procedure are a cause for concern.

Aim: To describe TTP indications and to compare Comp and mortality rate (MR) between TTP and immediate DP (IDP) in patients with urgent need of artificial pacing.

Methods: Retrospective analysis of patients admitted between 2010-2016 with urgent pacemaker indication and 1 year follow-up. Patients were divided into TTP or IDP group. Comp incidence (myocardial perforation, arrhythmia induction, thrombus at puncture site, endocarditis, infection or electrode repositioning) and MR during follow-up were evaluated. A statistical comparison was performed.

Results: 287 patients were included, 128 of which (45.0%) implanted TTP. Clinical data is presented in the Table. Comp rate was higher in TTP, without statistical significance (n=8, 6.3% in TTP vs. n=4, 2.5% in IDP, p=0.143). 1-year MR was higher in the TTP group (n=26, 20.3% vs. n=7, 4.6%, p<0.001).

Conclusion: The presence of symptoms, syncope or atrium-ventricular block were the main reasons for PTP implantation. Although both groups have similar baseline characteristics, 1-year MR in TTP group was higher, which can be related to the different underlying pacing indications.

Table 1.

	PTP (n=128)	IDP (n=159)	P-value
Age (mean±SD)	75.9±11.6	76.1±10.3	.866
Female gender (n,%)	60 (46.9)	69 (43.4)	.633
Arterial Hypertension (n,%)	32 (25.0)	47 (29.6)	.427
Dislipidemia (n,%)	22 (17.2)	33 (20.8)	.456
Diabetes Mellitus (n,%)	17 (13.3)	23 (14.5)	.864
Smoker (n,%)	3 (2.3)	6 (3.8)	.736
Previous Acute Myocardial Infarction (n,%)	2 (1.6)	5 (3.1)	.467
Previous valvular surgery (n,%)	4 (3.1)	3 (1.9)	.704
Syncope at admission (n,%)	53 (41.4)	55 (49.5)	.050
Dizziness/Asthenia at admission (n,%)	18 (14.0)	31 (19.0)	.144
Asymptomatic (n,%)	3 (2.0)	15 (9.0)	.039
Atrium Ventricular Block (n,%)	58 (45.3)	61 (38.4)	.278
Atrial Fibrillation (n,%)	15 (11.7)	19 (11.9)	.892
Sinus Bradicardia (n,%)	13 (10.0)	42 (26.4)	.011

P661

Predictors of cardiovascular rehospitalisation in young patients with advanced heart failure after cardiac resynchronization therapy

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Introduction: Advanced heart failure (HF) has a poor prognosis and every hospitalization is associated with a progressive deterioration of heart function with a worse quality of life. These factors have a particular impact in young patients.

Objective: Our aim was to find predictors of rehospitalisation after cardiac resynchronization device implantation among clinical, echocardiography and exercise test data.

Methods: 42 patients subjected to cardiac resynchronization therapy (CRT) were retrospectively selected taking into

account the performance of an echocardiogram and cardiopulmonary exercise test (CPEX) before CRT.

Follow-up of these patients was achieved through hospital records revision considering as primary end-point the first hospitalization after CRT.

Results: The studied patients had a mean age of 56,3 ± 9,6 years, 25 were males (62%), 14 (34,1%) had ischemic heart failure and 20 (48,8%) an idiopathic dilated cardiomyopathy. Mean left ventricular ejection fraction (LVEF) was of 23,4 ± 7%.

The median follow-up was of 1506 days (IQR 625; 2677) and during follow up 19 (45,2%) patients were hospitalized.

Comparing patients with cardiac hospitalisation, versus not hospitalized, we found a significant differences in gender, (15 (57,7%) men vs 4 (25%) of women were hospitalized ; p=0,039;) and basal systolic blood pressure (BSBP) (107 ± 12 mmHg vs 121 ±17 mmHg; p=0,007).

Using Cox regression analysis, including LVEF, age, gender and basal systolic blood pressure, only BSBP was predictor of cardiac hospitalisation (HR:0,94; IC 0,89-0,98; p=0,005). Represented on Figure 1- Kaplan Maier Curve

Based on ROC analysis, the area under the curve was 72%, with cut-of value BSBP 112 mmHg (64% sensibility, 67% specificity, p=0,02).

Conclusion: On heart failure patients after CRT, basal systolic blood pressure ≥ 112mmHg prior CRT, was predictive of hospitalization time free.

P662

QT prolongation,QT dispersion and ventricular arrhythmias in patients with acute coronary syndrome treated with percutaneous coronary intervention

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Aim of the study: To analyze the prolongation of QT interval and QT dispersion and their dynamic changes in patients with acute coronary syndrome treated with PCI ,to compare the results between STEMI and NSTEMI pts,and to find the correlation with ventricular arrhythmias.

Methods: Cross-sectional study was conducted in 40 pts who presented with ACS and with prolonged QT interval at arrival,all of them treated with PCI.QT intervals(using Bazett's formula) and QT dispersion were manually calculated at admission,immediately after PCI ,24 hours afterPCI and at the point where the QT interval was the shortest after PCI.Analysed variables:age(mean 63.2y),DM(30%), HTN(72.5%), smokers(70%),type of MI(55%- NSTEMI,45%-STEMI),location(87.5%-anterior MI,12.5%-inferior MI).Statistical methods used-comparative statistics:independent samples T test,paired samples test and correlations. Statistical significance was determined at the level of .05.

Results: The average duration of the QT interval at arrival was 480.49msec. These values increase right after PCI (average of 503.05msec)with peak duration 24h after PCI (541.64msec), and getting back in normal ranges after 72 h(458.87msec). The paired samples statistics revealed statistically significant difference in every compared group: QT at arrival-QT after PCI (.001), QT at arrival-QT after 24h afterPCI(.000),QT at arrival-shortestQT(.006), QT after PCI-shortestQT(.000),QT after 24h afterPCI-shortestQT(.000), QT afterPCI-shortestQT(.000).The statistical analysis for QT dispersion showed that it follows the changes of the QT interval-average value of 47.66msec at arrival, 70.07msec after PCI, 74.56msec 24h afterPCI and 36msec at the point of the shortest QT int.There was statistically significant correlation between QT int. at arrival and QT disp. at arrival(r.333, p .038) and QT int.after PCI and QT disp.after PCI (r .513, p .001; Correlation significant at the 0.01 level).There was significant difference obtained for QT disp. at arrival compared to QT disp. after PCI (.000) and QT disp. at arrival-QT disp.after 24h afterPCI(.001),there was not significant difference between QT disp.after PCI and QT disp.after 24h after PCI (.550).The comparative statistics for the STEMI and NSTEMI revealed statistically significant difference only between the value of the QT disp. at arrival(36.82msec in STEMI, 53.82msec in NSTEMI, p-0.037). The occurrence of ventricular arrhythmias was found in 5 pts (12.5%), 3 pts with STEMI and 2 with NSTEMI.

Conclusion: The QT interval prolongation which occur during ACS is a dynamic parameter which changes at different points- reaches the peak point 24h after PCI and gets back in the normal range after 72h,and QT dispersion follows this trend of change. There is no difference of these changes between STEMI and NSTEMI patients except for the value of QT dispersion at admission which is shorter in the STEMI group. These pts have increased risk of malignant arrhythmias and should be closely monitored.

P663

Utility of brain regional oxygen saturation monitoring in out-of-hospital cardiac arrest severity and quality cardio pulmonary resuscitation evaluation: A prospective observational cohort study

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Introduction: Brain reginal oxygen saturation (rSO2) monitoring is useful in the evaluation of the severity of brain damage in patients with cardio pulmonary arrest and quality cardio pulmonary resuscitation (Q-CPR). However, previously Newman et. al. reported that rSO2 increase was not observed during CPR in patients with out-of-hospital cardiac arrest (OHCA).

Purpose: rSO2 measurements in OHCA patients are useful for prognosis prediction and Q-CPR evaluation.

Methods: We studied 114 cases of OHCA transported to 2 facilities in 8 ambulances.

Results: We could measure rSO2 values in 33 of the 114 cases in the ambulance. The peak rSO2 value was higher in patients with prehospital return of spontaneous circulation (ROSC) (n=4) than in those without ROSC (n=29) (median, [interquartile range, IQR]; 58[24-72]% versus 34[15-70]%, p=0.65); in patients with survival to hospital admission (n=9) than in those without survival to hospital admission (n=24) (median[IQR]; 58[15-74]% versus 34[15-68]%, p=0.67); and in patients with survival after 30 days (n=2) than in those who did not survive after 30 days (n=31) (median[IQR]; 70[15-70]% versus 34[66-73]%, p=0.17). However, there were no statistical significances. We measured the increase in rSO2 value during CPR in 20 (69%) of the 29 cases without prehospital ROSC. However, we also observed "mostly dead cases" whose rSO2 value does not be elevated to CPR/ROSC in 10 (30%) of all 33 cases. In some cases we confirmed that ROSC and pulseless electronical activity can detect early rSO2 measurements (Figure). In 21 (66%) of the 33 cases, the rSO2 value was the lowest (=15%) at the start of measurement in the ambulance, suggesting the existence of a "transport gap," which makes it difficult to maintain Q-CPR during patient movement to an ambulance. In the association between right- and left-sided rSO2, the Spearman's correlation coefficients were 0.87.

Conclusion: The findings indicated that rSO2 measurements in OHCA patients may be useful for prognosis prediction and Q-CPR evaluation. However, blind measurements have variations in the measured values of the two channels. Development of a sensor with a higher sensitivity and stability, and algorithms that can adjust the time cycle for Q-CPR evaluation are needed.
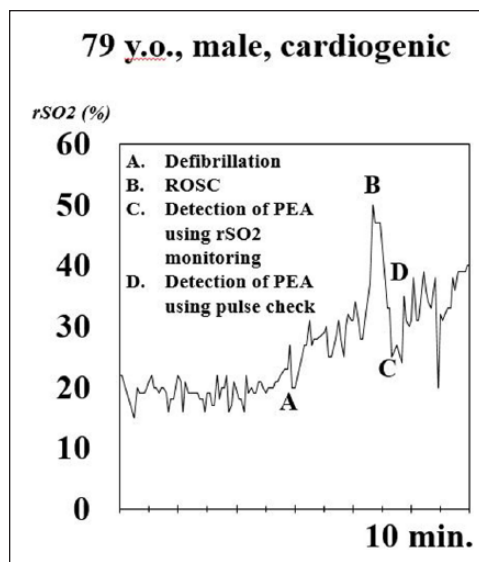
Detecting ROSC and PEA by rSO2

P664

Magnitude and prognostic utility of ventricular dysfunction in post-cardiac arrest syndrome

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Background: Post-cardiac arrest syndrome is directly related to ventricular dysfunction (VD). The evolution of this syndrome is not known precisely. It is intended to quantify the magnitude of VD and its reversibility, the time frame of such reversibility and the clinical factors that may be related.

Methods: Retrospective cohort study, which included patients suffering a out-of-hospital cardiac arrest (OHCA) in the Girona area, in which a echocardiography in the acute phase and another in stable phase prior to discharge could be performed.

The ejection fraction (EF above 50% is classified as preserved; EF between 45-50% as mild depressed; EF between 40-45% as moderately depressed; EF between 35-40% as moderately-severely depressed; EF between 30-35% as severely depressed; finally, EF less than 30% is classified as very severely depressed.

EF was analyzed at admission and at 5 days of the event, associating patients to the reversibility or non-reversibility group. Reversibility in EF was defined as the difference of 1 or more points according to the classification previously described. The variables studied in each of the groups were: age, sex, previous MI, first rhythm, number

of defibrillations, resumption of spontaneous circulation (ROSC), use of LUCAS, shock at admission, pH at admission, etiological diagnosis of MSR, death and cerebral performance category (CPC) at discharge.

Results: Data were collected from 207 patients between February / 2013 and July / 2017. Finally, 66 were included. A 25.75% of the patients had reversibility in EF. There were no significant differences in LUCAS use, presence of shock at admission or use of therapeutic hypothermia. Only 5.8% of the patients with reversibility had pH <6.99, compared to 12.2% in the non-reversibility group (OR 0.47, CI 0.25-0.79). There were no differences in death, CPC at discharge; 84.84% presented CPC-1 at discharge and diagnosis of AMI as the cause of the event.

The mean EF was between 40-50% in the non-reversibility group, whereas the reversibility group presented an EF between 30-40% initial and> 50% at discharge. 64.7% of the patients who improved their EF during admission presented preserved EF at discharge compared to 42.8% of the other group (OR 1.51, CI 1.30-1.72). In fact, only 5.8% of the patients with reversibility finished FE <40% compared to 27.24% of the other group (OR 0.38, CI 0.17-0.59). No patient in the reversibility group finished FE <35%, compared to 16.16% of the non-reversibility group.

Conclusions: Most patients with DV associated with OHCA did not present reversibility of their EF. The initial pH seems to be a determining factor in the improvement of EF. Although there were no significant differences in death and CPC at the time of discharge, patients who presented reversibility had higher preserved EF and lower severe DV at discharge.
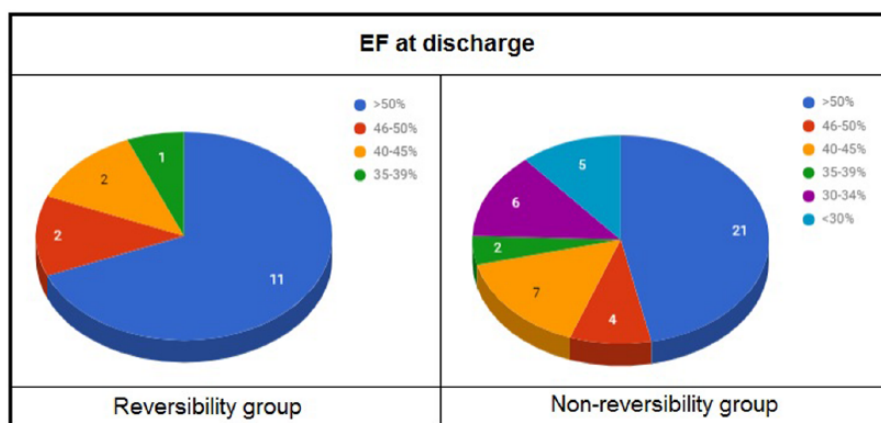
EF at discharge

P665

Post-cardiopulmonary arrest status in intensive care unit: a five years retrospective study

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Introduction: Training and experience in cardiopulmonary resuscitation (CPR) are central to any doctor, especially in the context of Intensive Care Medicine. Despite the therapeutic advances, cardiopulmonary arrest is associated with unfavorable prognosis, even in the presence of trained and immediately available personnel.

Objectives: Clinical and epidemiological characterization of cardiopulmonary arrest (CPA) admitted in our Intensive Care Unit (ICU).

Material and methods: Retrospective study of patients admitted consecutively by CPA from 1 January 2011 to 31 December 2015. Were excluded patients who did not have criteria for cardiopulmonary arrest (for example, patients who presented only respiratory arrest). Results were expressed in mean, standard deviation and median, considering p < 0.05 statistically significant. Performed chi-square, t-independent and Mann-Whitney tests.

Results: 150 patients were admitted to the study. There was a predominance of males (56.2%). The mean age was 67.1 ± 13.7 years. Majority coming from the Emergency Room (40.1%), with admission SOFA of 9.6 ± 3.9. Non-defibrillable rhythms were the most frequent (70.1%). The main causes of CPA were, according to 5H and 5T, the Acute Coronary Syndrome (22.6%) and Hypoxemia (20.4%).

At discharge, patients had mean SOFA, APACHE and SAPS of 6.9, 26.4 and 60.1 respectively. The median delay in ICU was 3 days, with an ICU mortality rate of 37.2% and hospital mortality of 73.7%. In 43.8%, of the studied population, the ICU staff assumed limitation of therapeutic effort.

There was no statistically significant association between first-documented arrest rythm and the outcome, despite higher mortality in the non-defibrillable rhythms. There was also a statistically significant difference between ICU outcome and: 1) admission SOFA (deceased with a slightly higher score (11.78 ± 3.4)); 2) delay in ICU (with patients deceased to present a median of 2 days); 3) age (with deceased patients reporting an average of 63.53 ± 14.489 years).

Conclusion: The results of our study demonstrate that CPA continues to be an event associated with high mortality, especially in the non-defibrillable rhythms, and the causes of CPA are according to the literature data.

P666

Cardiologist-only management of deep sedation during emergency cardioversion of atrial fibrillation: the INSTEAD II trial

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Background: It has already been demonstrated that sedation with midazolam administered by cardiologist-only is as safe as sedation with propofol and anesthesiologist assistance in the setting of elective direct-current cardioversion (DCC) of atrial fibrillation (AF). Moreover, a cardiologist-only approach provides less procedural delays and health-related costs, thus rapidly becoming the preferred method to deliver conscious sedation in elective DCC of AF. However, no data exists regarding the safety of such a regimen during emergency procedures, when time is an issue and complication rates rise exponentially due to hemodynamic instability, higher heart rates, and serious acute comorbidities.

Purpose: to test the feasibility and safety of a cardiologist-only approach to deep sedation during DCC of persistent atrial fibrillation (AF) performed in an emergency setting.

Methods: Prospective, open-blinded, randomized study including 42 patients, admitted to the ICU or the Emergency Department and candidate to emergency DCC of AF for hemodynamic instability or chest pain. Patients were randomized in a 1:1 fashion to either propofol or midazolam treatment arm. Patients in the midazolam group were managed by the cardiologist only, while patients treated with propofol group underwent DCC with anesthesiologist assistance.

Results: Forty-two patients (25 males, mean age 65 ± 12 years old) were consecutively enrolled and split into two equal groups. Comorbidities, risk factors, and concomitant therapies were similar between the two groups. Ten patients

(23.8%) experienced periprocedural adverse events, of which bradycardia was more common in the midazolam group (four vs. one; p=ns), hypoxia was more common in the propofol group (two vs. none; p=ns) and hypotension was equal between the two groups (two vs. two; p=ns). No neurological sequelae, ventricular tachycardia, pulmonary edema, or death were reported. All adverse events in the midazolam group were successfully managed by the cardiologist alone without the need for anesthesiology support. Patients treated with propofol experienced a greater decrease in systolic and diastolic blood pressure during DCC when compared with their counterparts treated with midazolam (-20.1 vs. -10.4 mmHg and -8.3 vs. -5.3 respectively; all $p < 0.05$). Immediate and short-term AF recurrence rates were similar between the two groups (p=ns).

Conclusions: When emergency DCC of AF is needed, sedation with midazolam administered by the cardiologist appears to be as safe as sedation with propofol and anesthesiologist assistance. Although adverse events are more frequent than in elective procedures, they do not differ between the two groups and are easily managed by the cardiologist alone, making the reported approach feasible even in an emergency setting.

P667

Analysis of the sinus induced arrythmia patterns

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Background: According to the health ministry in the country of the study origin cardio vascular diseases (CVD) are the most common death causes. Important in CVD treatment is rapid identification, because the outcome may result in the irreversible changes in myocardium. Therefore, HRV (heart rate variability) is one of the cheapest and fastest ways of diagnostics.

Purpose: The aim of this study was to analyse patterns of HRV and produce a method for diagnosis identification, based on the HRV interval distribution.

Methods: Two groups are present in this study – healthy 18-26 (of both sexes) as a control group and 50-79 (of both sexes) having CVDs: arrhythmia, CHF (congestive heart failure). They cardiograms were taken and RR intervals measured (according to the HRV study guidelines). Next, data was visualised: intervalogramms, correlation plot, averages for 4,6,12 values. Fourier transformation was carried, analytics pack applied to the data sets.

Results: The study determined that for people with heart abnormalities HRV levels were lower than in healthy subjects. CHF and arrhythmia represents unique RR interval length distribution, which is typical only for these

conditions. Moreover, healthy subjects reported lower beat-to-beat duration correlation, while compared with CHF and arrhythmia, where strong correlation was present. Induced sinus arrhythmia was proved to be caused by respiration and link to a Bainbridge reflex is suggested.

Conclusions: Based on the presence of different parents for healthy and CVD subjects it is possible to use interval analysis method in the diagnosis determination. Average RR interval distribution is different for sexes, which might be a basis for a further research.
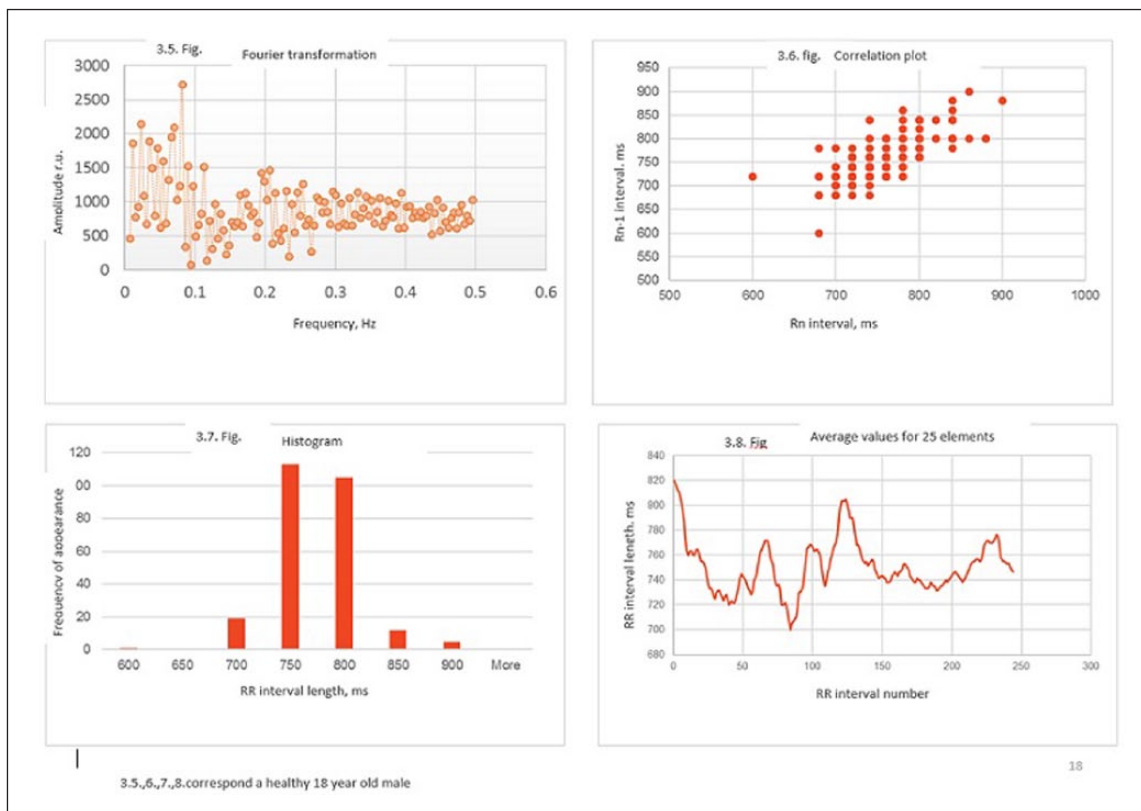
Sample of data analysis

Pulmonary Embolism, Acute Aortic Syndrome, and Infections

P668

Our 16 years experience with complicated infective endocarditis in intensive care unit

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Introduction: The epidemiological profile of patients with complicated infective endocarditis (IE) needing intensive/ coronary care unit has evolved substantially over the last decade especially in developing countries. However, no previous study has explored the outcomes i.e heart failure, myocardial infarction and cardiovascular death in these patients.

Objective: This study investigates the 30-day mortality and long-term outcome in patients with complicated IE admitted to MICU/CCU for medical treatment.

Method: All patients fulfilled the modified Duke Criteria for IE requiring admission to MICU/CCU from 2001 to 2016 were evaluated [Table 1.] and underwent transesophageal echocardiography (TOE) within 3 days of presentation.

Results: A total of 65 patients were diagnosed with complicated IE. Diabetes and end stage renal failure (ESRF) were highly prevalent in overall cohort. There appeared to be a temporal shift in the affected valves and causative microorganism. Mitral valve endocarditis were more prevalent in Grp1&2 while aortic valve endocarditis is more commonly affected in Grp3. Likewise, a - hemolytic streptococcus were the commonest causative agent In Grp1&2

while staphylococcus aureus were more common in Grp3. Haemophilus, Actinobacillus, Cardiobacterium, Eikenella, Kingella (HACEK) and fungal endocarditis is also becoming more significant. 50 patients required inotropic support and 41 patients developed multi-organ failure. 14 patients had at least a type II heart block and 9 patients required temporary/permanent pacemaker. Using multivariate analysis, patients who developed acute kidney injury prior transfer to ICU and ESRF patients or vegetation size > 15mm (seen in TTE/TOE) were identified as predictors for inpatient death. Overall mortality is 54% while 23% patients has permanent neurological deficit

Conclusion: Our studies concluded that acute kidney injury and vegetations size >15 mm are independent risk factors for poor prognosis and mortality. In addition, early utilization of TOE to identify large vegetation prompting a more aggressive management to prevent septic emboli and reducing mortality.

Table 1.

	Group 1(N=23) 2001-2005	Group 2 (N=23) 2006-2010	Group 3(N=17) 2011-2016
Age/Gender (Male)	64.2±2.8/17 (74%)	52.8±3.1/10 (43%)	47.4±1.9/8 (47%)
Diabetes/End stage renal failure	14 (61%)/4 (17%)	17 (74%)/4 (17%)	11 (65%)/11 (65%)
Mitral/Aortic	11 (48%)/7 (30%)	9 (39%)/9 (39%)	6 (35%)/9 (53%)
a - hemolytic streptococcus/ Staphylococcus aureus	10 (43%)/6 (26%)	10 (43%)/9 (30%)	6 (35%)/8 (47%)
Acute renal failure (OR 5 95% for all the groups)	CI 1.04-22.28 P = 0.03	CI 1.07-24.13 P=0.03	CI 1.02-23.07 P = 0.03
Vegetation >15mm (OR 5 95% for all three groups)	CI 1.01-21.81 P = 0.05	CI 1.13-24.19 P = 0.05	CI 1.06-23.10 P = 0.05

P669

Is syncope a predictor of mortality in acute pulmonary embolism?

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Introduction and Purpose: Acute pulmonary embolism (APE) is a condition with high fatality mainly due to multiple onset symptoms that can delay the correct diagnosis. Current available data show that syncope is a modality of presentation in 9 to 35% of patients. It remains a matter of controversy whether this symptom independently classifies the patient into a high risk group or not. The most recent published data did not show a significant correlation of this onset symptom with mortality.

Methods: We analyzed a series of consecutive patients admitted to our clinic with APE from January 2014 to August 2017. Clinical, biological and imaging data were recorded for all patients with a syncopal onset at the time of admission and during hospitalization.

Results: The study group included 88 patients. 13.8% presented with syncope, having a mean age of 71.3 ±13.2 years, comparable to the rest of the sample and with a similar gender distribution. All-cause in-hospital mortality was 18.4%. Patients with syncope were more likely to require inotropic support (OR = 4.6, 95 % 1.28-16.01, p=0.01) due to the association with cardiogenic shock (OR= 9.58, 95% CI 2.24-40.88, p=0.0005) and systolic blood pressure below 90 mmHg (OR=4.85, 95% CI 1.16-20.3, p=0.02). Patients with syncope had a higher PESI score (144.08 ± 54 versus 102.3 ± 31.1, p = 0.006) and a greater percentage of in-hospital mortality (OR= 4.1, 95% CI 1.11-15.46, p=0.02). The differences in mortality were comparable during medium-term follow-up (12 ± 1 months). Using various multivariate logistic regression equations syncope was not an independent predictor of mortality (p=0.568) compared to PESI score (p=0.005) and the presence of shock (p=0.029). Syncope was not associated with a central location of the thrombus on chest CT examination. Echocardiography showed a shorter pulmonary artery acceleration time and more frequent right ventricle dysfunction in patients with syncope, with trending statistical significance.

Conclusion: Although syncope was significantly correlated with a higher in-hospital mortality rate and hemodynamic instability, the only independent predictors of mortality remain PESI score and the presence of cardiogenic shock. In our lot syncope did not reclassify the patient in a higher mortality group independently but due to the association with hemodynamic instability which remains, in our opinion, the main tool in decision making. Evaluating the time between syncope and presentation as well as the number of these episodes can provide additional data in the future.

P670

Lactate as a prognostic marker in normotensive patients with acute pulmonary embolism

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Introduction: The majority of patients diagnosed with acute pulmonary embolism (APE) are normotensive at hospital admission, so the correct and early risk classification is crucial in deciding the following therapy. There is still some level of controversy regarding this strategy in the case of normotensive patients. A limited number of studies have investigated the role of serum lactate in the prognosis of normotensive patients with APE, lactate being an established biomarker with prognostic implications in the survival of patients with trauma and sepsis.

Material and method: We prospectively analyzed a sample of patients diagnosed with APE admitted consecutively to our clinic from January 2014 to August 2017. Hemodynamically unstable patients on arrival were excluded. Lactate level was determined from the arterial blood at the time of admission and expressed in mg/dl. Lactate positive group was defined as having serum lactate higher than 18 mg/dl (2 mmol/L). The patients were monitored using clinical and paraclinical data throughout their entire hospital stay.

Results: The study group (n=76) had a mean age of 68.7±13.3 years and mean oxigen saturation of 90.2% ±7.7. 60.5% were female and 12.3% of them received fibrinolytic therapy. We registered an in-hospital mortality rate of 17.1%. Patients with unfavorable outcome had a higher lactate level (36.7 mg/dl ±33.9 vs 17.8 mg/dl±10.7, p= 0.04) and PESI score (135.1±44.6 vs 96.4±28.5, p=0.002) along with a shorter pulmonary acceleration time (PAT) determined through echocardiography (69.1±11.9 vs 87.3±26.3, p=0.01). We did not find any significant differences in the lactate positive group in terms of oxygen saturation or partial pressure of oxygen as compared to the lactate negative lot. Lactate levels were directly correlated with age (r=0.307, p=0.027), PESI score (r=0.354, p=0.010), and indirectly with arterial pH (r=-0.345, p=0.014), pulmonary artery maximum velocity (r=-0.546, p=0.007) and PAT value (r=-0.432, p=0.019).

In the ROC curve analysis, the predictive value of lactate levels (AUC 0.735, 95%CI 0.563-0.907, p=0.028) for in-hospital mortality were similar with those of PAT (AUC 0.762, 95%CI 0.625-0.899, p=0.020) and PESI score (AUC 0.740, 95%CI 0.606-0.875, p=0.003), all three parameters being superior predictors to troponin I (AUC 0.511, 95%CI 0.335-0.687, p=0.893).

In multiple logistical regression including lactate levels (p=0.034) and PESI score (p=0.083) the former is an independent predictor of in-hospital mortality, while the latter has only a trending statistical significance.

Conclusions: Lactate collected at admission for normotensive patients with APE can represent an accessible parameter for risk stratification and along with other established biological and echocardiographic markers can help the physician in deciding further therapy.

P671

Outcome differences between high versus low risk acute pulmonary embolism

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Introduction: Acute pulmonary embolism (APE) is an significant clinical unit with notable mortality despite progressions in diagnosis and treatment. Simplified pulmonary embolism severity index (sPESI) predicts 30 day all-cause mortality of patients with PE, however recent studies suggest an adequate predictive value of sPESI for long-term mortality as well but its precise accuracy has not been established.

Purpose: The aim of this study is to analyze clinical outcomes after APE, compare them between high and low risk PE and to assess the predictive value of sPESI for short and long-term outcomes.

Methods: The prospective cohort study included 250 patients from a single hospital in time period from June 2014 till September 2017. Patients were divided into two groups - high or low risk APE according to sPESI. Three clinical outcomes were described - death, major bleeding and thromboembolic recurrence. Patient follow-up was made 30 days, 90 days and 1 year after first episode of APE. The data were analysed by SPSS 21.0.

Results: The mean age ± standard deviation (SD) of patients was 67.04 ± 16.42 [95% confidence interval (CI) = 65.03-69.05] years. 158 patients were classified as high risk and 92 as low risk PE.

After 30-day follow-up mortality rate was 8.23% (n=13) in high risk and 3.26% (n=3) in low risk PE group (p=0.122). Major bleeding was detected in 5 (3.16%) vs 2 (2.17%) cases in high and low risk PE, respectively (p=0.648). There was no thromboembolic recurrence in 30 days after diagnosis in both groups.

90-day follow up was performed for 148 patients in high risk and 78 in low risk PE group. In 90 days, mortality rate was 14.86% patients (n=22) in high risk vs 7.69% patients (n=6) in low risk group (p=0.121). Major bleeding had 8

(5.41%) patients in high risk group, but 3 (3.85%) in low risk group (p=0.605). Thromboembolic recurrence in 90 day period was detected in 4 (2.70%) vs 0 (0%) in high and low risk groups, respectively (p=0.144)

In one-year follow-up after the first episode of APE, 110 patients were eligible in high risk and 61 in low risk group. Among these patients mortality rates were significantly higher in high risk compared to low risk group - 37 (33.73%) vs 8 (13.11%) (p=0.003). The number of patients who had episodes of major bleeding (15 (13.64%) vs 7 (11.48%) in high and low risk group, respectively (p=0.687)), as well as thromboembolic recurrence (4 (3.64%) vs 1 (1.64%) (p=0.457)) did not reach statistical significance.

Conclusions: After 30 and 90-day follow up there was no evidence of significant differences between high and low risk PE in three outcomes - death, episodes of major bleeding and thromboembolic recurrence. Mortality rates were much higher in high risk PE group compared to low risk PE group only in 1 year follow-up period.

P672

SaO2/FiO2 ratio is associated to short-term outcome in acute pulmonary embolism

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Background: SaO2/FiO2 ratio is an indicator of oxygenation status and has been shown to predict adverse outcome in some acutely-ill populations, such as septic patients. However, SaO2/FiO2 ratio is not so widely used in respiratory dysfunction assessment as the PaO2/FiO2 ratio. We aimed to know whether SaO2/FiO2 ratio and PaO2/FiO2 ratio are associated to prognosis in acute pulmonary embolism (PE).

Purpose: (1) To assess the association between acute short-term prognosis in acute PE patients and SaO2/FiO2 ratio and PaO2/FiO ratio; and (2) to examine correlation between SaO2/FiO2 ratio and PaO2/FiO ratio in acute PE patients.

Methods: We retrospectively studied 483 consecutive patients hospitalized for acute PE along 3 years. Arterial blood gas analysis was performed within the first 6 hours of hospitalization. SaO2/FiO2 ratio was the quotient between oxygen saturation of arterial haemoglobin and oxygen fraction in inspired air. PaO2/FiO2 ratio was the quotient between oxygen partial pressure in arterial blood gas and oxygen fraction in inspired air. Measured outcome was all-cause 7-day mortality.

Results: Among the 483 acute PE patients comprising study population, mean age was 66.3 ± 17.6 years and 40% (n=192) were male. Mean Pulmonary Embolism Severity Index (PESI) score was 116.9 ± 49.4 points. Mean SaO2/FiO2 ratio was 348.3 ± 114.5 and mean PaO2/FiO2 ratio was 272.4 ± 116.8. All-cause 7-day mortality rate was 9.9% (n=48). Non-survivors had significantly lower SaO2/FiO2 ratios (267.5 ± 139.7 in non-survivors vs 356.2 ±108.8 in survivors, p=0.002). On the other hand, PaO2/FiO2 ratio was not significantly different between non-survivors and survivors (p=0.195). SaO2/FiO2 and PaO2/FiO2 had a good correlation (r=0.714, p < 0.001). In acute PE patients with SaO2/FiO2 <200, all-cause 7-day mortality rate was 23.8%, and significantly higher than patients with SaO2/FiO2 ≥200 (p=0.002). In acute PE patients with SaO2/FiO2 200-299, 300-399, and ≥400, all-cause mortality rate at 7 days was 11.7%, 4.7% and 5.5%; however, these mortality rates did not significantly differ from the remaining patients (p=0.455, p=0.455 and p=0.052, respectively).

Conclusions: Short-term mortality was higher in acute PE patients with lower SaO2/FiO2 ratio. All-cause 7-day mortality was as high as 23.8% in SaO2/FiO2 ratio <200. SaO2/FiO2 ratio is well correlated to PaO2 ratio. Our study suggests SaO2/FiO2 ratio within the first hours of hospitalization may be useful in prognostic assessment of acute PE patients.

P673

Hyperglycemia at admission as a prognostic factor in acute pulmonary embolism

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Background: The association between elevated glucose levels (> 126 mg/dl) and main caracteristics of the patients with acute pulmonary embolism (PE) has controversial prognostic consequences.

Objective: We evaluated the relationship between hyperglicemia at admission and prognosis of the PTE pts enrolled in the Romanian Registry for Pulmonary Thrombembolism (RO-TEP).

Methods: The RO-TEP registry enrolled 1335 consecutive PE patients (pts) between January 1st, 2009 and August 31st, 2017 (aged 65.34+/−14.08, 667 females). PTE pts were stratified into levels of risk using clinical, right ventricle (RV) dysfunction and myocardial injury criteria, according to the 2014 PTE European Society of Cardiology guidelines, as follows: high risk 390 pts (29.2%), intermediate risk 791 pts (59.3%) and low risk 154 pts (11.5%).

Results: The average Wells score was 5.23+/−2.23 and revised Geneva score was 8.89+/−3.62. Using independent-samples t-test we can conclude that there is a statistically significant difference between the group with glicemia > 126 mg% and < 126 mg% regarding the most frequent symptoms of PTE (syncope, p=0.l025, acute dyspnoea p=0.026, hemoptysia p=0.012 and cardiac arrest p=0.012. The systolic blood pressure (p=0.002) and shock index (heart rate divided by systolic blood pressure) (p=0.029), S1Q3T3 pattern on ECG at admission (p=0.030), the Wells score (p=0.027) but not revised Geneva score are also significantly different. Among patient with/without hyperglycemia at admission there was a statistically significant difference between some etiologies (thrombophilia, p=0.011), co-morbities (hypertension, p=0.011), shock or hypotension at admission (p=0.030), right ventricular dysfunction (p=0.031) and biomarkers of myocardial injury (p=0.026). Some transthoracic echocardiography (TTE) finding are also significantly different the admission right ventricular diameter (p=0.001) but not left ventricular diameter, RV-RA gradient (p=0.017), admission TAPSE (p=0.018), maximal inferior vena cava diameter (p < 0.001), admission PASP (p=0.011). Hyperglycemia at admission cause significant statistical differences between various complications of pulmonary embolism (cardiogenic shock, p=0.018; low cardiac output syndrome, p 0.18) and mortality (p=0.021)

Conclusions: Differences arising from the hyperglycemia at the admission of patients with pulmonary thromboembolism allow us to consider this as a prognostic factor.

P674

Pulmonary embolism in intensive care medicine: a ten years retrospective study

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Introduction: The risk of pulmonary embolism (PE) is a constant problem in the context of Intensive Care Medicine. Sometimes diagnosis is difficult and leads to a mortality of approximately 30%, if not treated.

Objectives: Epidemiological characterization of patients admitted to Intensive Care Unit (ICU) with the diagnosis of PE.

Material and methods: Retrospective analysis, of patients admitted in our ICU with a diagnosis of PE, in a 10-year period was carried out. We analyzed common epidemiological variables, established therapeutics, severity / mortality indexes and evolution in hospitalization. Two groups were created depending on whether or not thrombolytic therapy was used. Results expressed in mean, standard deviation and median, considering p < 0.05 statistically significant.

Results: Admitted 105 patients with a diagnosis of PE, with a predominance of females (65.7%). The mean age of the population was 57.8 ± 18.4 years, with the majority coming from the Emergency Department (44.8%). Admission SOFA and medium lactates of 3.0 and 1.4, respectively, were highlighted. The main risk factors were surgery intervention (20%), heart failure (14.3%) and neoplasia (13.3%). Complicated obstructive shock was present in 27.6% of patients. Regarding the therapy instituted: 29.5% required invasive ventilation, 14.3% required non-invasive ventilation and 22.9% needed vasopressors. Thrombolysis, performed in 42.9% of patients admitted, is also highlighted. At discharge, patients presented a 2-days median hospitalization time with SOFA, APACHE and SAPS of 2, 14 and 31, respectively. Mortality in ICU of 10.5% and hospital mortality of 15.2%.

Comparing the thrombolysis group versus non-thrombolysis, we found that the thrombolysis group had an odd 9.4x greater to have obstructive shock, with shorter hospital stay (2 days) and higher admission APACHE and lactates (16 and 1,6 , respectively).

Conclusion: The group of patients with PE hospitalized in the ICU represent a relatively young population with non-negligible risk factors, which assume an important weight in the dynamics and management of the pathology. We emphasize the good hospital outcome with relatively low mortality.

P675

Deep vein thrombosis in acute pulmonary embolism: prevalence, risk factors, and impact on outcome

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Background: Previous studies had reported a wide prevalence range of deep vein thrombosis (DVT) in patients with acute pulmonary embolism (PE). However, to authors's knowledge, risk factors for DVT presence and impact of DVT on outcome of acute PE patients have not been explored.

Purpose: Our study aimed (1) to estimate prevalence of DVT, as assessed by venous compression ultrasonography (CUS), in patients with computed tomographic pulmonary angiography (CTPA)-proven acute PE; (2) to identify risk factors for DVT; and (3) to access impact of DVT on outcome in patients with CTPA-proven acute PE.

Methods: We conducted a retrospective analysis of 164 consecutive patients hospitalized for CTPA-proven acute PE along 3 years, who underwent venous CUS at the discretion of the attending physician. We collected data on demography, previous medical history, anatomic location of

pulmonary emboli on CT, laboratory tests, right ventricular (RV) function, all-cause mortality and haemodynamic decompensation within 7 days, and presence of DVT, as assessed by venous CUS. Univariable analysis was performed to identify predictors of DVT. The χ^2 (chi-square) test was used to compare observed percentages.

Results: Among the 164 enrolled patients, mean age was 64.8 ± 17.0 years, and 43.2% (n=71) were male. DVT was present in 53.7% (n=88). Patients with DVT tended to be older, but this did not reach statistical significance (p=0.061). In univariable analysis, previous chronic pulmonary disease was the only predictor of DVT [p=0.036, OR 2.55, CI 95% 1.06-6.14]. Previous chronic heart failure, active cancer, or immobilization did not predict DVT (p=0.282, p=0.336, and p=1.000, respectively). Compared with patients without DVT, patients with DVT had significantly higher rates of central pulmonary emboli (saddle embolus, or affecting at least one main pulmonary artery), as assessed by CTPA (26.5 vs 50.7%, respectively, p=0.004). Troponin I levels (p=0.701), NT-proBNP levels (p=0.122), and frequency of RV dysfunction (p=0.840) did not differ in patients with and patients without DVT. Outcome of patients with DVT also did not significantly differ from outcome of patients without DVT in terms of all-cause mortality rates within 7 days (p=0.351) and haemodynamic decompensation rates within 7 days (p=0.726). Frequency of fibrinolytic treatment for acute PE also did not significantly differ between patients with and patients without DVT (p=0.753).

Conclusions: We estimated DVT prevalence in acute PE patients in 53.7%. Our small sample size may explain lack of significance for some well-known risk factors as predictors for DVT, such as active cancer or immobilization. Patients with DVT had significantly higher rates of central pulmonary emboli; however, presence of DVT did not seem to have impact on outcome in acute PE. Our study does not support screening for DVT in patients with CTPA-proven acute PE.

P676

Post-resuscitation arterial oxygen and carbon dioxide partial pressures abnormalities are not associated to outcomes after out-of-hospital cardiac arrest attributed to acute pulmonary embolism

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Background: Early partial pressures of arterial oxygen (PaO2) and carbon dioxide (PaCO2) after resuscitation from cardiac arrest were found to be related to in-hospital mortality and neurological outcome by some observational studies. Impact of post-resuscitation PaO2 and PaCO2 abnormalities after out-of-hospital cardiac arrest (OHCA) specifically attributed to acute pulmonary embolism (PE) was not explored yet.

Purpose: We aimed to know whether post-resuscitation hyperoxaemia, hypoxemia, hypercarbia and hypocarbia are associated with short-term mortality after OHCA attributed to acute PE.

Methods: Retrospective review of adult patients admitted to a single-centre emergency department (ED), along 3 years, for OHCA attributed to acute PE. We considered OHCA to be attributed to acute PE if (i) computed tomographic pulmonary angiography proved acute PE; (ii) echocardiography documented right ventricular enlargement in clinical settings suspicious for acute PE; and (iii) necropsy confirmed acute PE. Included patients must had sustained recovery of spontaneous circulation (ROSC) ≥1 hour after ED arrival and at least one arterial blood gas (ABG) sample analysis collected within the first 6 hours. In ABG, we identified presence of hyperoxaemia (PaO2 ≥300 mmHg), hypoxemia (PaO2 <60 mmHg), hypercarbia (PaCO2 >50 mmHg) and hypocarbia (PaCO2 <30 mmHg). Outcome was all-cause 7-day mortality. Association between outcome and hyper- or hypoxemia and hyper- or hypocarbia were analysed by χ^2 (chi-square) test.

Results: We included 21 patients admitted for OHCA attributed to acute PE. Mean age was 67.0 ± 18.8 years, and 23.8% were male. All-cause 7-day mortality was 71.4% (n=15). Hyperoxaemia, hypoxemia, hypercarbia, and hypocarbia occurred in 33.3%, 9.5%, 23.8% and 19.0%, respectively. Hyperoxaemia, hypoxemia, hypercarbia and hypocarbia were not associated with all-cause mortality within 7 days (p=0.354, p=1.000, p=.0115 and p= p=1.000, respectively).

Conclusions: PaO2 and PaCO2 abnormalities were relatively frequent in OHCA attributed to acute PE with sustained ROSC. However, PaO2 and PaCO2 abnormalities were not associated to all-cause 7-day mortality. These results are somewhat unexpected, and may be related to small sample size and to inherent limitations of the study retrospective design. Impact of disturbed oxygenation and ventilation following resuscitation for OHCA attributed to acute PE deserves further evaluation.

P677

Association between abnormal partial pressures of arterial oxygen (PaO2) and carbon dioxide (PaCO2) to outcomes in acute pulmonary embolism

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Background: Abnormal partial pressures of arterial oxygen (PaO2) and carbon dioxide (PaCO2) are relatively frequent in acute pulmonary embolism (PE) patients. Ventilation/perfusion mismatch, impaired diffusion, and intrapulmonary shunting, have been all implicated as pathophysiological mechanisms. Moreover, evidence suggests that supra-physiological partial pressure values, such as hyperoxaemia, may negatively impact prognosis in some populations, namely in as acute myocardial infarction patients.

Purpose: We aimed to know whether hyperoxemia, hypoxemia, hypercarbia and hypocarbia in the first 6 hours after acute PE are associated with short-term mortality.

Methods: We retrospectively studied 483 consecutive patients hospitalized for acute PE along 3 years. Arterial blood gas (ABG) analysis was performed within the first 6 hours of hospitalization. We defined hyperoxaemia as PaO2 $\geq$300mmHg, hypoxemia as PaO2 <60mmHg, hypercarbia as PaCO2 >50mmHg, and hypocarbia as PaCO2 <30mmHg. Outcome was all-cause 7-day mortality. Associations between outcome and hyper- or hypoxemia and hyper- or hypocarbia were analysed by χ^2 (chi-square) test.

Results: Among the 483 acute PE patients comprising study population, mean age was 66.3 $\pm$ 17.6 years and 40% (n=192) were male. Mean Pulmonary Embolism Severity Index (PESI) score was 116.9 $\pm$ 49.4 points. All-cause 7-day mortality was 9.9% (n=48). Hyperoxaemia, hypoxemia, hypercarbia, and hypocarbia occurred in 11.8%, 30.8%, 17.2% and 22.6%, respectively. Hyperoxaemia was associated with all-cause mortality within 7 days, but did not reach statistical significance (hyperoxaamia: OR 2.17, CI 95% 1.02-4.64, p=0.056). Hypoxemia and hypercarbia were not associated with all-cause mortality within 7 days (p=0.250 and p=0.544, respectively). Hypocarbia was associated with all-cause mortality within 7 days, but did not reach statistical significance (OR 1.84, CI 95% 0.96 – 3.50, p=0.069).

Conclusions: PaO2 and PaCO2 abnormalities were relatively frequent in the first 6 hours of hospitalization for acute PE. Hyperoxaemia and hypocarbia tended to be associated to higher short-term mortality. These results reinforce the need for further studies, adequately accessing the effect of disturbed oxygenation and ventilation, as well as the effect of therapeutic interventions over them, in acute PE patients.

P678

Risk-stratification and age-adjusted D-dimer test: Are there satisfactory in acute pulmonary embolism?

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Background/Aims: Pulmonary embolism is connected with high morbidity and mortality. Prognostic assessment is important for the management of patients with pulmonary embolism. Pulmonary embolism often has a nonspecific clinical presentation. The use of diagnostic testing in an attempt to avoid missing the potentially life-threatening diagnosis increases both cost and use of medical resources. Various score systems exsist to evaluate the probability of pulmonary embolism, which can be used for risk stratification, to get the most accurate diagnosis. The aim of our study was to review the evidence for existing prognostic models in acute pulmonary embolism and determine validity and usefulness for predicting patient outcomes. We determine the accuracy of an age-adjusted D-dimer threshold to detect pulmonary embolism.

Materials and Methods: We performed a retrospective analysis of pulmonary embolism in three hungarian emergency departments. Data from 659 patients were included for this retrospective analysis. The Wells, Geneva score systems were used to reevaluate retrospectivly the risk of pulmonary embolism. The diagnosis of pulmonary embolism was accurate, when the CT verified it. We calculated specificity, sensitivity, negative and positive predictive values of the different strategies. Data were analyzed with a SPSS 20.0 statistical software. In our study, chi-square test, Independent-Samples T-test, ANOVA, korrelation interpretation were performed. P values of < 0.05 were considered to be statistically significant.

Results: Our study included 659 patients (407 women, 252 men), admitted to three ED. In the 659 cases all over 105 D-dimer assays, 51 CT angiograms and 212 chest X-ray examinations were carried out rudlessly, which could have mean saved money to the hospitals and less radiation to patients. The age adjusted D-dimer threshold was more specific (70 % versus 60 %) but less sensitive (95% versus 98 %). The sensitivity of the combination (risk-stratification and age adjusted D-dimer test) was 100 %.

Conclusions: Our study showed that Genfi score(which was calculated from the patients complaints, medical history and physical examination) had the closest correlation with the diagnosis. An age adjusted D-dimer limit has the potential to reduce diagnostic imaging. This is more accurate than a standard threshold of 500 ng/dl. The combination of the risk stratification and the age adjusted D-dimer we can safety diagnose the pulmonary embolism. Finally we can conclude that risk-evaluation in acute PE is indispensable and the appropriate use of guidelines results in lower costs.

P679

Aspartate and alanine aminotransferase levels in predicting short- and medium-term outcome in acute pulmonary embolism

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Background: Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) levels have been associated to prognosis in several acutely-ill populations. AST and ALT may increase in acute pulmonary embolism (PE) patients due to either hepatic congestion or reduced cardiac output leading to hepatic hypoxic injury.

Purpose: We aimed to assess the predictive value of AST and ALT on short- and medium-term outcome in acute PE patients.

Methods: We retrospectively studied 483 consecutive patients hospitalized for acute PE along 3 years. AST and ALT concentration levels were determined within the first 6 hours of hospitalization. We considered AST and ALT to be elevated if both were above 2 times upper limit of normal. Data on previous medical history, haemodynamic status, laboratory results and righ ventricular (RV) function were also retrieved. Short-term outcome was all-cause 7-day mortality. Medium-term outcome was all-cause 90-day mortality.

Results: Among the 483 acute PE patients comprising study population, mean age was 66.3 ± 17.6 years and 40% (n=192) were male. Elevated AST and ALT were present in 15.3% of patients (n=74). Age, male gender, previous chronic heart failure, previous chronic pulmonary disease and active cancer were not significantly associated with elevated AST and ALT (p=. 0.167, p=0.379, p=0.219, p=0.995 and p=0.413, respectively). Elevated AST and ALT were, however, predictors of all-cause 7-day mortality (OR 3.25, CI 95% 1.68-6.29, p < 0.001) and all-cause 90-day mortality (OR 2.25, CI 95% 1.33-3.81, p=0.002) in univariable analysis. When taken into consideration with other univariable predictors of all-cause mortality, such as score PESI, shock index, modified shock index, lactate, troponin I, NT-proBNP levels and RV dysfunction, only Pulmonary Embolism Severity Index (PESI) score was an independent predictor for 90-day all-cause mortality (OR 1.02, CI 95% 1.00-1.04, p=0.018).

Conclusions: High AST and ALT levels are relatively common in acute PE patients. On univariate analysis, they predicted short- and medium-term mortality. However, elevated AST and ALT concentrations were not found to be independent predictors of outcome in acute PE patients in our analysis.

P680

Should CT pulmonary angiography be routinely performed after ultrasound-facilitated catheter-directed thrombolysis in intermediate-high risk pulmonary embolism?

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Introduction: In patients with intermediate-to-high risk pulmonary embolism (PE), ultrasound-assisted catheter-directed thrombolysis (USAT) has been shown effective in reducing pulmonary artery pressure and right ventricular (RV) overload, The effect on the thromboembolic burden has been less univocal, with great reduction or even complete dissolution in some cases and little variation in others, when standard imaging techniques as namely conventional versus computed tomography (CT) pulmonary angiography (PA) were used.

Methods: We evaluated two patients who were referred to our center with an intermediate-high risk PE.

Clinical data of two patients were collected and analyzed. Both patients were screened by quantitative D-dimer assay, lower limbs ultrasonography and echocardiography. RV overload was evaluated through measurement of RV-to-left ventricle (LV) (RV/LV) ratio at computed tomography pulmonary angiography (CPTA) imaging. Diagnoses were made according to CTPA and confirmed by pulmonary angiography performed at the time of procedure.

In both patients, standard anticoagulation with intravenous unfractionated heparin was started and urgent (i.e., within the subsequent 12 hours) USAT arranged. The procedure was carried out in the Catheterization Laboratory and consisted in the advancement through a 6F sheath in the common right femoral vein of the dedicated USAT device within the trombo-embolus. Combined delivery of ultrasound and low-dose rt-PA (1 mg/h) was then started and continued for 20 hours. At the end of infusion the USAT device was removed and echocardiography and CTPA were performed.

Result: On admission both patients had normal blood pressure, but were tachycardic, and had frank desaturation. PESI score of these patients was 108 and 115, and RV/LV ratio 1,45 and 1,75 respectively. Both patients had increased cardiac troponin. Thus, both these cases were identified as intermediate-high risk class. Upon urgent CTPA, thrombo-embolus located in pulmonary arteries was demonstrated. After USAT the thrombo-embolus size was largely unchanged in both patients while the RV-to-LV ratio was reduced. Notably saturation and patient clinical status was improved.

Conclusion: In our experience USAT proved capable to reduce pulmonary pressure and RV overload and to improve clinical status. Interestingly, these clinical improvements were not associated with a similar reduction of the trombus burden as seen at CPTA. Therefore, the precise mechanisms of the favourable results observed with USAT in intermediate-high risk PE need further studies.

P681

Diagnostic performance of enlarged mediastinum on chest x ray in patients with suspected acute aortic dissection. The ADVISED-CXR multicenter prospective study

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On Behalf of: ADVISED-CXR study group

Background: Acute aortic syndromes (AAS) are deadly and difficult to diagnose diseases presenting with an array of common and unspecific symptoms. Chest radiography (CXR) to evaluate possible presence of enlarged mediastinum is commonly used as a screening test in patients with suspected AAS. Accordingly, in the IRAD registry from 12 international referral centers, CXR was obtained in 92% of patients with a final diagnosis of AAS. However, prospective studies of this diagnostic method in risk-stratified patients from the Emergency Department are lacking.

Purpose: We evaluated the diagnostic performance of mediastinum enlargement on CXR in all patients suspected of AAS, and in patients stratified with the aortic dissection detection risk score (ADD-RS) at low (ADD-RS=0) or not-high risk (ADD-RS≤1), per current guidelines.

Methods: In a multicenter prospective observational study, consecutive outpatients were eligible if they had ≥1 of the following: chest/abdominal/back pain, syncope, perfusion deficit, and if AAS was in differential diagnosis. Analysis was restricted to study patients were CXR was performed during the diagnostic work-up. The ADD-RS was computed by the treating or a researcher physician. Mediastinum enlargement on CXR was defined as a maximum width of mediastinum ≥80 mm at the level of the aortic knob, or a ratio of mediastinum to chest width >0.25. Final case adjudication was based on advanced imaging or on 14-day follow-up.

Results: 1098 patients were analyzed. 78 (14.1%) patients had AAS: 35 had type A aortic dissection, 16 had type B aortic dissection, 15 had intramural aortic hematoma, 7 had aortic rupture and 5 had penetrating aortic ulcer. ADD-RS>0 showed a sensitivity of 92.3% (95% CI 84 to 97.1%) and a specificity of 28% (95% CI 25.3 to 30.9%) for diagnosis of AAS, whereas the sensitivity and specificity of ADD-RS>1 were 46.1% (95% CI 34.8 to 57.8%) and 88.8% (95% CI 86.7 to 90.7%) respectively. Mediastinum was enlarged (CXR+) in 102 (9.3%) study patients and in 21 out of 78 patients with AAS. CXR+ showed a sensitivity of 26.9% (95% CI 17.5% to 38.2%) and a specificity of 92.1% (90.2 to 93.6%) for diagnosis of AAS. Within 292 patients with ADD-RS=0, 6 cases of AAS were observed, and CXR+ was found in 2 of them. Within 949 patients with ADD-RS≤1, 42 cases of AAS were observed, and CXR+ was found in 12 of them. The ADD-RS>0/CXR+ diagnostic strategy showed a sensitivity of 94.9% (95% CI 87.4 to 98.6%) and a specificity of 25.8% (95% CI 23.1 to 28.6%) for AAS. Sensitivity and specificity of the ADD-RS>1/CXR+ diagnostic strategy were 61.5% (95% CI 49.8 to 72.3%) and 82.2% (95% CI 79.8 to 84.5%) respectively.

Conclusions: The sensitivity of enlarged mediastinum on CXR for diagnosis of AAS is low. Absence of mediastinum enlargement on CXR is inadequate for AAS rule out in patients suspected of AAS, even if clinically stratified at non-high risk (ADD-RS≤1) or at low risk (ADD-RS=0).

P682

Short term outcome of thoracic endovascular aortic repair in patients with thoracic aortic diseases

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Aim and Background: Open surgical repair for thoracic aortic diseases is associated with a high perioperative mortality and morbidity. Most of type B aortic dissections are uncomplicated and are medically treated which carries a high mortality rate. Thoracic endovascular aortic repair is the first-line therapy for isolated aneurysms and complicated type B AD. We aim to test the safety of early TEVAR in patients with uncomplicated type B AD and patients with thoracic aortic aneurysms.

Methods: A total of 30 patients (24 men and 6 females; mean age 59±8 years) with uncomplicated type B AD and aortic aneurysm who underwent endovascular aortic

repair in National Heart Institute were followed up. Clinical follow-up data was done at one, three and twelve months thereafter. Clinical follow-up events included death, neurological deficits, chronic malperfusion syndrome and secondary intervention. Multi-slice computed tomography was performed at three and six months after intervention.

Results: Of the 30 patients, 24 patients had AD, and 6 patients had an aortic aneurysm. 7 patients underwent hybrid technique and the rest underwent the basic endovascular technique. Success rate was 100% for the basic endovascular procedures. 2 patients developed complications, type Ia endoleak and type IIa endoleak, however both improved after short term follow up. The total mortality rate was 10% throughout the follow-up. Both death and endoleak occurred in subacute and chronic cases, while using TEVAR in acute AD and aneurysm showed no side effects. Early TEVAR showed better results and less complications.

Conclusion: Along with medical treatment, early thoracic endovascular aortic repair should be considered as the gold standard in uncomplicated type B aortic dissections and aortic aneurysms.

Table 1. Indications for treatment.

Indication	No.
Aortic Dissection (N. 24)	
Acute cases	11
Sub-acute cases	7
Chronic cases	6
Hybrid technique	7
Basic Endovascular technique	17
Survival	21
Aortic Aneurysm (N. 6)	
Basic Endovascular technique	6
Survival	6
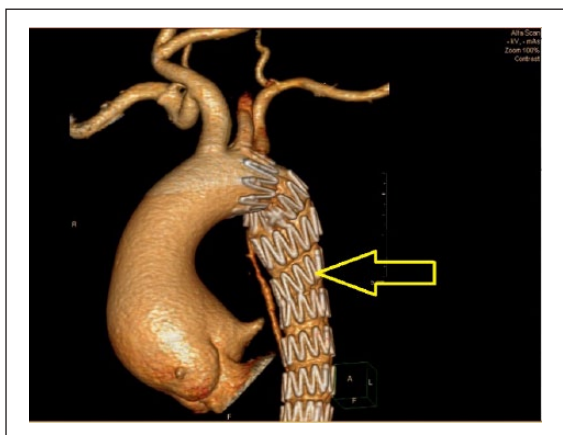
Post TEVAR

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Initial medical management in acute type A aortic dissection patients with thrombosed false lumen in the ascending aorta

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Background: Several studies from limited institutions reported the feasibility of medical management for selected patients with acute type A aortic dissection, who had intramural hematoma or retrograde extension.

Purpose: We retrospectively investigated the safety and feasibility of our conservative approach for patients with acute type A aortic dissection in the daily practice.

Methods: From January 2013 to December 2016, 105 consecutive patients were admitted to our institution as having acute aortic dissection, including 47 patients of type A. Initial medical management was attempted in selected type A patients who were clinically stable and had thrombosed false lumen without ulcer-like projection in the ascending aorta.

Results: Except for 7 patients without the indication for surgery, urgent surgery was underwent in 21 patients (76.0 ± 11.4 years old, male 38%), while 19 patients (73.0 ± 13.7 years old, male 47%) were treated with the initial medical management. The maximum diameter of ascending aorta was significantly larger in the surgically treated patients (49.7 ± 7.4 vs 43.2 ± 4.5 mm, p < 0.01). In the medically treated patients, 11 patients had an entry tear in the descending aorta, and 7 patients had completely thrombosed false lumen. Pericardial effusion was controlled in 3 patients with pericardial drainage. Their heart rate, systolic and diastolic blood pressure were 73.6 ± 13.3 bpm, 119.2 ± 20.6, 66.3 ± 16.5 mmHg at the admission to intensive care unit, and 78.2 ± 8.6, 110.9 ± 17.0, 62.4 ± 10.7 at 24 hours after, respectively. In-hospital mortality rate was 0%, while 2 patients underwent aortic repair in one week. During the follow up (455.6 ± 412.0 days), other 2 patients were operated on. In the surgically treated patients, 19 patients had classic dissection and 2 patients had thrombosed false lumen with ulcer-like projection in the ascending aorta. Brain ischemia and limb ischemia were observed in 4 and 4 patients, respectively, and in-hospital mortality rate was 9.5%.

Conclusions: The outcome of medically treated patients with our conservative approach was favorable. The initial medical management for selected patients with thrombosed false lumen in the ascending aorta might be safe and feasible.

P684

Trends in endocarditis: analysis of a 11-year cohort in a tertiary hospital

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Background: The epidemiology of infective endocarditis (IE) depends on a number of host factors whose prevalence can vary globally. The usual patient population affected by IE is sicker and older, often with many comorbid conditions. The risk is growing in younger populations due to the emerging epidemic of intravenous (IV) drug use.

Purpose: To analyse the epidemiology of IE in current clinical practice, and to identify predictors of in-hospital and 1-year mortality.

Methods: Retrospective analysis of medical records of patients who were admitted in a tertiary care centre and diagnosed with IE from 2006 to 2016. Cox regression was used to identify predictors of in-hospital and 1-year outcome, and Kaplan-Meier survival curves were analysed.

Results: We identified 147 episodes of endocarditis (142 patients), mean age 62 ± 16 years old, with a male predominance (73.4% males). 47.9% had previous valvular disease, 13% were current IV drug users and 13.7% were HIV positive. Prosthetic valve IE occurred in 25.2% of patients (implanted less than one year ago in 27%) and device-related IE in 3.4%. The mean number of valves affected was 1.2 ± 0.4, aortic valve was the more commonly involved (56.5%) and right-side valves were affected in 13.6%. Staphylococcus aureus was the most frequently isolated microorganism (24.5%), while in 19.7% blood cultures were negative. Mean hospital stay was 42.7 ± 2.9 days. Complications during hospitalization occurred in 81.0% pts; 48.3% had NYHA class III-IV heart failure (HF), 21.1% septic shock, 41.5% evidence of locally uncontrolled infection or periannular complication, and 32% embolization. 32% of patients were submitted to cardiac surgery. In-hospital mortality was 29.9%, at 1-year 39.4%, and at the end of follow-up (650 ± 864 days) was 46.9%.

Independent predictors of in-hospital death were the presence of abscess (HR 2.3, 95% CI 1.1-5.0, p=0.028), septic shock (HR 2.8, 95% CI 1.4-5.5, p=0.004) and occurrence of any complication (HR 8.1, 95% CI 1.1-62.4, p=0.044), while surgery had a protective effect (HR 0.25, 95% CI 0.08-0.71, p=0.01). Independent predictors of 1-year mortality were the occurrence of HF (HR 3.1, 95% CI 1.7-5.8, p < 0.001) or septic shock (HR 3.5, 95% CI 1.9-6.4, p < 0.001) during hospitalization, while fever at presentation (HR 0.47, 95% CI 0.26-0.86, p=0.014) and surgery (HR 0.33, 95% CI 0.16-0.71, p=0.004) had a protective effect.

Conclusions: Despite advances in medical, surgical, and critical care interventions, IE remains associated with significant morbidity and mortality. This study highlights the impact of complications of IE in the outcome of patients, and that surgery has a central role in the management of this condition.

P685

Improvement of adequacy index in sepsis protocol after referencing of tertiary center of cardiology

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On behalf of: ROAD Registry

Purpose: To evaluate the impact of referencing a tertiary center of cardiology (Emergency Department of InCor) in attending septic patients, comparing the adequacy of sepsis treatment in the pre and post referencing of the service.

Methods: Retrospective, unicentric and observacional study, comparing the adequate treatment of 186 patients in the pre-referencing [group I] and 153 in post-referencing [group II] (total of 339 patients) between january 2,014 and december 2,016. It was obtained demographic and laboratorial data, SOFA score and comorbidities. The primary outcome was adherence to the bundles of 3 and 6 hours. The secondary endpoint was mortality and progression to septic shock. The comparison between groups was performed through Q-square and T-test. Multivariate analysis was performed for secondary outcomes by logistic regression, being considered significant p < 0.05.

Results: In the comparison between groups I and II, there were significant differences regarding the prevalence of alcohol consumption (6.5% vs. 13.7%, p = 0.025) and heart failure (62.9% vs. 76.5% , p = 0.007), respectively. Regarding the adherence to the bundles, there was a significant improvement comparing between groups I and II (7.5% vs. 22.2%, p < 0.0001), with a significant increase in the compliance rate in the collection of blood cultures, administration of vasopressors and antimicrobials in the first hour. The mean time to start the antimicrobial in group I was 2.2 hours vs. 1.27 hour in group II (p < 0.0001). There were no significant differences between groups I and II in relation to mortality (51.6% vs. 60%, p = 0.124). However, group II presented a lower evolution for septic shock than group I (25.5% vs. 54.3%, OR = 3.85: 95% CI: 2.38-6.24, p < 0.0001), respectively.

Conclusion: The referral of care in the emergency cardiology department and the consequent reduction of overcrowding by noncardiological cases showed a significant improvement in most of the indicators of the sepsis protocol.

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Management and treatment of acute pericarditis in the emergency room

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Introduction: Acute pericarditis is the most frequent pericardial disease, and accounts for 5% of the patients admitted with chest pain to the Emergency Room (ER).

Methods: We reviewed all patients discharged form de ER or admitted in Cardiology with the diagnosis of Acute Pericarditis, from July 1st 2014 to February 28th 2017, with a mean follow up for 10.5 ± 8.9 months.

Results: 68 patients were diagnosis of acute Pericarditis, based on typical chest pain and electrocardiophic changes. 7 patients (10%) also had pericardial friction rub. 8 (11%) were admitted to the Cardiology Ward.

All patients were treated with nonsteroidal anti-inflammatory drugs (NSAIDs) and 28 (41%) also received colchicine. 20 (29%) had recurrent or continued symptoms despite treatment. Colchicine was prescribed more frequently to those who had cardiology consultation in the ER (63% vs 13%, p < 0.01). Recurrences were more common to those who did not receive colchicine (40% vs 14%, OR 4.00, p0.02). Only one needed steroids. 4 (5%) suffered pericardial effusion, but no pericardial drainage was performed. No patient died.

Conclusions: Acute Pericarditis is a frequent and benign disease. Diagnosis is based on the clinical and electrocardiographic changes. In our hospital, the use of colchicine was low despite the guidelines recommendations. Colchicine was associated to lower recurrences.

Imaging

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Parameters of myocardial mechanics as significant predictors of ventricular arrhythmias and suddenly cardiac death in STEMI patients in one year follow up

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Potential pathological substrate of worse prognosis and incidence of ventricular arrhythmia in STEMI pts treated with pPCI is abnormal function of myocardial mechanic.

Aim: To determine parameters of myocardial mechanics as predictors of incidence of ventricular arrhythmias (secondary VF and VT sustained) as potentially reason of suddenly cardiac death (SCD).in one year follow up (FU). We analyzed strain (S), strain rate (Sr), index of mechanical dispersion (IMD), post-systolic shortening (PSS) for all 18 LV segments and all three myocardial layers.

Method: We prospectively studied 120 consecutive STEMI pts treated with pPCI. Echo examination performed on day 4 ± 2 (VIVID 9GE, EchoPAC Ver 113).

Results: 9.2% pts had VF/VT/SCD. Parameters of longitudinal S and circumferential S of all three layers were significantly different between groups, as well as IMD and PSS. The best predictor of arrhythmias was global CS in endo- layer -14.98 ± 6.05 vs. $21.90 \pm 6.01\%$ (p=0.004) and systolic CS in endo- layer -13.07 ± 6.21 vs. $20.46 \pm 6.29\%$ (p=0.003). Cut off value as significant predictor for ventricular arrhythmias of global CS was -15.88% (ROC 0.825, p=0.004, sensitivity 71.4% and specificity 87.8%) and of systolic CS was -13.75% (ROC 0.824, p=0.04, sensitivity 71.4% and specificity 86.7%).

Conclusion: During one year FU after STEMI predictors of malignant ventricular arrhythmias and SCD may be circumferential strain of endocardium layer as well as longitudinal strain and conventional echo parameters.

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Implementation of 3D echocardiography in clinical practice: a comparison with cardiovascular magnetic resonance for left ventricular volumetric assessment in unselected patients

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Background: As a result of the rapid technological developments, left ventricle volumes assessment, by means of real time three dimensional echocardiography (RT3DE), has been recently incorporated in the last recommendations for cardiac chamber quantification. Despite several studies showed excellent correlation between RT3DE and the gold standard technique, represented by the cardiovascular magnetic resonance (CMR), real world data on unselected patients are still scarce.

Purpose: We aimed to compare RT3DE and CMR for left ventricle volumes analysis in consecutive, unselected patients admitted in our cardiology department due to acute cardiovascular condition (acute coronary syndrome, myocarditis, chest pain management etc.)

Methods: 24 consecutive patients planned for CMR underwent to RT3DE (EPIQ 7 and QLAB 3DQ-Advanced Philips, for, respectively, images acquisition and analysis).

A trained echocardiographer (accredited by the European Association of Cardiovascular Imaging) performed the studies, blinded from the results of CMR. 6 patients (25%) were excluded due to very poor acoustic window. Results are reported as mean +/− SD. Echocardiographic and CMR-derived data were compared by using unpaired t tests. Relationship between measurements was assessed by Pearson correlation analysis. The agreement between the two techniques was assessed according to the method described by Altman and Bland. A p value less than 0.05 was considered to be significant.

Results: We found no significant differences in left ventricle end-diastolic volume (LV-EDV), end-systolic volume (LV-ESV) and ejection fraction (LV-EF) between RT3DE and CMR (TABLE 1). We obtained the following correlations: EDV, r=0.66; ESV, r=0.86; EF, r=0.80 (figure 1, on the top, for EF analysis). Bland-Altman analysis for EDV, ESV and EF showed a bias +/− SD respectively of 0.05 +/− 36.3ml, 1.28 +/− 20.2ml and -3.2 +/− 8.9% (figure 1, on the bottom, for EF analysis).

Conclusion: Our study suggests that, in unselected patients, with satisfactory acoustic window, RT3DE performed by trained staff, is accurate in left ventricle volumes and function assessment when compared with the gold standard technique, represented by the CMR.

Table 1. Clinical manifestations and complication.

	RT3DE	CMR	p-value
LV-EDV (ml)	113,5 +/− 45,8	113,4 +/− 42,1	0,99
LV-ESV (ml)	50,4 +/− 32,9	49,2 +/− 40,1	0,79
LV-EF (%)	57,3 +/− 12,2	60,6 +/− 14,9	0,15
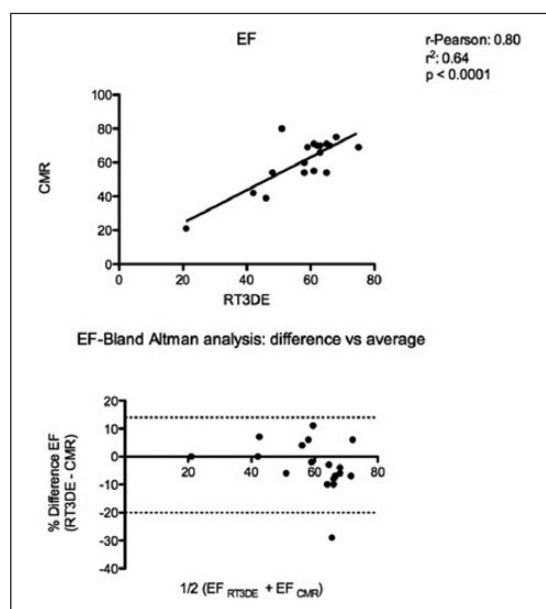
Figure 1

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Short and long-term outcomes of percutaneous mitral balloon commissurotomy in patients with rheumatic mitral stenosis and atrial fibrillation

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Introduction: Rheumatic fever and rheumatic heart disease continue to be a major health problem in the developing countries such as Tunisia. Rheumatic mitral stenosis (MS) is a very common problem in our population. The controversy persists that whether the presence of atrial fibrillation (AF) has a direct negative effect on the outcomes after of percutaneous balloon mitral commissurotomy (PBMC).

Purpose: The aim of this study was to assess the effect of AF on the immediate and long-term clinical and echocardiographic findings in the patients undergoing PBMC.

Methods: The immediate and long term procedural and clinical outcomes after PBMC of 476 patients with AF were retrospectively collected. A total of 129 consecutive patients with AF (group 1) was analysed and compared with 347 patients in normal sinus rhythm (group 2).

Results: The group 1 patients were older than the group 2 patients with normal sinus rhythm (44.96 ± 13.3 versus 29.81 ± 9.9 years; p<0.001) and presented more frequently with New York Heart Association (NYHA) class III-IV (84.5% vs. 71.2%; p = 0.02). A greater proportion of patients with AF had echocardiographic score >8 (39.5% versus 23.3%; p<0.001), calcified valves (15.4% versus 8.06%, p = 0.03) grade 1 mitral regurgitation (51.1% versus 37.4%; p = 0.006). The procedural success was 84.4% in group 1 and 89.2% in group 2 (p = NS). All patients had good immediate results as reflected by the post-PBMC mitral valve area (1.84±0.3 versus 1.89 ± 0.35 cm^2; p = NS). The mean follow-up was 48 ± 12.9 months. During the follow-up, patients in AF had a lower survival (96.9 versus 99.3%; p = 0.01), a lower event-free-survival (65.3% versus 72.2 %; p = 0.03), and a lower freedom from restenosis (31.3% versus 60.4%; p = 0.04). AF was an independent predictor of combined events (death, redo PBMC or mitral valve surgery; OR = 2.96; p < 0.01).

Conclusions: Patients with AF had worse long-term clinical and echocardiographic outcomes after PBMC.

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Echocardiographic analysis in hypertrophic cardiomyopathy: the left atrium function as a predictive of lv diastolic dysfunction and a worsening functional status

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Background: Hypertrophic cardiomyopathy (HCM) is associated to a left ventricular and atrial remodelling.

Purpose: The aim of our study was to evaluate the relationship of the left atrium function, assessed by conventional echocardiography and speckle tracking echocardiography, with the left ventricular diastolic function and symptoms in patients with HCM and normal systolic function.

Methods: We enrolled 34 patients with HCM and preserved left ventricular ejection fraction (LVEF). The left ventricular and atrial functions were assessed by two dimensional (2D) and three dimensional (3D) echocardiography, Doppler and speckle tracking imaging parameters.

Results: Despite preserved LVEF, patients with HCM had poorer left atrial (LA) and LV myocardial deformation. The 2D- LV global longitudinal strain (GLS) was -14.06% ±3.2. The 2D- LV GLS was significantly correlated with the interventricular septal thickness (IVST). The 3D- LV GLS was also significantly correlated with the IVST and the left ventricular mass index. The mean LA peak systolic strain (LAs) was 28.09% ±7.7. The LAs presented significant inverse correlations to the LV outflow tract (LVOT) obstruction, the E/E' ratio and the 3D left atrial ejection fraction. Patients with elevated LV filling pressures and symptoms had a worse LA function, as shown by lower LA ejection fraction and LA peak systolic strain.

Conclusion: The left atrium strain measurements may be helpful as a complementary method to evaluate diastolic function in HCM patients and can provide further insights into the physiology and symptoms occurrence in these patients.

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Mitral regurgitation in patients with coronary artery disease: causes, clinical significance

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Background: Mitral regurgitation (MR) of ischemic genesis is an unfavorable prognostic sign; the randomized studies on its surgical correction had led to ambiguous results. The mechanism of MR development can be various, the cause of its development can be the disorders of regional contractility, left ventricular remodeling and its dyssynchrony. The optimal treatment strategy of ischemic MR depends on the prevailing mechanism of its occurrence.

Purpose: To study the factors, associated with the presence of chronic MR in patients with stable coronary artery disease (CAD).

Material and methods: The study included 874 patients with CAD, who were examined and treated before the planned surgical interventions on coronary arteries, carotid arterial system, abdominal aorta and the arteries of lower limbs. Depending on the presence and severity of MR all the patients were divided into groups: group 1 – patients without MR (n=448), group 2– with MR grade I (n=378), group 3– with MR grade II-IV (n=48).

Results: It was noted that a clinical presentation of angina pectoris ant the signs of chronic heart failure (CHF) of grade I were observed more often among the patients without MR and with MR grade I (p=0.006 and p < 0.001). At this the presence of MI history and rhythm disturbances prevailed in the groups of patients with MR grade II-IV (83.3% и 29.2%; p=0.055 and p=0.059). According to the results of echocardiography the dimensions and the volumes of left ventricle (LV) cavity, left atrium in the group of patients with MR grade II-IV were significantly higher than the same parameters in other groups, and LV ejection fraction (EF) was the lowest (p < 0.001). In this group the presence of chronic LV aneurysm was registered more often (p=0.020). The analysis of prevalence and localization of coronary atherosclerosis didn't show any reliable intergroup differences except for the prevalence of significant stenoses of circumflex artery in the group of patients with MR grade I and MR grade II-IV (42.9% and 43.8%; p=0.047). Concurrently the risk of perioperative complications by EuroSCORE scale was lower among the patients without MR (p < 0.001). According to the results of multivariate analysis the independent predictors of MR grade II-IV detection were: the history of MI (p=0.044), LV aneurysm (p=0.004), the increase in LV end-systolic volume (ESV) (p < 0.001), the increase in risk by EuroSCORE scale (p=0.004), as well as the female gender, the presence of the symptoms of CHF and angina pectoris.

Conclusion: When performing the examination of patients with stable CAD a mild ischemic dysfunction of mitral valve was revealed in 43.2% of cases, moderate and severe dysfunction – in 5.5% of patients. The independent factors associated with the presence of moderate and severe MR were the presence of MI history, LV aneurysms, increased LV ESV, symptoms of CHF and angina pectoris, female gender, herewith no connection with the localization of coronary stenoses was noted.

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Correlation between the PR interval and the echocardiographic atrial function

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Introduction: The PR interval on the electrocardiogram reflects the conduction time of the electrical activity of the atria towards the ventricles, an elongated PR interval correlates with a significant risk of occurrence of atrial contraction on closed atrio-ventricular valves equivalent to the syndrome Of pace maker in stimulated subjects. The aim of this work is to study the repercussion of the prolongation of the interval PR on the left atrial function?

Materials and methods: This is a prospective study including 54 sinus rhythm patients, recruited during the daily activity of echocardiography. All patients received an electrocardiogram on the day of the echocardiographic examination.

Results: The average age of our patients was 53.2 ± 12.78 years (range: 12 and 78 years) and the sex was 0.5. The duration of the mean PR interval was 161.29 ± 27.2 ms (range: 110-200 ms).

14.8% had ischemic heart disease, 25.9% had mitral valvular heart disease, 18.5% had valvular heart disease, and 27.7% had a healthy heart.

We noted that the duration of the PR interval in ms was correlated to the size of the left atrium (Vol OG max: $p = 0.002$, $r = 0.42$; , 54) whereas it was inversely correlated to the left atrial systolic function parameters such as the shortening fraction ($p < 0.001$, $r = -0.46$), the ejection fraction of the left atrium $P = 0.001$, $r = -0.55$) and the velocity of the systolic wave S at half lateral wall of the OG ($p = 0.04$, $r = -0.27$).

Conclusion: The results of our study show that slow atrioventricular conduction may alter the left atrial systolic function regardless of underlying cardiac disease.

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The spectrum of severe valvular heart disease in a developing country: epidemiology, clinical presentation, diagnosis and surgical treatment

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Introduction: Valvular heart disease (VHD) is a significant and an increasing health problem in the developing world.

Purpose: The aim of this study was to determine the prevalence, the epidemiological profile, the clinical feature and the management of the severe VHD in a single cardiovascular tertiary centre of Tunisia.

Methods: From January 2010 to December 2012, 589 adult cases with severe VHD were included in this retrospective study. All the required demographic and echocardiographic characteristics and the treatment strategies were studied. The incidence of early postoperative complications and mortality were evaluated.

Results: The mean age was 55 (17.39) years. Out of the 589 patients, 360 (61.1%) were females. Overall, the mitral valve was the most common involved valve (55.8%) and 30.4% patients with severe VHD had mitral stenosis (MS) alone. Rheumatic heart disease (RHD) was the most common etiology present in 355 (60.3%) patients. Surgical treatment was indicated in 64.1% of all patients. Among total, only 36.1% of the cases underwent valve replacement surgery. Percutaneous mitral balloon commissurotomy was performed in only 36% of the patients with severe MS. Early postoperative complications were occurred in 39 (24.2%) patients. Mortality was occurred in 22 (13.6%) patients. There were no significant correlations between age, comorbidities, simultaneous valve repair and replacement, the anatomic site of the valve and the incidence of postoperative mortality.

Conclusion: VHD remains public health problem in Tunisia and is frequently severe. RHD was the most common etiology of severe VHD. Severe VHD was associated to high early postoperative morbidity and mortality. Multicenter collaborative studies will help to better describe the pattern of VHD and there should be a renewed focus on the prevention of RHD.

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Can global longitudinal strain replace Simpsons biplane method on echography left ventricular ejection fraction evaluation?

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Introduction: Transthoracic echocardiography (TTE) is the most commonly used method for measuring left ventricular ejection fraction (LVEF), but its reproducibility remains controversial, especially in patients with akinetic, hypokinetic or dyscinetic areas.

Speckle tracking echocardiography assesses myocardial deformation and left ventricular systolic function by measuring left ventricular global longitudinal strain (LV GLS), which is more reproducible, but is not used routinely in the clinical setting.

Objective: Our aim was to find the relationship between global longitudinal strain and left ventricular ejection fraction.

Methods: 72 consecutive patients were retrospectively selected, (53 males (73.6%), mean age 66 ± 11 years), with no clinical exclusion criteria, from those referred to 2D transthoracic echocardiography (TTE).

TTE was performed on GE echocardiography machine and analysis executed with EchoPac version 113.

Left ventricular ejection fraction and global longitudinal strain was performed by two different physicians, blinded to other evaluation.

According to 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure, patients were divided in 4 groups accordingly LVEF, preserved if ≥ 50%, slight reduced ≥ 40-49%, moderately reduced ≥35-39% and severely reduced <35%.

Results: In the studied population the mean LVEF was 42 ± 11,8% and LV GLS was -10 ± 4,4%.

A strong correlation was found between LVEF and LV GLS (r=-0,78, p < 0,001).

20 patients have LVEF ≥ 50% with LV GLS -14,9 ± 4,1%, 19 patients have LVEF ≥ 40-49% with LV GLS -11,4 ± 3,1%, 14 patients have LVEF ≥35-39% with LV GLS -8,0 ± 1,8% and LVEF <35% was observed in 19 patients with LV GLS -6,8 ± 2,4%.

Conclusion: Two-dimensional GLS is easy to obtain and relates with LVEF. It would be particularly useful when a suboptimal acoustic window turns LVEF measurement by Simpson's biplane method difficult and in patients with myocardial motility alterations.

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Coronary artery disease can be predicted by two-dimensional speckle tracking analysis on dobutamine stress echo

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Introduction: Two-dimensional speckle tracking (2D ST) provides valuable information for regional wall motion abnormalities.

Some studies have demonstrated the adjuvant value of 2D ST for assessment of coronary artery disease on dobutamine stress echo (DSE) on patients with normal left ventricular ejection fraction (LVEF) and without previous transmural infarction.

However the adjuvant value of 2D ST on DSE in patients with depressed LVEF, prior transmural infarction or valvular disease remains unknown.

Objective: Our aim was to determine the value of 2D ST on diagnose of coronary artery disease during DSE.

Methods: Sixty two consecutive patients (with and without cardiac disease) referred to DSE were retrospectively selected among those who were referred to coronary angiography within a 3 month interval.

Left Ventricular Global Longitudinal Strain (LV GLS), circumferential Strain (CS) and Radial Strain (RS) were measured at rest and peak stress. Also, differences between rest and peak stress were calculated. LV GLS of anterior and posterior segments corresponding to LAD and RCA or LCX territories were evaluated separately.

It was defined as significant coronary artery disease (CAD) in angiography, the disease of 1 or more of the 3 main epicardial arteries, with lumen occlusion ≥ 70%.

Results: Of 62 patients 47 (75,9%) were male and mean age was 66 ± 11 years. Mean left ventricular ejection fraction was 42,5 ± 12 %. Coronary angiography revealed significant lesions in 37 patients.

Comparing patients with significant CD and no CD, we found a significant differences in LV GLS at rest (-8,7 ± 3,2 vs -12,8 ± 4,7; p < 0,001) and peak (-8,4 ± 3,1 vs -12,8 ± 3,9; p < 0,001), peak CS (-8 ± 3,6 vs -10 ± 3,7; p=0,02) and rest RS (16,3 ± 8,5 vs 22,7 ± 17; p=0,04) were predictive of significant CD.

LV GLS of LAD territory at rest (-7,4 ± 2,9 vs -11,5 ± 4,7; p < 0,001) and peak (-6,4 ± 2,5 vs -11,4 ± 4,2, p < 0,001) are predictive of LAD disease. LV GLS of RAD/CX territory at rest (-8,9 ± 3,1 vs -11,8 ± 4,3; p=0,001) and peak (-7,8 ± 2,8 vs -10,8 ± 4; p=0,002) are predictive of RCA and/or LCX disease. (Table 1)

Conclusions: LV GLS could have adjuvant value to predict significant coronary disease on DSE, including on patients with cardiac disease.

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Predictors of events occurrence during follow-up of patients with nonischaemic heart disease submitted to stress echocardiography

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Introduction: Stress echocardiography (SE) has been applied to assess ischaemic heart disease (IHD). Due to the growing evidence supporting the use of SE beyond the evaluation of IHD, its increasing implementation makes important to evaluate predictors of events occurrence during follow-up (FUP) of patients (pts) submitted to SE.

Purpose: To evaluate predictors of events occurrence during FUP of pts with nonischaemic heart disease submitted to SE.

Methods: Retrospective study that included pts submitted to SE (both exercise (EE) and dobutamine (DE) echocardiograms) performed in a single centre during a 4 year-period (2013-2016). Was defined as event occurrence during FUP: death from any cause, hospitalization due to heart failure (HF), ischemic stroke and myocardial infarction (MI). Univariate analysis was performed.

Results: Were performed 2430 SE, of which 291(12%) weren't performed to assess IHD. Were excluded 47 pts that didn't have FUP and 34 SE that were performed in the same pts. At the end, were included 210 pts: 112(53%) were male, mean age 55±17 years.

The SE was performed in 74(35%)pts due to valvular heart disease (VHD), in 70(33%) pts due to hypertrophic cardiomyopathy, in 25(12%) due to symptoms during exercise (normal rest echocardiogram), in 20(10%) post-pulmonary embolism, in 11(5%) due to pulmonary hypertension, in 10(5%) post-endarterectomy and in 4(2%) for arrhythmia evaluation.

Were performed 190 (90%) EE and 20(10%) DE.

During a mean time FUP of 764±2268 days, events occurred in 16(8%) pts: 7 died, 1 had a MI, 2 had an ischemic stroke and 9 were hospitalized due to HF. During FUP, 11 pts (5.8%) were at NYHA class III, 11(31%) at NHYA class II and 120(64%) at class I.

Pts that had more events during FUP were older (72 vs 56 years;p<0.001), with more history of coronary artery disease (35 vs 5%;p<0.001), dyslipidaemia (12 vs 5%;p=0.03) and chronic renal disease (67 vs 6%;p<0.001). Pts that performed the exam due to VHD had also more events during FUP (14 vs 4%;p=0.02), specifically pts with aortic stenosis (19 vs 4%;p=0.001). Pts with diabetes tended to have more events (17 vs 6%;p=0.06).

Complications during SE occurred in 43(20%) pts. We didn't find an association between events occurrence during FUP and complications occurrence, METS or heart rate achieved, SE duration or gender.

Conclusion: In this sample, the incidence of events occurrence during FUP in pts with nonischaemic heart disease submitted to stress echocardiography was 8%. Pts that had more events during FUP were older, with history of coronary artery disease, dyslipidaemia and chronic renal disease and performed the exam due to valvular heart disease, specifically due to aortic stenosis. These results showed that cardiovascular risk factors and valvular heart disease remain the most important factors for events occurrence. Duration, METS achieved or complications occurrence during SE performance were not associated with adverse future events.

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The focused cardiac ultrasound skill of newly-graduated doctors: which acoustic window has the highest yield?

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Background: Focused cardiac ultrasound (FCU) is a useful modality in conjunction with physical examination to confirm diagnosis and guide management in emergency care settings. The examiner's image acquisition skill is an important factor that determines the effectiveness of FCU. However, the FCU skill of newly-graduated doctors after a short training course has not yet been demonstrated.

Objective: To assess the FCU skill of newly-graduated doctors after a short training course, as determined by the quality of images and time to diagnosis.

Methods: Doctors who had graduated within the past three months from a university in northeast Thailand were enrolled. The three-hour FCU training course consisted of lectures on basic cardiac anatomy, clinical scenarios, and a hands-on two-dimensional echocardiography session including examples of parasternal short axis (PSA) and long axis (PLA), subcostal view (SC), pleural scanning view (PS) and apical four-chamber view (A4C) echocardiographs. After one month, an experienced cardiologist and an emergency physician evaluated participants' skills in terms of image quality and time to diagnosis on real patients.

Results: There were 70 participants, 45.7% of whom were male. The mean age was 24.6 years old. In terms of image quality, PSA for evaluating left ventricular (LV) structures was highest achieved at 61.4%, followed by PLA for detecting pericardial effusion (44.3%), SC for evaluating inferior vena cava diameter (37.1%) and pericardial effusion (36.7%), and PS for detecting pleural effusion (28.5%). The A4C for detecting LV structures had the lowest achievement (17.1%). Time to diagnosis of LV abnormalities was shortest in PSA (15 seconds) and longest in A4C (35 seconds). A total of 87.1% of participants passed the hand-on examination in all acoustic windows.

Conclusion: Newly graduated doctors were capable in FCU after a short training course. However, PSA, PLA and SC acoustic windows resulted in higher quality and shorter times than A4C, indicating that these should be the first acoustic windows used in acute cases.

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Analysis between coronary angiotomography and sensitive troponin in chest pain with intermediate risk of acute coronary syndrome: preliminary results

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On Behalf of: ROAD Registry

Background: Great advances have been achieved recently regarding diagnostic methods aided by coronary computed tomography angiopraphy (CCTA) and sensitive troponins. However, various questions about these methods still remain obscure and there is no effective comparison between them in patients with intermediate risk.

Purpose: Evaluate the sensitivity and specificity of sensitivity troponins in the detection of coronary artery disease in patients with chest pain and the intermediate probability of acute coronary syndromes (ACS) compared with CCTA.

Methods: Were included prospectively 65 patients with chest pain and TIMI risk score 3 or 4. All patients were submitted to troponin measurements and CCTA. If CCTA showed coronary stenosis ≥ 50%, patient was initiate the ACS treatment and was hospitalized to have coronary cineangiography. If CCTA shows lesions < 50%, the patient was discharged and monitored for 30 days. A second sampling of the troponin was obtained (blinded) from all patients three hours after the first collection in order to evaluate for an increase/decrease of troponin. The commercial kit of troponin ADVIA Centaur® TnI-Ultra was used. The CCTA used was the 320-channel Toshiba Aquilium machine. The primary endpoint was number of adverse events after 30 days (hospitalization, death and myocardial infarction) and compare the sensitivity, specificity, and negative and positive predictive values between the sensitivity troponin versus CCTA in the detection of an ACS. Comparison between groups was made by T-test and Q-square. Complementary analysis was made by ROC curve calculating the area under the curve (AUC) and the cut-off score of the relation between 20% increase/decrease troponin and coronary lesions on angiography/events.

Results: About 43.1% were male and the median age was 63.8 years. There were not observed deaths in this study. Nineteen patients were submitted to cineangiography and significant occlusion was confirmed in 73.7%. In 46 patients with lesions in CCTA < 50%, were observed 2 (4.3%) events in 30 days (p = 0.338). When troponin increased/decreased at least 20%, were observed significant coronary occlusions in 52.6% (sensitivity = 57.1%, specificity = 60%, accuracy = 57.9%) and events in 4% (p = 0.733) (sensitivity = 50%, specificity 61.9%, accuracy = 61.5%). AUC of troponin related to significant coronary lesion was 0.543 (CI 95% [0.255 – 0.831]) and troponin related to events was 0.468 (CI 95% [0.151 – 0.785]). The cut-off scores were 45% (sensitivity = 42% and specificity = 80%) and 27.50% variation of troponin (sensitivity = 50% and specificity = 65%, respectively related to significant lesions and events.

Conclusion: Until this moment, use of CCTA in this group of patients was safe with few events described. Variations of 20% in sensitive troponin had showed limited power in detection of coronary lesions and events. Maybe higher variations could be better in that.

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Acute myocarditis: Comparison and correlation between cardiac magnetic resonance and transthoracic echocardiogram

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On behalf of: ROAD Registry

Background: Acute myocarditis concern a myocardial inflammation mainly caused by viral infection. Cardiovascular magnetic resonance (CMR) can be used to diagnose that. Comparison of findings between CMR and transthoracic echocardiogram (TTE) was not done in this group of patients.

Purpose: The aim of this study was to describe CMR findings in patients with acute myocarditis and compare them with TTE.

Methods: Thirty eight patients with acute myocarditis confirmed by CMR were included. In all of them were excluded significant coronary artery stenosis (normal or stenosis < 50% of the vessel diameter on angiography, computed tomography or both). They were selected and prospectively submitted to CMR exam in a 1.5T Philips scanner between May 2,013 and December 2,016. Ventricular function by cine MR with SSFP technique, and myocardial tissue characterization using late gadolinium enhancement (LGE) were evaluated. 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). TTE was made in two dimensions by method of Simpsons. Myocardial was divided in twenty areas to comparison. Analysis was made by linear regression of Cox and Q-square.

Results: Among 38 patients, median age was 40.6 years, 71.1% were male and median ejection fraction by TTE was 53.7%. Edema was showed by CMR in 63.2% and late enhancement in 94.7% of patients (92.1% intramyocardial). The median number of segmentary myocardial regions/patient affected observed was higher in CMR (0.84 + 2.07) than in TTE (0.58 + 1.46). Comparing CMR with TTE, correlation between segmentary hypokinesias showed significate difference in basal portion of inferior wall (2.6% vs. 10.5%, p = 0.013, respectively). Linear regression showed bad correlation between CMR and TTE comparing segmentary hypokinesias (R = 0.316/Anova=0.053).

Conclusions: In the study, CMR and TTE showed not correlation in detect segmentary hipokinesias in patients with acute myocarditis, and CMR was superior than TTE in that.

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Nontraditional risk factors in patients with type 2 diabetes mellitus and established cardiovascular disease

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Aim: The importance of traditional risk factors is well known, but they can not completely explain pathogenesis of atherosclerosis. This fact has led to considerable interest in nontraditional risk factors for atherosclerosis.

Methods: The present study is cross-sectional study. We studied 121 inpatients, they admitted our hospital ER with type 2 Diabetes Mellitus (DM) and established cardiovascular disease (CVD). 89 were male, mean age was 55.8 ± 10.0 years. 74(61%) of them had past myocardial infarction(MI), 10(8.5%) – percutaneous coronary intervention and 37(30.5%) past ischemic stroke. C-reactive protein (CRP) and endothelial dysfunction (ED) were estimated. ED was assessed with Doppler ultrasonography by the measurement of flow-mediated dilation (FMD) in the brachial artery, CRP was measured by ELISA method.

Results: Mean plasma concentration of CRP was 3.2 ± 1.04mg/dl, 100(82.6%) patients had C-reactive hyperproteinemia (OR=1.9, CI 1.6-4.9, p=0.02). Most of patients were found ED (89%), results of FMD was abnormal (OR - 6.9, CI- 2.7-17.4, p=0.001). there were found statistical significant association between had C-reactive hyperproteinemia and ED (OR - 2.3, CI – 1.05-5.23,p=0.02).

Conclusions: On the basis of obtained results we suppose that inflammation and ED are ordinary events in most of patients with type 2 DM and established CVD. The assessment of nontraditional risk factors may provide clinically useful information for the evaluation of attributable risk in order to the prevention new CVD events.

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