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Dear Colleagues and Friends,

Welcome to Acute Cardiovascular Care 2015, the fourth annual congress of the *Acute Cardiovascular Care Association* of the ESC.

Over the years, **Acute Cardiovascular Care** congress has become the interactive forum where cardiologists, emergency physicians, intensive care physicians, internists, surgeons, imaging specialists, interventionalists, nurses, students, paramedics, and other professions in the field gather and serve ACCA's mission to "*improve the quality and care and outcomes of patients with acute cardiovascular diseases*".

Main topics this year include antithrombotic therapy, atrial fibrillation, platelet inhibition and coagulation, bleeding, circulatory support, device therapy, fibrinolytic therapy, interventional cardiology, renal replacement therapy, sepsis and infection... We have also given special emphasis to innovation and a selection of presentations and cases are dedicated to the main theme: **Innovating to improve Acute Cardiovascular Care**.

During the next few days, hear about new findings, exchange with your peers and learn from the experts. The scientific programme offers more than 40 sessions, including the **ACCA School** practical sessions now on Saturday morning, as well as Clinical Case presentations, Debates, Meet the Experts ... Stay up to date with the most recent research and developments with the rich abstract-based programme, and visit our industry partners in the exhibition and satellite sessions for demonstrations of their latest innovations.

We are pleased to invite you to attend the Inaugural Session on Saturday evening, and honoured to welcome Professor Frans Van de Werf for the Keynote Lecture: "The history of the fight against coronary thrombosis". Join us afterward in the Exhibition for the Networking reception.

Vienna, often described as Europe's cultural capital, is a city unique in charm and romance. With its musical heritage and cultural attractions, we hope you will also find time to enjoy this amazing city during your stay.

On behalf of ACCA and the entire Scientific Programme Committee, we thank you for being with us and wish you an enjoyable conference.

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Moderated Poster Session I: acute heart failure, cardiac shock, SCD Saturday, 17 October 2015 15:00 - 16:00

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Validation of a risk-prediction tool for severe heart failure in the setting of non-ST elevation acute coronary syndrome

A Espinola Pardo,¹ K Medina Rodriguez,¹
M Butron Calderon,¹ S Rufian Andujar,²
JC Garcia Rubira,¹ A Reina Toral,³
AD Ruiz Duthil,¹ E Blanco Ponce¹ and
RJ Hidalgo Urbano¹

¹University Hospital of Virgen Macarena, Department of Cardiology, Seville, Spain ²University Hospital Virgen de Valme, Department of Cardiology, Seville, Spain ³University Hospital Virgen de las Nieves, Intensive Care Department, Granada, Spain

Purpose: Acute heart failure (HF) is a common complication of acute coronary syndromes (ACS), and increases mortality rate. We propose to create a score to predict patients who will develop severe HF throughout the course of Non-ST ACS.

Methods: After identifying predictors for severe (Killip III or IV classes) heart failure (AHF group) by means of a multivariable logistic regression model in the population of ARIAM registry suffering from a non-ST elevation ACS, we aim to apply a risk model in a population of patients.

Results: A multivariable model was conducted over 10160 patients, without HF at admission (Killip I class), to find out 5 independent variables for progression to severe heart failure: age, diabetes, peripheral artery disease, previous use of diuretics and heart rate at admission. We studied a 293 patient sample in which we validated our score. One patient's data were missing. 15 patients (5.1%) had severe HF (AHF group), showing higher mortality (6.7% vs 0.7%). AHF patients were older ($p=0.002$) with no differences in relation to gender. This group showed a greater proportion of non-smokers, dyslipidemia, previous myocardial infarction, stroke and peripheral artery disease. They were more often previously

treated with statins, nitrates and diuretics. We compared our 5-variable score with TIMI and GRACE scores in AHF predicting ability showing higher c statistics (0.79 vs 0.73 vs 0.74).

Conclusions: Age, diabetes, peripheral artery disease, previous use of diuretics and heart rate at admission have been identified as predictors for progression to AHF in non-ST ACS in our population. Using an easy score could accurately identify patients in risk for AHF, better than TIMI or GRACE scores.

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Predicting neurological outcome of survivors after a sudden cardiac death with a quick score on admission

M Nunez Torras,¹ J Aboal,¹ A Fageda,¹ D Bosch,¹
N Coma,¹ J Pascual,¹ J Iglesias,¹ G Vazquez,¹
R Brugada¹ and P Loma-Osorio¹

¹University Hospital de Girona Dr. Josep Trueta, Girona, Spain

Purpose: Neurological evaluation and prognosis of sudden death survivors is a major clinical challenge. We sought to construct and evaluate a score of neurological outcome of patients alive after sudden death with variables recorded at hospital admission

Methods: We studied 203 consecutive patients with a diagnosis of sudden cardiac death recovered between 2007 and 2014, admitted to the CCU. A univariate and multivariate analysis was performed to select the most relevant clinical and analytical variables. Cerebral performance category at discharge > 2 was considered a poor neurological outcome.

Results: Multivariate analysis showed that age > 65 ($p = 0.05$, 2.51 ExpB), a first non-shockable rhythm ($p = 0.002$, ExpB 9.68), Time to restoration of spontaneous circulation (ROSC) > 30 min ($p = 0.001$, ExpB 4.39) and first PH < 7.2 ($p = 0.012$, ExpB 3.44) were independent factors of poor neurological outcome. We adjudicated age > 65 to 1 point, pH < 7.2 and ROSC > 30 minutes to 2 points and a first non-shockable rhythm to 3 points. A score > 4 , had a specificity of 95% and a sensitivity

of 35% for predicting a poor neurological outcome at discharge. The area under the ROC curve for this score was 0.824 ($p < 0.001$).

Conclusions: This score had a high specificity to determine which patients have poor neurological prognosis in survivors of a sudden death.

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Circulating endothelial-derived microparticles as a marker of clinical outcomes in acutely decompensated heart failure patients

A Berezin,¹ A Kremzer,¹ YU Martovitskaya,¹
T Samura¹ and T Berezina²

¹State Medical University, Zaporozhye, Ukraine ²Private medical center VitaCenter, Zaporozhye, Ukraine

Background: Chronic heart failure (CHF) remains a leading cause of cardiovascular morbidity and mortality. Although the endothelium is considered an important targeting for traditional risk factors and endothelial dysfunction remained independently associated with mortality from CHF, the innate molecular mechanisms affected forming of endothelial dysfunction is being became not fully clear. The study aim was to evaluate whether circulating microparticles with apoptotic or non-apoptotic phenotypes are useful for risk assessment of three-year cumulative fatal and non-fatal cardiovascular events in acutely decompensated CHF patients.

Methods: It was studied prospectively the incidence of fatal and non-fatal cardiovascular events, as well as the frequency of occurrence of death from any cause in a cohort of 388 patients after resolving acutely decompensated CHF. Circulating levels of NT-pro brain natriuretic peptide (NT-pro-BNP), high-sensitivity C-reactive protein (hs-CRP), endothelial apoptotic microparticles (EMPs) were measured at baseline.

Results: Median follow-up was of 2.32 years (IQR= 1.8-3.1). During follow-up, 110 cardiovascular events (including 43 fatal cases) were determined. Additionally, 74 subjects were hospitalized repetitively due to

CHF and also 16 subjects were readmitted in the hospital due to other cardiovascular reasons. In the univariate logistic regression analysis, the main factors independently related with cumulative end-points were creatinine, fasting glucose, HbA1c, total cholesterol, uric acid various types of EPMs, NT-pro-BNP, hs-CRP, NYHA class, decreased left ventricular ejection fraction (LVEF) less 45%, and type 2 diabetes mellitus. In multivariate model NYHA class, decreased LVEF (less 45%), NT-pro-BNP, hs-CRP, CD144+/CD31+/annexin V+ EMPs, and CD31+/annexin V+ EMPs remained statistically significant for cumulative

end-point. Adding of CD144+/CD31+/annexin V+ EMCs and CD31+/annexin V+ EMCs to the standard ABC model may improve the relative IDI for cumulative end-point by 11.4% and 10.5% respectively. These data are very promising, and they are required new investigation with higher statistical power and increased sample size to be overcome the internal limitations of the study.

Conclusion: Apoptotic phenotype of circulating microparticles may relate three-year combined clinical outcomes in CHF patients. Finally, identification of the pattern of circulating EMPs may help to determine patients at high risk and reclassify it for possible biomarker-guided therapy of acutely decompensated CHF.

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Confusion - a predictor of poor outcome in cardiogenic shock patients

A Kataja,¹ T Tarvasmaki,¹ J Lassus² and VP Harjola³

¹Helsinki University Central Hospital, Internal medicine, Helsinki, Finland ²Helsinki University Central Hospital, Heart and lung center, Helsinki, Finland ³Helsinki University Central Hospital, Division of Emergency Care, Department of Medicine, Helsinki, Finland

Purpose: Confusion is a common symptom among critically ill patients, but its significance as a predictor of poor outcome may be underestimated. The aim of this study was to compare the characteristics of cardiogenic shock patients with and without confusion as a sign of hypoperfusion and to investigate its predictive value in 90-day mortality.

Methods: The CardShock study was a multicenter, prospective, observational study. Cardiogenic shock (CS) was defined as severe hypotension of cardiac cause with clinical signs of hypoperfusion such as confusion (altered mental status, somnolence, agitation or delirium), cold periphery or oliguria and/or serum lactate > 2 mmol/L despite adequate fluid resuscitation. 219 patients were enrolled within 6 hours from detection of CS.

Results: Of 219 patients, mental status was recorded in 216 patients at the time of enrolment. 68% (148) had confusion (C) whereas 31% (68) had normal mental status (NC). Patients with C were significantly older than NC (mean 68 vs. 64 years, $p < 0.05$). No differences in gender or co-morbidities were found. Confusion was associated with higher blood glucose (mean 13.4 vs 11.2 mmol/L, $p < 0.05$), higher blood lactate (median 3.4 vs. 2.3 mmol/L, $p < 0.001$) and lower systolic blood pressure (sBP) (mean 76 vs. 80 mmHg, $p < 0.05$). The 90-day mortality rate was significantly higher in C vs. NC patients (50% vs. 22%, $p < 0.001$). Kaplan-Meier curve for 90-day mortality is shown in Figure 1. Confusion was found to be an

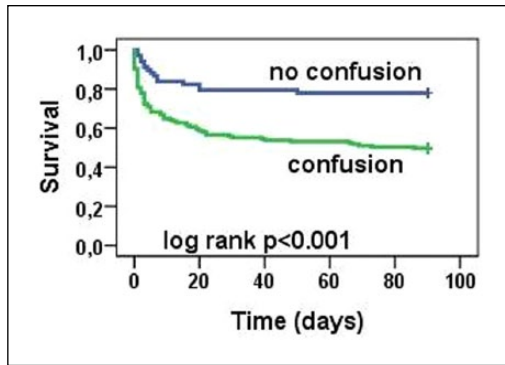


Figure 1.

independent predictor of 90-day mortality (odds ratio 2.42; 95% CI 1.06, 5.53; $p < 0.05$, adjusted for age, gender, lactate, sBP and left ventricular ejection fraction).

Conclusions: Confusion is a common but maybe overlooked symptom in CS and is independently associated with increased 90-day mortality.

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Urinary output predicts outcome in patients undergoing extracorporeal membrane oxygenation

K Distelmaier,¹ C Roth,¹ C Binder,¹ L Schrutka,¹ IM Lang,¹ G Heinz,¹ G Maurer,¹ H Koinig,¹ A Niessner¹ and G Goliasch¹

¹Medical University of Vienna, Vienna, Austria

Aims: Extracorporeal membrane oxygenation (ECMO) represents a valuable and rapidly evolving therapeutic

option in patients with severe heart or lung failure. However, survival remains poor and accurate risk stratification challenging. We therefore evaluated the predictive value of urinary output (UO) within 24-hours after ECMO initiation on mortality in patients undergoing veno-arterial ECMO support following cardiovascular surgery and aimed to improve established risk prediction models

Methods and Results: We included 240 patients undergoing veno-arterial ECMO therapy following cardiovascular surgery at a university-affiliated tertiary care center into our registry. During a median follow-up time of 51 months (IQR 34-71), 65% of patients died. 24-hour UO was the strongest predictor of outcome among renal function parameters with a HR per 1-SD of 0.55 (95% CI 0.42-0.71; $P < 0.001$) for 30-day mortality and of 0.63 (95% CI 0.53-0.76; $P < 0.001$) for long-term mortality. Most remarkably, 24-hour UO showed additional prognostic value beyond that achievable with the SAPS-3 score indicated by improvements in C-Statistic for 30-day mortality (SAPS-3:0.52 vs. SAPS-3&24-hour UO:0.64; $P = 0.003$) and category-free net reclassification index (NRI) (44%; $P = 0.001$) as well as for long-term mortality in C-Statistic (SAPS-3:0.54 vs. SAPS-3&24-hour UO:0.63; $P = 0.01$) and NRI (46%; $P < 0.001$).

Conclusion: We identified 24-hour UO as a strong and easily available predictor of mortality in patients undergoing ECMO therapy following cardiovascular surgery. Implementation of 24-hour UO leads to a substantial improvement of established risk prediction models in this vulnerable patient population. These results are particularly compelling, because measurement of UO is inexpensive and routinely performed in all critical care units.

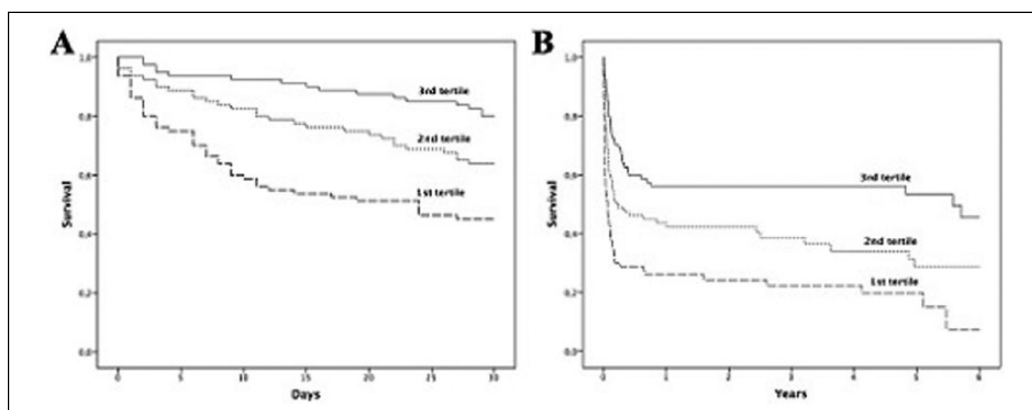


Figure 1.

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Procedural and clinical results for urgent transcatheter aortic valve implantation in patients with critical symptomatic aortic stenosis

U Landes,¹ K Orvin,¹ P Kodner,¹ A Assali,¹
H Vaknin-Assa,¹ S Schwartzberg,¹ A Levi,¹
S Shapira,¹ A Sagie¹ and R Kornowski¹

¹Rabin Medical Center, Cardiology, Petah Tikva, Israel

Introduction: Severe AS patients may develop acute heart failure (HF) resilient to medical therapy. Herein we report our Transcatheter Aortic-Valve Implantation (TAVI) experience in treating unstable AS patients who are poor surgical candidates and require urgent intervention for their aortic valve disease.

Methods: Patients were included in the Urgent TAVI group if they were admitted with acute HF due to severe AS, when pulmonary edema, incessant syncope or incessant angina persisted despite of medical therapy and TAVI performed at the same hospital stay. Other patients were included

in the elective TAVI group which was farther divided by hospitalization history in the previous 6 months .

Results: Of 369 consecutive patients who underwent TAVI, 27 (7.3%) underwent the procedure urgently. Urgent patients were more common to be frail and at higher mortality risk with surgical AVR. Pulmonary edema was the most common clinical presentation, requiring mechanical ventilation in 5 and aortic balloon valvuloplasty in 4 patients. Pre-procedural imaging assessment used fewer modalities, yet, implantation success remained high and there was no difference in periprocedural complications. Although 30-days functional capacity was reduced, patients maintained similar 30-days major adverse cardiovascular events compare to the elective patients.

Conclusions: Short-term outcome following TAVI appears to be reasonable among patients who undergo the procedure urgently compare to elective or semi-elective patients. For patients with severe AS who develop acute HF resilient to medical therapy and at high risk for surgical AVR, urgent TAVI may be a viable treatment strategy. More data on larger populations and long term outcome is needed.

Table 1.

	Elective TAVI N=158	Semielective TAVI N=184	Urgent TAVI N=27	P-value
All-cause death	6 (3.8%)	8 (4.3%)	1 (3.7%)	0.8
Cardiovascular death	2 (1.3%)	4 (2.2%)	1 (3.7%)	0.6
Stroke or Transient ischemic attack	4 (2.5%)	0	1 (3.7%)	0.2
Myocardial infarction	0	1 (0.5%)	0	0.5
Major adverse cardiovascular events	12 (7.6%)	13 (7.1%)	2 (7.4%)	0.8
NYHA class III-IV	34 (21.5%)	40 (21.7%)	17 (63%)	<0.001
Prosthetic valve mean systolic gradient (mm Hg)	8.3 (±4.3)	7.4 (±4.1)	6.9 (±3.2)	0.25
Prosthetic valve regurgitation (moderate or more)	4 (3.3%)	6 (4.2%)	2 (8.7%)	<0.001

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Prognostic value of right ventricular myocardial involvement in hypertrophic cardiomyopathy: an ultrasound speckle-tracking analysis.

RIM Ben Said,¹ RIM Ben Said,¹ RIM Ben Said,¹ AMIRA Zaroui,¹
AMIRA Zaroui,¹ AMIRA Zaroui,¹ T Chalbia,¹
T Chalbia,¹ T Chalbia,¹ N Khedher,¹ N Khedher,¹
N Khedher,¹ M Ben Halima,¹ M Ben Halima,¹
M Ben Halima,¹ A Farhati,¹ A Farhati,¹ A Farhati,¹
MS Mourali,¹ MS Mourali¹ and MS Mourali¹

¹La Rabta hospital, cardiology, Tunis, Tunisia

Introduction and aim: Previous studies showed increased right ventricular (RV) wall thickness and RV diastolic dysfunction in a large proportion of patients affected by hypertrophic cardiomyopathy (HCM). However, the role of RV myocardial function in HCM patients' prognosis still remains unclear. The aim of this study was to explore RV function in patients with HCM by 2-D speckle tracking echocardiography (2-D-STE) and to determine the prognostic significance of RV function in HCM patients.

Methods and results: We evaluated prospectively 105 patients with HCM (mean age 49 years old, 74 males) and 65 healthy subjects matched for age, gender. Left ventricular (LV) and RV function were assessed by 2-D-STE. Patients

were followed up for 38 months to relieve cardiovascular events, defined as: syncope, non sustained ventricular tachycardia, atrial fibrillation, and congestive heart failure. LV global longitudinal strain was significantly lower in HCM patients compared to controls ($-13.81 \pm 6.19\%$ Vs -21.85 ± 1.46 , $p=0.01$). RV strain measurements were also significantly lower in HCM patients ($-15.59 \pm 5.81\%$ Vs $-21.77 \pm 1.93\%$; $p=0.01$). 28 patients (26.66%) presented a cardiovascular event after a median time of 22 months. Multivariate analysis revealed that RV strain is an independent predictor of cardiovascular events: a cutoff of -17.5% predicted cardiovascular events with 69% sensitivity and 63% specificity (OR=3.986; CI 95% [1.449-10.963]; $p=0.005$). RV strain had also an additive value to predict cardiovascular events compared to the value of the presence of more than 3 conventional sudden cardiac death risk factor (OR=8.75, 95 % CI [1.57 - 48.54] , $p=0.01$ Vs OR=4.58, 95 % CI [0.76 - 27.49], $p=0.02$)

Conclusion: RV myocardial systolic deformation is impaired in HCM patients when compared with healthy subjects. The RV strain appears to have significant predictive value in HCM, regardless of the presence of other detrimental risk factors. a cutoff of -17.5% predicted cardiovascular events with 69% sensitivity and 63% specificity.

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In-hospital and medium-term prognosis of Takotsubo cardiomyopathy. A portuguese multicentre study

L Reis,¹ K Domingues,² C Lourenco,³ O Azevedo,⁴ A Almeida,⁵ B Marmelo,⁶ J Almeida,⁷ S Leao,⁸ B Picarra⁹ and N Marques¹⁰

¹University Hospitals of Coimbra, Coimbra, Portugal ²Hospital of Santarem, Santarem, Portugal ³Hospital Centre do Tamega e Sousa, Penafiel, Portugal ⁴Alto Ave Hospital Center, Guimaraes, Portugal ⁵Hospital Garcia de Orta, Almada, Portugal ⁶Hospital Sao Teotonio, Viseu, Portugal ⁷Hospital Center of Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal ⁸Hospital Center of Tras-os-Montes and Alto Douro, Vila Real, Portugal ⁹Hospital Espirito Santo de Evora, Evora, Portugal ¹⁰Faro Hospital, Faro, Portugal

Introduction: Takotsubo cardiomyopathy (TC) is characterized by a transient dysfunction of the left ventricle (LV). The prognosis of TC is usually favourable, but it is not completely understood.

Aim: To evaluate the in-hospital and medium term prognosis of TC patients.

Methods: Multicentre study involving 12 hospitals with inclusion of all patients diagnosed with TC in the last 10 years. We evaluated demographic, clinical, electrocardiographic and echocardiographic data. We evaluated the prevalence

of complications during hospitalization and in the medium term prognosis.

Results: We included 165 patients with TC, predominantly women (89,1%). The mean age was 66 ± 14 years.

Chest pain was the most common clinical presentation (88,5%). A physical or emotional stress was identified as a possible triggering factor in 59, % of patients.

The admission ECG showed ST segment elevation (44,8%) or negative T waves (37,6%) in most patients. Troponin I was elevated on admission in 89,1% of cases (maximum value of $19,0 \pm 4,4$ ng/ml). The echocardiogram showed akinesia in mid and apical segments of the left ventricle in 94,5% of cases. Coronary angiography showed no coronary artery disease in 85,4% of patients. Complete recovery of LV function occurred in 44,8% during hospitalization and 50,9% up to 15 days after admission.

During the hospital stay ($6,9 \pm 6,6$ days) the following complications occurred: heart failure (28,5%), cardiogenic shock (9,7%), atrial fibrillation (7,9%), acute pulmonary edema (3,6%), complete atrioventricular block (2,4%), ventricular tachycardia (2,4%), stroke/TIA (1,8%), LV thrombus (1,8%) and death (1,4%).

During a follow-up of 41 ± 31 months, the following complications occurred: TC recurrence (4,3%), stroke/TIA (3,1%) and death (1,8%).

Conclusions: In the acute phase TC has a high prevalence of complications, particularly heart failure, cardiogenic shock and atrial fibrillation, also occurring severe complications such as stroke or death. The medium-term prognosis of TC is good, with a low incidence of TC recurrence, stroke or death.

Rapid Fire “Best abstracts and Innovations” Saturday, 17 October 2015 16:00- 17:30

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Predicting the risk of 3-day mortality of patients with acute heart failure at emergency department: the 3D-EAHFE scale

O Miro,¹ J Jacob,² P Herrero,³ FJ Martin-Sanchez,⁴ V Gil,⁴ R Escoda¹ and P Llorens⁵

¹Hospital Clinic de Barcelona, Emergency Department, Barcelona, Spain ²Hospital Universitari de Bellvitge, Emergency Department, Hospitalet de Llobregat, Spain ³University Hospital Central de Asturias, Emergency Department, Oviedo, Spain ⁴Hospital Clinic San Carlos, Emergency Department, Madrid, Spain ⁵General University Hospital of Alicante, Emergency Department, Alicante, Spain

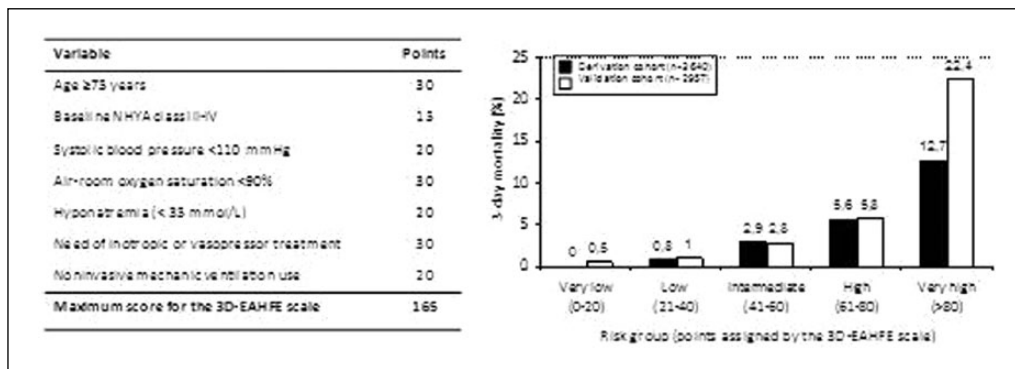
Objective: Prediction of death during the first days of an acute heart failure (AHF) episode is specially relevant at emergency department (ED), since it could address early intensive measures and resources or inform relatives about foreseeable adverse outcomes. We developed a prognostic scale (3D-EAHFE scale) to stratify patients according to very short-term risk of death.

Methods: We used the EAHFE database, a multipurpose, multicenter registry with prospective follow-up currently including 9078 patients with AHF attended at 34 Spanish ED from 2007 to 2014. Up to 232 variables are recorded in every patient, including demographic, comorbidities, therapeutic regimen at home and data of acute episode, including treatment and management. The derivation cohort included patients recruited during 2009 and 2011 EAHFE registry spots (n=4897). The classifying variable was all-cause 3-day mortality. Patients lacking

key variables were excluded. The 3D-EAHFE scale was created based on the results of the multivariate analysis, and then validated using the cohort of patients included in the 2014 spot (n=3233).

Results: Derivation cohort included 3640 patients and 102 (2.8%) died at 3 days. The final 3D-EAHFE scale contained 7 clinical variables (see Figure) with a total possible score from 0 to 165 points, and rendered a C-statistic of 0.80 (0.76-0.84; $p < 0.001$). The validation cohort included 2957 patients (66 died, 2.2%), and C-statistic was 0.76 (0.70-0.82; $p < 0.001$). Five groups were defined from very low to very high risk, with a 3-day mortality (derivation/validation) of 0/0.5%, 0.8/1.0%, 2.9/2.8%, 5.5/5.8% and 12.7/22.4%, respectively.

Conclusions: The 3D-EAHFE scale allows the stratification and prediction of the very short-term prognosis of patients with AHF at ED according to five risk groups.



3D-EAHFE scale risk stratification.

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Contemporary real world use of the novel P2Y12 inhibitors in patients with an acute myocardial infarction. A treatment paradox

R Beigel,¹ Z Iakobishvili,² N Shlomo,³ A Segev,¹ D Zahger,⁴ S Atar,⁵ S Gottlieb,⁶ I Goldenberg,¹ E Asher¹ and S Matetzky¹

¹Sheba Medical Center, Tel Hashomer, Israel ²Rabin Medical Center, Petah Tikva, Israel ³Neufeld Cardiac Research Institute, Tel Aviv, Israel ⁴Soroka University Medical Center, Beer Sheva, Israel ⁵Nahariya Hospital for the Western Galilee, Nahariya, Israel ⁶Shaare Zedek Medical Center, Jerusalem, Israel

Background: Data are limited regarding real-world experience with novel P2Y12 inhibitors. We aimed to assess to assess implementation, outcome, and therapy adherence to P2Y12 inhibitors in acute myocardial infarction (AMI) patients undergoing percutaneous coronary intervention (PCI).

Methods: Consecutive AMI patients undergoing PCI were included in a prospective, multicenter, observational, nationwide registry. Logistic regression analysis for independent predictors of P2Y12 inhibitor therapy was performed. Patients were followed for 30 days' assessment of therapy adherence, net adverse clinical events (NACE) including death, recurrent acute coronary syndrome, stroke, stent thrombosis, urgent revascularization, and major bleeding.

Results: We evaluated 1093 patients, of whom 381 (35%) were treated with clopidogrel, 468 (43%) with prasugrel, and 244 (22%) with ticagrelor. Independent predictors for under-treatment with novel P2Y12 inhibitors were older age (OR 0.17, 95% CI 0.1 – 0.27, $p < 0.0001$), prior stroke (OR 0.41, 95% CI 0.2 – 0.68, $p = 0.008$), and non ST-elevation myocardial infarction (NSTEMI) (OR 0.37, 95% CI 0.26 – 0.54, $p < 0.0001$). Treatment with novel P2Y12 inhibitors was associated with a numerical lower rate of NACE at 30 days compared with clopidogrel, with a similar treatment

Table 1.

Independent predictors	Odds ratio	95% Confidence interval	P
Age	0.17	0.10 – 0.27	<0.0001
NSTEMI	0.37	0.26 – 0.54	<0.0001
Prior Stroke	0.41	0.2 – 0.68	0.008
No history of hypertension	0.61	0.41 – 0.87	0.014
No prior clopidogrel therapy	0.52	0.29 – 0.93	0.048

Logistic regression analysis for independent predictors for under-treatment with novel P2Y12 inhibitors compared with clopidogrel.

effect in higher risk subsets who were less likely to receive the drug (p for interaction > 0.1).

Conclusions: Despite current recommendation, in real-world practice, a significant proportion of patients still receive clopidogrel. Paradoxically, those individuals which are older with more co-morbidities, and those presenting with NSTEMI seem to benefit at least the same as other patients when treated with novel P2Y12 inhibitors. Our findings emphasize the need for improved implementation of recommendations into current practice.

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Nt-probnp shows diagnostic accuracy for atrial fibrillation in patient with stroke

A Ramirez Moreno,¹ JR Siles Rubio,¹ M Noureddine,² JC Salas,¹ F Ruiz-Navas,¹ A Valle-Alberca,³ A Milan-Pinilla,³ E Zambrano-Medina,³ A Milan-Pinilla³ and L Inigo-Garcia³

¹Cardiology Department. Hospiten., Estepona, Spain

²Servicio de Medicina Interna. Hospiten, Estepona, Spain

³Hospital Costa del Sol, Marbella, Spain

Aim: To determine if cut-off points of serum NT-proBNP at the time of stroke onset can help identify pAF in cryptogenic stroke patients.

Methods: Among 264 ischemic stroke patients admitted to a stroke unit NT-proBNP serum levels were measured within 72 hours of stroke onset. Etiology was classified using TOAST criteria. In patients with cryptogenic stroke, 24-Holter was done to look for pAF within the first week, three and six months after admission. First, patients with a defined etiology were used to construct a Receiver Operating Characteristic (ROC) curve for the diagnosis of AF. From this curve, the sensitivity and specificity of pre-established cut-off points was calculated. A logistic regression was done to assess the independent relationship

of lnNT-proBNP with AF controlling for confounders. In a second phase the cut-off points previously established were evaluated, in patients with cryptogenic stroke, for the diagnosis of pAF.

Results: In 184 patients a stroke etiology could be established. Fifty five patients had the diagnosis of cardioembolic stroke related to AF. Using multivariate analysis the lnNT-proBNP was independently associated to AF (OR -2.7, 95%IC 1.6-4.5; p<0.0001). The Area Under the Curve (AUC) of the ROC curve of lnNT-proBNP for the diagnosis of AF was excellent -0.91, 95%IC (0.87-0.95). The previously defined cut-off of 265.5 pg/ml had a sensitivity of 100% and specificity of 70.6%. The cut-off point of 912 pg/ml had a specificity of 87.5%. 80 patients had a cryptogenic stroke. In 17 (21%) pAF was found during follow-up. The cut-off point of 265.5 pg/ml had a sensitivity of 88.2% and a specificity of 61.9% for the diagnosis of pAF. The cut-off point of 912 pg/mL had a specificity of 88.9%.

Conclusion: NT-proBNP had good accuracy to predict pAF in patients with cryptogenic stroke and can help evaluate these patients.

68

C-reactive protein at admission is an independent predictor of major complications and need for emergent surgery in infective endocarditis patients: a protocol based prospective observational study

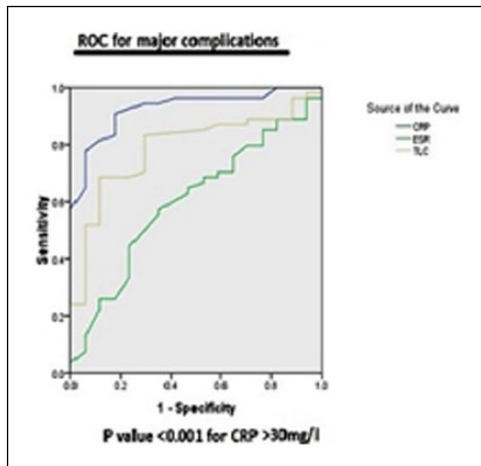
S Mohanan,¹ R Gopalan Nair,¹ V Haridasan,¹ C G Sajeev¹ and M N Krishnan¹

¹Kozhikode Medical College, Department of Cardiology, Kozhikode, India

Background: Major complications in infective endocarditis (IE) remain high even in the current era of critical cardiac care. A reliable parameter that predicts complications and identifies patients requiring urgent surgery is lacking.

Purpose: Our aim was to study the value of baseline clinical, laboratory and microbiological parameters in IE patients. We focussed on the independent utility of inflammatory markers like leukocyte count (TLC), erythrocyte sedimentation ratio (ESR) and C-reactive protein (CRP) regardless of blood culture positivity or vegetation size.

Methods: This was a prospective study on consecutive IE patients (by modified Duke criteria) who were admitted to our tertiary care centre between 2012 to 2015. Predefined laboratory-microbiological sampling protocols and antibiotic-initiation protocols were followed. Peak levels



CRP predicting major complications.

of CRP and ESR in the first 3 days of admission were documented.

Results: Out of 101 patients treated, 71 patients with definite IE by Duke criteria were analysed. Mean age was 43 ± 16 years. Blood cultures were positive in 55% ($n=39$) of which *Staphylococcus* was the most common. Major complications occurred in 72% ($n=53$) and in-hospital mortality was 31% ($n=22$). Mean ESR and CRP levels were 102 ± 31 mm/hr and 51 ± 20 mg/l respectively. In multivariate analysis, high CRP levels were independently predictive of poor outcomes ($p < 0.001$) including major complications, embolic events and need for urgent surgery. A CRP > 30 mg/l predicted complications with a sensitivity of 91% and specificity of 82%. CRP level > 40 mg/l predicted mortality (relative risk = 8.12, $p = 0.003$).

Conclusion: Major complications and mortality continue to remain high for IE. The interim results identify the independent value of CRP levels as a marker for early risk-stratification of IE patients.

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Echocardiographic assessment of global longitudinal right ventricular function in patients with an acute inferior ST elevation myocardial infarction and proximal right coronary artery occlusion

M Hutyrá,¹ J Precek,¹ T Skala,¹ Z Tudos,² M Kocher,² D Vindis,¹ O Moravec,¹ J Zapletalova,³ A Smekal¹ and M Taborsky¹

¹Palacky University, Faculty of Medicine and Dentistry, 1st Dept of Internal Medicine-Cardiology, Olomouc, Czech Republic ²Palacky University, Faculty of Medicine and Dentistry, Department of Radiology, Olomouc, Czech Republic

³Faculty of Medicine and Dentistry, Department of Biophysics, Olomouc, Czech Republic

Purpose: Right ventricular (RV) myocardial infarction (MI) is a frequent concomitant of an acute inferior MI. We set out to determine the diagnostic value of speckle tracking echocardiography in comparison with cardiac magnetic resonance (CMR) for RV stunning and scar prediction.

Methods: 55 patients (66 ± 11 years) with an acute inferior ST elevation MI who underwent percutaneous coronary intervention (PCI) of an occlusion in the proximal right coronary artery were prospectively enrolled. An echocardiography was done on the day of presentation and on the 5th day thereafter. A CMR was subsequently performed 1 month after the MI. The CMR was used to differentiate between the group with RV scar ($n = 26$) and without RV scar ($n = 29$).

Results: RV peak systolic longitudinal strain (RV-LS) at presentation determined RV scar ($-21.1 \pm 5.1\%$ vs. $-9.9 \pm 4.6\%$, $p < 0.0001$). The RV-LS correlated with the scar extent ($r = 0.83$, $p < 0.0001$). RV-LS $> -15.8\%$ had a sensitivity of 92% and a specificity of 83% in RV scar prediction (AUC 0.93). RV-LS was superior to TAPSE and TDI in determining the presence of RV scar. According to RV-LS values at presentation and on the 5th day, 3 subgroups were defined: G1-normal deformation (RV-LS $< -20\%$), G2-RV stunning (baseline RV-LS $> -20\%$, 5th day RV-LS $< -20\%$) and G3-persistent RV dysfunction (unchanged RV-LS $> -20\%$). In G1, there was neither RV scar nor clinically relevant hypotension. In G2, 58% of patients developed RV scar and 36% had hypotension. In the G3, 83% developed RV scar and 55% had hypotension.

Conclusions: The myocardial deformation analysis could provide an early prediction of RV scar. It allowed the patients to be divided into subgroups with normal RV function, stunning and persistent RV dysfunction.

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Left atrial dysfunction as a correlate of the occurrence of supra-ventricular arrhythmia in hypertrophic cardiomyopathy: Strain 2D analysis

R Ben Said,¹ AMIRA Zaroui,¹ T Chalbía,¹ M Ben Halima,¹ A Farhat¹ and MS Mourali¹

¹La Rabta hospital, cardiology, Tunis, Tunisia

Introduction and Aim: Hypertrophic cardiomyopathy (HCM) represents a generalized myopathic process

affecting both ventricular and atrial myocardium. We aimed to assess left atrial (LA) function by two-dimensional speckle tracking echocardiography (2DSTE) and its relation with the occurrence of supra-ventricular arrhythmia during the follow-up.

Methods and results: We prospectively enrolled 105 consecutive patients with HCM and 65 normal subjects matched for age and gender: Left ventricular (LV) global longitudinal strain (GLS) was assessed as well as the LA strain: s-wave (LASs). Patients were followed up for 38 months to relieve cardiovascular events, defined as supra-ventricular arrhythmia (Atrial fibrillation and/or atrial flutter).

GLS was significantly lower in patients with HCM compared to controls ($-13.81 \pm 6.19\%$ Vs $-21.85 \pm 1.46\%$ $P < 0.001$). Patients with HCM had also a significantly lower LASs compared to controls ($24.46 \pm 10.75\%$ Vs $32.37 \pm 3.33\%$, $P < 0.01$). 14 patients (13.4%) present a cardiovascular event after a median time of 22 months. LASs was significantly lower in the group of patients with supra-ventricular arrhythmia compared to the group without supra-ventricular arrhythmia ($19.9 \pm 10.40\%$ Vs $26.76 \pm 10.25\%$; $p < 0.001$). In multivariate analysis, LA Strain is an independent predictor of supra-ventricular arrhythmia: a cutoff of -20% predicted supra-ventricular events with 80% sensitivity and 86% specificity (odds ratio 4.11, 95% CI [0.021-5.59], $p = 0.006$).

Conclusion: LA myocardial deformation is significantly impaired in patients with HCM compared to healthy controls. A cutoff of -20% predicted supra-ventricular events with 80% sensitivity and 86% specificity.

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ECG evaluation in patients with pacemaker and suspected ACS: which score to apply?

P Freitas,¹ MB Santos,¹ M Castro,¹ J Brito,¹ L Raposo,¹ HM Gabriel,¹ RC Teles,¹ M Almeida,¹ J Ferreira¹ and M Mendes¹

¹Hospital de Santa Cruz, Cardiology, Lisbon, Portugal

Introduction: The appropriate management of ACS greatly relies on ST-segment analysis. In patients with pacing the ECG shows a LBBB-like pattern. There are several criteria to diagnose ACS in patients with LBBB but only the Sgarbossa score (Sg1996) was validated in pacemaker patients (pts). The aim of this study was to validate and compare Sgarbossa (Sg1996) with new scores (Selvester, Sv2006; Smith, Sm2012) in the diagnosis of STEMI in pacemaker pts.

Methods: We identified pacemaker pts submitted to coronary angiography due to suspected ACS in a high volume single-centre prospective registry. Biventricular or AAI pacing modes were excluded. Twelve-lead ECGs at 25 mm/second recorded at first medical contact were retrospectively analyzed by two blinded cardiologists. STEMI was defined according to angiographic evidence of acute occlusion or stenosis with peak 24-hour cardiac troponin I level greater than or equal to 10 ng/mL. Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy were calculated for each score.

Results: A total of 51 patients with ventricular pacing, out of 5072 coronary angiography exams performed due to ACS, were identified between 2010-2014. Eight patients were excluded due to AAI pacing. Median (IQR) age was 78 (71-85) years, 81% males. STEMI was diagnosed in 26 pts (60%). Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy are presented in Table 1.

Conclusion: From our knowledge this is the first study that evaluates LBBB scores in predicting STEMI in pacing patients. Despite the limitations of the ECG in diagnosing STEMI in this population, the Smith's score had the highest accuracy and clearly outperformed Sgarbossa's score.

Table 1.

	Sensitivity	Specificity	PPV	NPV	Accuracy
Sgarbossa	16 (4.5–36.1)	100 (81.5–100)	100 (39.8–100)	46 (30.1–62.8)	51.1
Smith	40 (21.1–61.3)	83 (58.6–96.4)	77 (46.2–95)	50 (31.3–68.7)	58.1
Selvester	40 (21.1–61.3)	72 (46.5–90.3)	67 (38.4–88.2)	46 (27.5–66.1)	53.4

Sensitivity, specificity, positive and negative predictive value (PPV and NPV) and accuracy of different scores in percentages (95% CI).

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PCWP: Is there a need for a standardized loop diuretics regimen monitoring in ADHF patients?

I Sharka,¹ S Myftiu,¹ A Quka,² M Xhafaj,¹
E Dado,³ L Kresto,¹ A Duka,¹ A Kristo¹
and I Balla¹

¹University Hospital Center Mother Theresa, Department of Cardiology & Cardiac Surgery, Tirana, Albania ²University Hospital Center Mother Theresa, Tirana, Albania ³Hygeia Hospital of Tirana, Department of Cardiology, Tirana, Albania

Purpose: loop diuretics represent one of the mainstay of therapy in ADHF patients. Applied diuretics regimens are not well standardized, usually guided by symptomatic and congestion relief outcomes. We aimed to investigate the role of non-invasive pulmonary capillary wedge pressure (PCWP) and other echographic parameters in optimizing loop diuretics therapy in AHF pts; comparison of management outcomes between a traditional versus an echo-derived parameters monitoring approach.

Methods: 137 consecutive ADHF patients underwent a double-blinded two arm cross-over study, 68 pts assigned to traditional monitoring approach (TMA) and 69 pts to the echo-derived hemodynamic parameters monitoring approach (HMA). TMA consisted on a daily evaluation of dyspnea, clinical congestion status, PASP, whereas a HMA included also echo-derived PCWP, cardiac index, inferior vena cava collapsibility index, dyspnea severity scale evaluation (DSS). A composite endpoint (diuretic resistance, a prolonged in-hospital treatment >a week, appearance of cardio-renal syndrome type I, cardio-hepatic syndrome, or cardiac death) was defined a complicated clinical course. Cross-over switching to continues IV diuretics regimen was considered on each treatment arm, when diuretic resistance occurred. An intention-to-treat analysis was performed to compare the effectiveness of TMA and HMA on diuretics therapy optimization and AHF pts outcomes.

Results: Comparing clinical data between two arms (TMA vs HMA), there were no significant differences on age (59.3±0.6 vs 61.4±0.3, p>.05); sex (males) (65.7% vs 6%, p>.05); diabetes (32.4% vs 29.2%, p>.05); hypertension (23.4% vs 19.6%, P>.05); ischemic cardiomyopathy (67.2% vs 63.9%, p>.05), NYHA class ≥ III (67% vs 71%, p>.05); inotropes (25.8% vs 32.3%, p>.05). Significant differences were found on diuretic resistance (36.5% vs 18.2%, p<.01); daily max diuretics dose (250±60 vs 180±40mg, p<.05); frequency of continuous infusion switching : 2 (1 to 3) vs 1 (0 to 2),

p<.05; CRS I (59.3% vs 36.4%, p<.001); hospitalization days (15±6 vs 7±5, p<.05). HMA showed significant difference regarding clinical composite outcomes HR 0.73 (95% CI : 0.12-0.96).

Conclusions: Despite advances in AHF treatment, diuretics use remains a not well standardized therapy, leading not rarely to unnecessary and even harmful high doses, as well as continuous infusions. Further large-scale randomized studies are needed to properly outline an optimal standardized monitoring approach to diuretics therapy, thus contributing to a better AHF management and subsequent in-hospital cost reduction.

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The role of toll-like receptors (TLRs) in myocardial infarction and their connection with AMP-activated protein kinase (AMPK)

A Garjani,¹ H Soraya,¹ B Bagheri,¹ B Sohrabi,¹
M Rameshrad,¹ H Vaez¹ and N Maleki-Dizaji¹

¹Tabriz University of Medical Sciences, Department of Pharmacology, Tabriz, Iran (Islamic Republic of)

Toll like receptors (TLRs) play a key role in the innate immune system. Recently we have reported that monocytic expression of hTLR4 as well as the serum levels of pro-inflammatory cytokines are positively correlated with the degree of coronary luminal stenosis in patients with stable angina. We have also demonstrated that activation of AMPK, a key sensor of cellular AMP:ATP ratio, by metformin or A769662 improves cardiac function and prevents cardiac inflammatory responses in LPS-induced myocardial dysfunction. In the present study, isoproterenol-induced MI model in Wistar rats (100 mg/kg/day for 2 consecutive days; sc) was used. A Powerlab system and a Millar catheter inserted into the left ventricle were used for hemodynamic assessment. Cytokines were assessed by ELISA, tissue proteins were measured by western blotting method, and TLR4 expression were evaluated by using real-time PCR. We demonstrated that oral administration of metformin at 25-100 mg/kg/day for two days significantly amended the ECG pattern and improved the left ventricular systolic pressure, contractility and relaxation (p<0.001). Interstitial fibrosis (using Gomori's Trichrom staining) significantly was attenuated in the groups treated with metformin (p<0.001). Acute treatment with metformin also reduced the inflammatory responses

as indexed by reduced serum levels of TNF- α (52%; $p<0.01$) and IL6 (67%; $p<0.01$) as well as by reduced myocardial MPO activity (24%; $p<0.01$). Metformin significantly upregulated the level of myocardial AMPK phosphorylation (Thr(172)) by 165% ($p<0.001$). This was associated with a marked suppression of TLR4 mRNA expression and subsequently reduction of protein levels of MyD88 (an adaptor protein of TLR4; $p<0.01$) in the heart tissue which were highly elevated ($p<0.01$) following MI induction. Taking together, isoproterenol-induced myocardial infarction was associated with significant decrease of AMPK phosphorylation along with an increase in TLR4 expression and activity. AMPK activation by metformin and subsequent suppression of TLR4 activity can be considered as a target in protecting the infarcted heart and may indicate a link between AMPK and TLRs.

Morning Poster session Saturday, 17 October 2015 08:30 - 12:30

Acute heart failure

P86

Efficacy of tolvaptan for the prevention of worsening renal function in acute decompensated heart failure

Y Suzuki,¹ S Murase,¹ O Matsuda,¹ S Kanoh,¹
A Murata,¹ M Ehara¹ and T Ito¹

¹Nagoya Heart Center, Nagoya, Japan

Background: Conventional diuretics are commonly prescribed for acute decompensated heart failure (ADHF) with volume overload. The administration of high-dose diuretics is recognized as inducing several adverse events such as worsening renal function (WRF).

Aim: The purpose of this study is to compare and evaluate the efficacy of tolvaptan (TLV) for the ADHF in daily clinical practice.

Methods: The consecutive 173 volume-overload ADHF treated with/without TLV were investigated. We divided them into 2 groups (TLV(-); $n=66$. TLV (+); $n=107$) and compared with clinical outcome of both groups such as the duration of CCU stay, the incidence of WRF. WRF was defined by an absolute increase in serum creatinine of ≥ 0.3 mg/dl from the values measured at the time of admission.

Results: In TLV (+) group, the duration of CCU stay was shorter and the incidence of WRF was less than those of TLV (-) group.

Conclusion: Treatment with TLV for ADHF could prevent WRF and shortened the duration of CCU stay, especially in elderly patients with renal dysfunction. The results of this study suggest TLV had better effect on the clinical outcome in the acute phase of treatment in the ADHF.

Table 1. Results.

all	TLV (-), n=66	TLV(+), n=107	p-value
male, %	54.5	57.9	NS
age	77.6 \pm 9.3	76.4 \pm 13.3	NS
EF, %	41.4 \pm 20.0	43.1 \pm 19.5	NS
pre Cr, mg/dl	1.11 \pm 0.44	1.40 \pm 0.80	<0.01
pre Na, mEq/ml	139.8 \pm 3.5	137.1 \pm 5.1	<0.05
post Na, mEq/ml	139.5 \pm 3.1	138.5 \pm 12.7	NS
3-day urine output, ml	4791 \pm 2163	6924 \pm 2943	<0.05
CCU stay, day	3.3 \pm 1.4	2.3 \pm 1.2	<0.05
WRF, %	6.1	1.9	<0.05
ADHF with GFR<60	TLV (-), n=49	TLV(+), n=89	
WRF, %	6.1	2.2	<0.05
ADHF with GFR<60, age>75	TLV (-), n=38	TLV (+), n=61	
WRF, %	7.9	4.9	<0.05

P87

Predictors of in-hospital mortality in patients with acute or acute worsening chronic heart failure

M Vavlukis,¹ E Caparovska,¹ B Pocesta,¹ I Kotlar,¹
D Kitanovski,¹ E Shehu,¹ H Taravari,¹ I Bojovski,¹
D Risteski¹ and S Kedev¹

¹University Clinic for Cardiology, Skopje, Macedonia, The Former Yugoslav Republic of

Aim of the study: to identify predictors of in-hospital mortality in acute HF patients.

Patients and methods: 355 randomly selected patients admitted to ICCU with symptoms of HF were analyzed for: risk factors and co-morbidities (COPD, CAD, PVD, anemia, renal failure), heart rate, systolic and diastolic BP, Hgb, sodium, BUN, creatinine, ejection fraction (based on which patients were divided in PEF-HF and REF-HF); length of stay and GWTG-HF score (Get with the Guidelines-HF risk score), calculated from the seven clinical variables in that score. Comparative analyze was performed between patients with in-hospital mortality (IHM) and survivors. Statistical analyze: univariate and multivariate binary and linear logistic regression, ROC Curve for testing of discriminate function of GWTG-HF score.

Results: 355 patients at mean age 70.1 ± 10.9 , 150 (42%) females and 205 (58%) males were included. Females were older 72.9 ± 11.4 vs. 67.9 ± 10.0 ($p=0.000$), had higher DBP ($p=0.007$) and EF (%): 43.6 ± 11.6 vs 41.1 ± 9.5 ($p=0.029$), and sodium level ($p=0.018$), more often had HTA (OR 1.4; $p=0.001$), while males had PAD (OR 1.7; $p=0.020$), and prior MI (OR 2.2; $p=0.001$). No significant differences in death rate, length of hospital stay and GWTG-HF score was observed. 82 (23.1%) events were registered (IHD group). The highest mortality rate was observed during the first 48 hours (40.4%). Mean hospital stay was 6.3 ± 5.3 days, with no differences between the groups (5.6 ± 3.9 vs. 6.7 ± 5.9 ; $p=0.056$).

We identified several univariate predictors: prior MI (beta -0.490 ; $p=0.041$), PVD (beta -1.01 ; $p=0.007$); anemia (OR 1.89; $p=0.044$); REF-HF (OR 2.43; CI 1.7-3.6; $p=0.000$); EF (beta -0.258 ; $p=0.000$); SBP (beta -0.299 ; $p=0.000$), DBP (beta 0.315 ; $p=0.000$); Hgb (beta -0.142 ; $p=0.007$), sodium (beta -0.107 ; $p=0.045$); creatinine (beta 0.184 ; $p=0.000$), BUN (beta 0.199 ; $p=0.000$), and GWTG-HF score (beta 0.279 ; $p=0.000$). Multivariate logistic regression identified SBP (beta -0.014 ; $p=0.020$) and anemia (ExpB 3.668; $p=0.019$); as positive, while prior MI (ExpB -2.753 ; $p=0.050$); PVD (ExpB -1.348 ; $p=0.005$) and DBP (beta 0.034 ; $p=0.003$) as negative predictors for in-hospital death.

Mean GWTG-HF score was 38.9 ± 10.1 (37.3 ± 9.3 ; 44.0 ± 11.0 ; $p=0.000$, non-IHD vs IHD pts). It had excellent discriminate function (ROC Curve: Area under the Curve 0.694 , $p<0.000$ (CI $0.627-0.778$), in predicting IHD.

Conclusion: Low sodium, high BUN and creatinine are predictors of IHD, but only anemia, reduced EF and low systolic BP were identified as independent predictors of IHD. GWTG-HF score is a powerful tool for prediction of IHD in acute or acute worsening CHF patients.

P88

Ivabradine in acute decompensated systolic heart failure is safe and effective to achieve target values of heart rate at hospital discharge.

P Beltran,¹ N Manito Lorite,² J Jacob Rodriguez,³ A Soto Priore,⁴ N Calcerrada Labrador,⁴ M Camprecios Crespo,¹ A Bonet Basiero,¹ A Carol Ruiz,¹ P Sanchez Chamero¹ and A Cabestrero De Diego¹

¹Hospital Sant Joan Despi Moises Broggi. CSI, Heart Failure Unit, Barcelona, Spain ²University Hospital of Bellvitge, Heart Failure Unit, Barcelona, Spain ³University Hospital of Bellvitge, Emergency Department, Barcelona, Spain ⁴Hospital Sant Joan de Deu de Martorell, Barcelona, Spain

Purpose: Acute decompensate heart failure (ADHF) is a growing problem associated with major morbidity and mortality. The Heart Rate (HR) has been recognized as a therapeutic target in chronic HF. Higher HR at hospital discharge in patients with ADHF has been associated with greater 1-year mortality and 30-day readmissions. The aim of this study was evaluate the safety and effectiveness of ivabradine to achieve target values of HR at hospital discharge.

Methods: Thirty consecutive patients with ADHF in sinus rhythm, hemodynamically stable and HR ≥ 75 bpm in spite of treatment with beta-blockers or when this was contraindicated or not tolerated, began treatment with ivabradine. Clinical data at admission (T0), immediately before initiation of ivabradine (T1), 24h (T2); 48h (T3), 72h (T4), 96h (T5), 120h (T6) after and at discharge (T7) were obtained.

Results: Basal HR (T1) was 92 ± 14 lpm. Ivabradine was initiated in 60% of the patients in the first 48 hours from admission. HR decreased 12.5 ± 4 bpm at T2 ($p=0.000$); 14.8 ± 4 bpm at T3 ($p=0.000$); 20 ± 6.8 bpm at T4 ($p=0.000$) and 22 ± 5.3 bpm at T7 ($p=0.000$) vs T1. There was no significant change in systolic and/or diastolic blood pressure at any of the periods. Admission HR and the magnitude of HR reduction correlated significantly. $Rho = 0.816$ ($p=0.000$). 26.7% of the patients had a PAS <100 mmHg prior to the initiation of ivabradine. In this group neither was detected a significant change in systolic and/or diastolic blood pressure. The discharge HR was 69.4 ± 8 bpm. Ivabradine did not have to be withdrawn for adverse effects in any patient.

Conclusion: Ivabradine was safe and effective to achieve HR target at discharge. Many patients with ADHF maintain a heart rate above 75bpm despite treatment with beta-blocker or this are contraindicated or not tolerated. In this setting the ivabradine is an option to consider.

Table 1. Clinical variables.

Age, years	67±18	HF de novo n (%)	15 (50)	SBP admission mmHg, mean (rank)	142 (85-200)
Males n (%)	18 (60)	NYHA III/IV n (%)	23 (77)	Start ivabradine, day	3±3
HTA n (%)	23 (77)	HFrEF n (%)	22 (73)	Beta-Blockers at discharge n (%)	24 (80)
Diabetes n (%)	11 (37)	HFpEF n (%)	8 (27)	Target dose BB at discharge n (%)	6 (19)
eGFR (DMRD)	54±11	Left ventricular EF,%	37.5±17.5	IECA's/ARAI at discharge n (%)	21 (70)
Ischemic cardiopatia n (%)	11 (37)	Hospital stay, days	6.7±4	Target dose IECA's/ARAI at discharge n (%)	33 (48)
Dilated cardiomyopathy n (%)	9 (30%)	HR at admission T(0)	99±19	Ivabradine dose at discharge, mg/12h	5±1.3

P89

Acute heart failure in a patient with iatrogenic cushing syndrome on treatment for gout

C James,¹ S Tisheva,¹ N Nikolov,¹ S Ohri,¹ K Gospodinov,¹ D Gaidarova,¹ D Yakova,¹ R Pencheva,¹ N Sirachka¹ and S Jose²

¹Medical University Pleven, Pleven, Bulgaria ²MOSC Medical College, Kolenchery, India

Introduction: Among uncommon causes of acute heart failure, endocrine disorders such as Cushing's Syndrome can be sited. Patients with Cushing's Syndrome have nearly 4 times increased cardiovascular mortality as compared to the general population. Iatrogenic Cushing's Syndrome (caused by treatment with corticosteroids) is the most common form of Cushing's Syndrome.

Case: A 41 year old male admitted to the ICU with history of breathlessness and bilateral pedal edema of 2 weeks duration which intensified during the past 3 days. Since 2010 patient is on treatment with high doses of corticosteroid by a GP for recurrent episodes of attacks of gout and later on patient himself continued on treatment with corticosteroids due to the excellent symptomatic relief. On admission patient was with features of congestive heart failure and hypo-tension (B. P -80/50). Patient was clinically cushingoid. BNP was 540 pg/ml (normal 0-100). Serum troponin and D-Dimer was negative. Uric acid level 862mmol/dl. TTE revealed severe global dilated cardiomyopathy with LVEF of 28%. Patient was treated with intravenous frusemide and inotropic agents with good clinical improvement. Cardiac catheterisation demonstrated normal coronary arteries. Extensive investigation for autoimmune, infective and infiltrative causes cardiomyopathy were negative. Patients reported alcohol intake was 3-4

units/week. No family history of cardiomyopathy. Patient was treated with full standard heart failure medications including ACE Inhibitors, beta-blockers and aldosterone antagonists. Endocrinology investigations confirmed diagnosis of Iatrogenic Cushing's syndrome. Rheumatologist tapered off corticosteroids and started on therapy with Etorocoxib, Colchicine, Febuxostat and Benzbromarone. Patient was under medical follow-up since last 6 months and control echocardiography showed improvement in LVEF to 35% at 3rd month and 42% in 6 months. During the follow up period NYHA class improved to Class II, BMI reduced and patient was with fewer acute gout attacks and decrease in tophi size.

Conclusion: Cushing's syndrome is an uncommon but potentially reversible cause of dilated cardiomyopathy and Heart Failure, most often reported in patients with hypercortisolism, in our case by exogenous supply. Injudicious use of Corticosteroids is to be avoided. Easy access to drugs in pharmacies and many adverse reactions in uncontrolled application impose need for health education of patients. It needs strong measures to limit the free access of drugs obtained on prescription in pharmacies.

P90

Analysis on the parameters of the EuroQoL- 5 D -5L among patients with Acute Decompensated Heart Failure

C James,¹ S Tisheva,¹ S Ohri,¹ D Yakova,¹ M Hristov,¹ K Gospodinov,¹ D Gaidarova,¹ N Stancheva,¹ T Chakalova¹ and S Jose²

¹Medical University Pleven, Pleven, Bulgaria ²MOSC Medical College, Kolenchery, India

Introduction: Acute decompensated heart failure is the worsening of the symptoms, typically dyspnoea, oedema and fatigue, in a patient with existing heart disease. The condition is caused by severe congestion of multiple organs by fluid that is inadequately circulated by the failing heart. The psychological and physical impact of this condition is very disturbing. The aim of this study is to analyze the impact of acute decompensated heart failure on the quality of life of these patients.

Design and methods: Questionnaire based cross sectional study was done on 312 patients admitted with acute decompensated heart failure (established by clinical and diagnostic methods including chest radiography, echocardiogram and laboratory investigations) in the Department of Cardiology in the University Hospital between 1st January 2013 and 31st December 2014. EuroQol - 5D-5L questionnaire was administered in these patients during the followup visit within 1 month of dehospitalisation. EuroQol 5D-5L comprises of 5 dimensions: mobility, self care, usual activities, pain/discomfort and anxiety/depression. Each dimension has 5 levels: no problem, slight problems, moderate problems, severe problems and extreme problems.

Results: The study revealed that among patients with acute decompensated heart failure, on the basis of EuroQol 5D-5L, in case of dimension mobility - 36% had moderate problems, 28% had severe problems and 8% were with extreme problems. 37% of patients had moderate problem, 26% had severe problems and 5% were with extreme problems on self-care. In consideration of the dimension pain/discomfort - 28% reported moderate problems, 22% severe problems and 8% extreme problems. In case of anxiety/depression - 20% had moderate problems, 38% had severe problems and 22% of patients were with extreme problems. When considering usual activity dimension of EuroQol 5D-5L, 26% had moderate problem, 28% had severe problems and 10% were with extreme problems.

Conclusion: The study revealed that the incidence of anxiety/depression, pain/discomfort, problems with mobility, self care and impairment of usual activity are at a high rate in patients with acute decompensated heart failure. Hence proper psychological and physical rehabilitation is to be implemented in addition to the pharmacological therapy, in patients with acute decompensated heart failure in-order to improve their quality of life.

P91

Evaluating the long-term effectiveness of Levosimendan use on the quality of life in patients with advanced heart failure

I Katsytadze,¹ K Amosova,¹ I Prudkyi¹ and O Gerula²

¹O. Bogomolet's National Medical University, Kyiv, Ukraine ²Kiev Alexander Clinical Hospital, Kiev, Ukraine

Purpose: To assess the impact of the use of levosimendan infusion on the quality of life and psychosomatic status in patients with advanced heart failure (AHF) during 1 year's study.

Materials and methods: 68 patients with AHF were included in our study. 30 patients were randomized in the group 1 without use of Levosimendan, 25 patients were randomized in 2nd group - Levosimendan infusion was performed once at the beginning of study, and 13 patients had 2 or more Levosimendan infusions (2,2±0,1) during 6 month from the start of our trial, and they joined the group 3. The middle age of patients 57±5,6 years, body mass index 25,7±1,2. All patients were assessed 4 times: before LV infusion (D0), in 3 month (M3), in 6 month (M6) and in 12 months (M12). All the patients were evaluated with EQ5D scale and Medical Outcomes Study Depression Questionnaire. At the beginning of study and M12 we analyzed NTproBNP of all patients with ELISA.

Results: 1-year mortality in Group 1 was 27% (8 patients), in Group 2 - 16% (4 patients), in Group 3 - 15% (2 patients). At baseline, depressive symptoms had 17 patients (55%) in group 1, 15 patients (64%) in group 2 and 7 patients (56%) in group 3. After 12 month of study, suffered from depression 82% of patients in group 1, 55% in group 2 and 40% in group 3, that was associated with worsening of all grades of EQ5D (mobility, self-care, usual activities, pain/discomfort and anxiety/depression) in group 1, improvement on 30% in group 2 and improvement on 25% in group 3 by the end of study. NTproBNP decreased in group 1 on 18%, increased in group 2 and group 3 accordingly on 15% and 24% compared to M0.

Conclusions: Levosimendan infusion in patients with AHF is effective and useful, It reduces mortality, improves quality of life and psychosomatic status, which is an additional advantage in the long-term prognosis of life in these patients. The frequency of levosimendan infusion has additional advantages in increasing life expectancy and improving their quality.

P92

Heart failure - the main cause of hospital death and morbidity of myocardial infarction in women

I A Leonova,¹ N Tretyakova,¹ N Trostyaneskaya¹ and S Boldueva¹

¹North-Western State Medical University named I.I. Mechnikov, St-Petersburg, Russian Federation

Research included 344 women with a myocardial infarction (MI) aged from 30 till 75 years. All women were divided into age groups: young till 44 years, middle age of 45-59 years, elderly ->60 years.

In women >60 years were significantly more compared to middle-aged women have severe acute heart failure (HF) ($p < 0,05$), among younger patients this complication has not been fixed. The detection rate of LV aneurysm according echocardiogram was significantly increased with age, HF were also more likely, though not certain, was noted among older patients. In conducting the correlation analysis of the observed regularities significant ($p < 0,0001$) link such complications as HF with the presence and duration of a history of CHD, both stable angina and MI earlier, also found significant ($p < 0,001$) HF with the presence and duration of diabetes. In assessing such a measure as NT-proBNP, determined on the 5th day of MI, no significant differences according to age was not, however, drew the attention of higher average value of this indicator in all age groups: a group of young women in $1036,9 \pm 15,1$ pg/ml, medium - $1053,9 \pm 8,1$ pg/ml and the elderly - $1082,3 \pm 12,9$ pg/ml, respectively. In all age groups was detected significantly higher levels of neutrophils in the development of HF (Killip's I $4,55 \pm 0,2 \times 10^9/l$ Killip's IV $7,74 \pm 0,5 \times 10^9/l$). NT-proBNP level was significantly higher ($p = 0,03$) in patients with angina to the presence of MI. Also found a positive relationship between the level of NT-proBNP and CK MB ($r = 0,64$ $p = 0,03$), the absolute number of monocytes in the first day of MI ($r = 0,46$ $p = 0,02$), CRP levels ($p = 0,01$), as well as the development of left ventricular aneurysms ($p = 0,02$) and a negative - the level of erythrocytes on the first day of MI ($r = -0,58$ $p = 0,02$). Development of acute HF associated with higher levels of glucose ($p = 0,02$) and creatinine ($p = 0,01$) in the first day, and the presence of anemia ($p = 0,003$). The findings suggest that NT-proBNP, hyperglycemia and anemia is directly related to the vastness of myocardial lesion, one adverse remodeling in the development of acute MI and congestive HF, which are more common in older women with MI.

Factors affecting the women's risk of dying in the hospital were congestive HF (RR 17.7 $p = 0.0001$), VT / VF in the first day of MI (RR 13 $p = 0.01$), the SA and AV block (RR 8.1 $p = 0.05$), creatinin > 117 mmol / l (RR 5.5 $p = 0.0005$), potassium < 4.15 mmol / l (RR 3.8 $p = 0.0005$), sodium < 136.5 mmol / l (RR 3.37 $p = 0.0001$), glucose > 9 mmol / l (RR 3.27 $p = 0.003$).

Antithrombotic therapy

P93

Ticagrelor related dyspnea in patients with acute coronary syndromes: incidence and implication on ticagrelor withdrawn.

M Gomez-Molina,¹ PJ Flores-Blanco,¹ AA Lopez-Cuenca,² MJ Sanchez-Galian,¹ E Guerrero-Perez,¹ M Sanchez-Martinez,¹ JI De Las Heras-Gomez,¹ F Cambronero-Sanchez,³ M Valdes⁴ and S Manzano Fernandez⁴

¹University Hospital Virgen De La Arrixaca, Murcia, Spain ²de la Vega Lorenzo Guirao Hospital, Cieza, Spain ³University Hospital Morales Meseguer, Murcia, Spain ⁴University of Murcia, School of Medicine, Department of Cardiology, Murcia, Spain

Purpose: Ticagrelor is more effective than clopidogrel in the prevention of adverse events after acute coronary syndrome (ACS). However, dyspnea is a relatively frequent side effect of this newer antiplatelet agent. The aim of this study was to evaluate the incidence of ticagrelor-related dyspnea, as well as, its implication on drug discontinuation in patients with acute coronary syndromes.

Method: Between January 1, 2012 and November 30, 2014, 113 consecutive patients treated with ticagrelor after an ACS were identified. At 3 months, patients were followed and the occurrence of ticagrelor-related dyspnea and the reasons for ticagrelor discontinuation were recorded in detail. Two patients were lost to follow-up (1.8%).

Results: The final study population consisted on 111 ACS patients. At 3 months of follow-up, a total of 15 patients (14%) had dyspnea judged by the investigator to be related with ticagrelor. All cases of ticagrelor-related dyspnea occurred in the first week after the initiation, and 10 of them (67%) occurred within 24 h of ticagrelor administration. Almost all cases were paroxysmal and mild in intensity. Some cases lasted < 24 h whereas others persisted over the course of the study, with most of these cases presenting as recurrent paroxysmal episodes. Interestingly, dyspnea episodes were not related with exercise. There were only 2 patients (1.8%) with severe dyspnea who required ticagrelor discontinuation. In these 2 cases, ticagrelor was switched to clopidogrel using a 300 mg loading dose. At the end of the study follow-up, 3 patients remained on ticagrelor treatment in spite of recurrent episodes of mild dyspnea. On the other hand, the overall rate of ticagrelor discontinuation was 8.2%. The main reason for ticagrelor withdrawal was economic difficulties in 4 patients (3.8%). Other less frequent reasons were dyspnea in 2 patients (1.8%), allergic reaction in 1 patient (0.9%), indication for oral anticoagulation due to an intraventricular thrombus in 1 patient (0.9%) and symptomatic bradycardia in 1 patient (0.9%).

Conclusion: A significant proportion of patients experienced dyspnea within the first days of ticagrelor administration, but this side effect rarely leads to drug discontinuation. Dyspnea was mild in most cases and often disappeared without the need to drug discontinuation.

Further large studies are needed to clarify the clinical importance and the optimal management strategy of this entity.

P94

Changes in kidney function and dosing adjustment of non-vitamin k oral anticoagulant in concomitant atrial fibrillation and recent acute decompensated heart failure

M Gomez-Molina,¹ JM Andreu-Cayuelas,¹ FJ Pastor-Perez,¹ CM Puche,¹ A Mateo-Martinez,¹ A Garcia-Alberola,² PJ Flores-Blanco,¹ V Roldan,³ M Valdes² and S Manzano Fernandez¹

¹University Hospital Virgen De La Arrixaca, Murcia, Spain ²University of Murcia, School of Medicine, Department of Cardiology, Murcia, Spain ³University Hospital Morales Meseguer, Murcia, Spain

Purpose: Renal impairment and fluctuations in renal function are common in patients with recent acute decompensated heart failure (ADHF) hospitalization, and in those with atrial fibrillation (AF). The aim of the present study was to evaluate the hypothetical need of dosage adjustment (based on fluctuations of kidney function) of dabigatran, rivaroxaban and apixaban during the first 6 months after hospital discharge in patients with concomitant AF and ADHF.

Methods: Observational study of 162 patients (52% male; mean age: 74 years) with non-valvular AF after hospitalization for ADHF who had creatinine determinations along follow-up. Hypothetical recommended dosage of dabigatran, rivaroxaban and apixaban according renal function was determined at discharge. Variations in serum creatinine and creatinine clearance (CrCl) and consequent changes in recommended dosage of these drugs were identified along 6 months of follow-up.

Results: Among overall study population, 44% of patients would have needed dose adjustment of dabigatran during follow-up, 35% would have needed adjustment with rivaroxaban and 29% would have needed adjustment of apixaban dosage. A higher proportion of patients with CrCl <60mL/min or elderly (≥ 75 years) would have needed dosage adjustment during follow-up.

Conclusion: The need of dosage adjustment of NOAC along follow-up is frequent in patients with AF after ADHF, especially among the elderly or those with renal impairment. Further studies are needed to clarify the clinical importance of these needs of drug dosing adjustment and the ideal renal function monitoring regime in heart failure and other subgroups of patients with AF.

P95

Changes in the level of platelet aggregation by replacing clopidogrel to ticagrelor in patients with myocardial infarction

E Tavlyeva,¹ A Alekseenko,² T Penskiy² and O Barbarash¹

¹RAMS Institution "Scientific-Research Institute for complex studying of cardiovascular diseases" Sib, Kemerovo, Russian Federation ²Kemerovo Cardiology Centre, cardiology, Kemerovo, Russian Federation

Purpose: The aim of the study was to investigate platelet aggregation and platelet activation in STEMI patients treated with clopidogrel in the ambulance and then ticagrelor in hospital.

Methods: The study enrolled 102 patients with STEMI. At the ambulance all patients received a loading dose of aspirin (250 mg) and clopidogrel (600 mg). PCI were performed immediately after hospitalisation. After intervention patients received maintenance dose of aspirin (100 mg) and of clopidogrel 75 mg / ticagrelor 90 mg twice a day. Platelet aggregation was assessed at PCI and 2 hours after intervention and on the 7th day. Platelet aggregation was assessed by multiple electrode aggregometry after stimulation with adenosine diphosphate (ADP) (1.25, 2.5 μ M), epinephrine and collagen 1.0 μ g/mL used as agonists.

Results: At PCI, high on-treatment platelet reactivity (HTPR: >300 PRU) was determined frequently irrespective of the used P2Y₁₂ antagonists (C: 41.2%, T: 40.6%; $p=0.866$). Platelet aggregation was similar in serum of patients 2 hours after PCI under both clopidogrel and ticagrelor (C: 31.29%, T: 29.9%; $p=0.142$). On the 7th day after PCI, platelet aggregation was significantly lower in patients on ticagrelor than in patients on clopidogrel (C: 34.8%, T: 20.45%; $p=0.001$).

Conclusion: Anti-aggregation effect of ticagrelor is higher than anti-aggregation effect of clopidogrel by the 7th day provided that clopidogrel is changed on ticagrelor in STEMI patients.

P96

Safety of early discontinuation of dual antiplatelet therapy for acute myocardial infarction patients complicated with out-of-hospital cardiopulmonary arrest

Y Furuse,¹ T Watanabe,¹ M Kato¹ and K Yamamoto¹

¹Tottori University, Department of Cardiovascular Medicine, Yonago, Japan

Background: There is a concern that dual antiplatelet therapy (DAPT) have to be discontinued especially in patients with acute myocardial infarction (AMI) complicated with out-of-hospital cardiopulmonary arrest (OHCA) due to bleeding complication induced by chest compression, hypothermia or necessity of surgical procedure during acute intensive care after percutaneous coronary intervention (PCI). Recently, duration of DAPT after PCI has been tended to be shorten in relation to the improvement of stent technology especially in the thrombogenicity, however, there is a lack of data whether early discontinuation of DAPT in OHCA patient is safe or not.

Purpose: The objective of the present study was to clarify the safety of early discontinuation of DAPT for AMI patients with OHCA.

Methods: Of 55 consecutive OHCA AMI patients received emergency PCI in our institute, 31 patients who survived over 3 days were enrolled to the study. The patients were assessed retrospectively in regards to the clinical background, PCI procedures, acute intensive care, early discontinuation of DAPT and cardiac accident in relation to the DAPT cessation. The early discontinuation was defined as cessation within 30 days after PCI.

Results: The mean age of the patients was 64.8 y.o. (ranged 28-93 y.o.) and 25 (76%) were male. Bare metal stents (BMS) were implanted in 22 cases (71%), second generation drug eluting stents (DES) were deployed in 9 cases (27%). DAPT was discontinued early in 8 (BMS: 7, DES: 1) cases (26%), and the mean period from PCI to cessation was 10.3 days. The reason of discontinuation were bleeding complication (hemothorax, gastric bleeding) in 4 cases, necessity of surgical procedure (tracheotomy, gastrostomy) in 4 cases. There was no relationship between hypothermia and bleeding complication. No cardiac accident was observed in all cases with early cessation of DAPT.

Conclusions: About quarter of AMI patients with OHCA are inevitable for early discontinuation of DAPT. Half of them are due to unexpected bleeding complication. Early cessation of DAPT was safe in this cohort, however, large scaled multicenter study is mandatory.

P97

Administration of intravenous fentanyl and laboratory efficacy of new p2y12 receptor antagonists in patients with STE myocardial infarction

Z Motovska,¹ J Knot,¹ M Ondrakova,¹ F Bednar,¹ J Ulman,² M Maly³ and P Widimsky¹

¹Charles University Prague, 3rd Faculty of Medicine, Faculty Hospital Kralovske Vinohrady, Prague, Czech Republic ²Faculty Hospital Kralovske Vinohrady, Prague, Czech Republic ³National Institute of Public Health, Prague, Czech Republic

Aim: Presented study aimed to determine the influence of intravenous fentanyl, a synthetic opiate analgesic, on laboratory efficacy of new P2Y12 antagonists in patients with STE myocardial infarction treated with primary PCI.

Methods: Study population consisted of 143 patients with obtainable information about (non) administration of fentanyl who were participating in the LAPCOR registry (ClinicalTrials.gov NCT02264912). P2Y12 antagonist efficacy was measured by VASP phosphorylation 24±4 hours after a loading dose of prasugrel (60 mg, N=80), or ticagrelor (180 mg, N=63) and expressed by platelet reactivity index (PRI). HTPR was defined as PRI ≥ 50%.

Results: Residual platelet reactivity in patients initiated on ticagrelor was (median, min to max) 14.3 (0.1 to 44.9)% in patients (N=29) receiving fentanyl, and 14.9 (0.3 to 46.2) % in patients (N=34) who did not (p=0.7). No HTPR was detected in ticagrelor-treated patients, irrespective of fentanyl administration. Residual platelet reactivity in patients initiated on prasugrel was (median, min to max) 13.3 (0.0 to 84.6)% in patients (N=30) receiving fentanyl, and 10.0 (0.3 to 56.4)% in patients (N=50) without fentanyl administration (p=0.13). Logistic regression showed that fentanyl administration did not significantly influence the probability of HTPR in prasugrel-treated patients (Odds Ratio (95% C.I.) 3.7 (0.6, 21.5), p=0.13). Controlling for baseline characteristics did not influence presented results.

Conclusion: Administration of fentanyl did not significantly diminish the maximal inhibition of platelet aggregation after a loading dose of new P2Y12 antagonists.

Table 1. Baseline characteristics.

Characteristic	Fentanyl No N= 84	Fentanyl Yes N = 59	P value
Age (Mean SD) Years	61.7 (11.8)	57.5 (11.8)	0.04
Female gender	20.2%	28.8%	0.3
Hypertension	67.9%	66.1%	0.9
Diabetes mellitus	28.6%	20.3%	0.2
Current smoker	64.2%	66.1%	0.9
Hyperlipidemia	31.0%	20.3%	0.2
Chronic kidney disease	11.9%	6.8%	0.4
LVEF ≤30%	11.9%	8.6%	0.6

P98

Efficacy and safety of different glycoprotein IIb/IIIa inhibitors in acute coronary syndromes: evidence from real world clinical practice

S Leao,¹ F Cordeiro,¹ P Magalhaes,¹ A Baptista,¹
C Ferreira,¹ P Mateus¹ and I Moreira¹

¹Hospital Center of Tras-os-Montes and Alto Douro, Cardiology, Vila Real, Portugal

Background: Antithrombotic therapy has a key role in management of acute coronary syndromes (ACS). The use of glycoprotein IIb/IIIa inhibitors (GPIIb/IIIa-in) proved to be beneficial in specific clinical settings. There are three molecules widely tested and regularly used in daily practice (eptifibatide (E), abciximab (A) and tirofiban (T)), which may have different efficacy and safety profiles. However, no studies comparing these molecules in real world clinical practice have been published yet.

Aim: Evaluate safety and efficacy of GPIIb/IIIa-in in ACS. Evaluate the interaction of these drugs with renal function.

Population and methods: Observational study including all patients with ACS treated with GPIIb/IIIa-in in a multicentric national registry since October 2010. Were included 2137 patients (1261 treated with E, 541 with A and 335 with T). Efficacy endpoint was a composite of in-hospital death, reinfarction or stroke. Safety endpoint was a composite of major bleeding or hemoglobin decrease ≥ 5 g/dL. Analysis was performed for each drug and glomerular filtration rate (GFR) tertiles, estimated by the MDRD formula.

Results: The proportion of males was similar in all groups (E: 79.1% vs A: 81.7% vs T: 77.6%, $p = 0.295$) and the mean age was higher in group E (E: 63 ± 13 years vs. A: 60 ± 12 years vs. T: 61 ± 13 years, $p < 0.001$).

Patients treated with E had a lower incidence of the endpoint of death, reinfarction or stroke (E: 3.6% vs A: 6.7% vs T: 10.7%, $p < 0.001$) and the endpoint of major bleeding or hemoglobin decrease ≥ 5 g / dL (E: 2.3% vs a: T vs. 3.9%: 7.9%, $p < 0.001$). After multivariate analysis (including in-hospital use of other antithrombotic drugs) the group treated with E, comparing to the group treated with T, had a lower risk of death, reinfarction or stroke (OR: 0.33; 95% CI 0.17 to 0.64; $p = 0.001$) and major bleeding or hemoglobin decrease ≥ 5 g / dL (OR: 0,32; 95% CI 0.14 to 0.75; $p = 0.009$).

E was both more effective in patients with normal GFR (E: 0.5% vs 2.3% vs. T: 5.9%, $p < 0.001$) or in those with decreased GFR (E: 5.7% vs. T 13.2% vs. 20.9%, $p < 0.001$) without significant interaction between drug and GFR ($p = 0.055$). Incidence of the safety endpoint was higher in the T group in all tertiles of GFR and there were no interaction between the drug used and the GFR ($p = 0.436$).

Conclusions: In patients included in this study, Eptifibatide treatment was associated with a significant decrease in the incidence of death, reinfarction or stroke and a lower incidence of major bleeding or hemoglobin drop. There was no interaction between renal function and different GPIIb/IIIa-in.

P100

Time related benefit of antiplatelet therapy on coronary reperfusion in st-segment myocardial infarction patients.

V Paradies,¹ M Pepe,¹ D Zanna,¹ A Cafaro,¹ F Resta,¹
G Camarda,¹ N Signore,¹ F Masi,¹ D Quagliara¹ and S Favale¹

¹University of Bari, Department of Cardiology, Bari, Italy

Aims: The goal of ST-segment elevation myocardial infarction (STEMI) treatment is early reperfusion. P2Y12 inhibitors (P2Y12I) demonstrated to improve angiographic results of primary PCI (pPCI) and patients' clinical prognosis. Of note P2Y12I onset of action is significantly impaired in STEMI patients. Aim of our observational study was to establish if the benefit of the P2Y12I loading dose administration is time related.

Methods and results: A total of 134 consecutive patients with STEMI (82.5% males, 64.8 ± 11.4 years old, 32.7% diabetics) addressed to pPCI were enrolled. Exclusion criteria was cardiogenic shock at presentation. We divided our population into three groups depending of the time interval from "P2Y12 inhibitors loading dose administration to balloon": the first group included patients receiving P2Y12 inhibitors loading dose at least 60 minutes before primary PCI, the second group between 30 and 60 minutes before primary PCI, the third group less than 30 minutes to primary PCI. Angiographic, clinical and biochemical parameters were evaluated. Two-skilled interventional cardiologists

evaluated the TIMI 0/1 of the infarct-related artery in the first angiogram immediately prior to PCI and post pPCI TIMI flow grade in a double blinded fashion.

Pre pPCI TIMI flow grade decreased throughout the groups proportionally to the increasing “P2Y12 inhibitors loading dose administration to balloon” time. We found the following rates of prePCI TIMI flow grade: 48,2% in the first group, 58% in the second group, 81,3% in the third group ($p < 0.001$).

Moreover post pPCI TIMI flow grade was significantly different in the three groups ($p < 0.001$); it improved throughout the groups proportionally to the increasing “P2Y12 inhibitors loading dose administration to balloon” time with following rates: 93,5% in the first group, 91,4% in the second group, 86,2% in the third group.

Conclusions: Current guidelines recommend rapid initiation of antiplatelet therapy. Absorption and effectiveness of P2Y12I was demonstrated to be significantly impaired in STEMI patients due to insufficient gastroduodenal motility, liver hypoperfusion and higher platelets reactivity. To date results from pharmacodynamic studies and randomized trials are often in contrast. Moreover randomized trials do not reflect the “real world times”. Our observational study support a time-related benefit of P2Y12 inhibitors administration: a longer time window between P2Y12 inhibitors administration and pPCI significantly improves coronary reperfusion in terms of both pre and post pPCI TIMI flow grade.

Biomarkers

PI02

Increased thrombocyte activation is associated with clinical restenosis in patients who underwent percutaneous coronary intervention

N Ratkovic,¹ OS Obradovic Slobodan,¹
DZB Dzudovic Boris¹ and DD Dincic Dragan¹

¹Military Medical Academy, Clinic of Emergency Internal Medicine, Belgrade, Serbia

Percutaneous intervention (PCI) with bare metal stent implantation causes platelet activation. Some studies have demonstrated a relationship between the early thrombotic response and the later development of

restenosis. We investigated a relationship between circulating levels of soluble CD40 ligand (sCD40L) and soluble P-selectin (sP-selectin) and appearance of restenosis as well as clinically manifested de novo coronary lesions in patients after PCI.

sCD40L and sP-selectin were measured in sera immediately before and 24 hours after PCI in overall 52 patients (22 urgent PCI and 30 elective PCI, on dual antiplatelet therapy). Surveillance period was 18 months.

8 (15.4%) patients have had restenosis, 1 (2%) patient had acute stent thrombosis and 5 (10%) have had de novo clinically manifested coronary lesion. Patients with restenosis had a significantly higher increase in both sCD40L (Δ -values: 0.81 (–0.19–3.28) vs. –0.65 (–2.25–0.00) ng/ml, $p = 0.002$), and sP-selectin (Δ -values: 7.8 (–2.21–16.00) vs. 4.9 (–13.21–0.65) ng/ml, $p = 0.01$) compared with patients without restenosis. No statistically significant difference in patients without restenosis compared with patients with de novo lesions.

Circulating sCD40L and sP-selectin are markedly increased after PCI in patients who are prone for later development of clinical restenosis, and not in patients who develop de novo coronary lesions.

PI03

Activity of superoxide dismutase (SOD) copper/zinc type and prognosis in a cohort of patients with coronary artery disease

E Zengin,¹ C R Sinning,¹ T Zeller,¹ HJ Rupprecht,²
R B Schnabel,¹ K Lackner,³ S Blankenberg,¹
D Westermann¹ and C Bickel⁴

¹University Heart Center Hamburg, Clinic for General & Interventional Cardiology, Hamburg, Germany ²GPR Rüsselsheim, Department of Medicine II, Rüsselsheim, Germany ³Johannes Gutenberg University Mainz (University Hospital of Mainz), Mainz, Germany ⁴Federal Armed Forces Hospital, Department of Medicine, Koblenz, Germany

Background: Superoxide dismutase (SOD) is important to control reactive oxygen species (ROS), but the relevance to human disease like coronary artery disease and underlying ischemia/reperfusion injury is not clarified.

Methods: For this study 2239 patients with known coronary artery disease were prospectively followed with a median follow-up time period of 3.6 years and a maximum of 6.9

years. During follow-up cardiovascular death was reported in 103 cases.

Results: For the univariate survival analysis, survival curves were calculated according to the Kaplan-Meier-Method. Log-rank-test revealed a significant influence of increasing SOD concentration on the patient survival ($P=0.004$). The model using the continuous log-transformed SOD concentration monitored a stable significant trend for SOD concentration ranging from the first model, adjusted for age and sex, but also for the fully adjusted model, encompassing variables like ejection fraction.

Conclusion: Rising SOD activity was attributed with cardiovascular mortality even after adjustment for a variety of traditional risk factors and clinical variables. The modulation of oxidative stress is important to judge ischemia/reperfusion damage, however regulation is more complex in nature and even an increased activity of an enzyme protecting from oxidative stress can have an adverse effect due to dysregulation of different pathways in management of ROS in the human body.

Table 1. Hazard Ratio SOD activity continuous.

	Model 1	Model 2	Model 3	Model 4
P value	0.002	0.006	0.005	0.045
Hazard Ratio (HR)	3.344	3.067	3.189	3.216
95% confidence limits				
Lower	1.543	1.371	1.431	1.029
Upper	7.247	6.863	7.110	10.052

Model 1 adjusted for age and sex Model 2 Model 1 + smoking status, history of hypertension, hyperlipoproteinemia and diabetes mellitus, concentration of triglycerides and LDL-HDL-ratio (both log-transformed and corrected for one standard deviation) Model 3 Model 2 + medication with β -blockers and statins and number of diseased vessels Model 4 Model 3 + ejection fraction.

PI04

Levels of total Pregnancy Associated Plasma Protein A and application in a cohort of patients with coronary artery disease

C R Sinning,¹ E Zengin,¹ S Appelbaum,¹ T Zeller,¹ H-J Rupprecht,² R B Schnabel,¹ K Lackner,³ S Blankenberg,¹ C Bickel⁴ and D Westermann¹

¹University Heart Center Hamburg, Clinic for General & Interventional Cardiology, Hamburg, Germany ²GPR Rüsselsheim, Department of Medicine II, Rüsselsheim, Germany ³Johannes Gutenberg University Mainz (University Hospital of Mainz), Mainz, Germany ⁴Federal Armed Forces Hospital, Department of Medicine, Koblenz, Germany

Background: Pregnancy associated plasma protein-A (PAPP-A) is a zinc containing metalloproteinase in discussion for application in unstable coronary artery disease (CAD). Still the question remains, if total or non-complexed PAPP-A should be measured and if heparin administration influences PAPP-A levels.

Methods: In 1144 subjects of the prospective AtheroGene study, 927 patients with CAD (N=534 stable angina; N=393 with acute coronary syndrome; ACS) and 217 controls without CAD, total PAPP-A levels were measured. The median follow-up time for the 927 patients with CAD was 5.0 years (maximum 6.9 years) and during this time, 55 cases died from cardiovascular causes.

Results: Patients with ACS routinely received heparin administration before blood draw. With the acuity of the event, PAPP-A levels were increased and highest in patients with STEMI 14,6 IU/L, followed by NSTEMI with 11,2 IU/L, unstable angina 9,4 IU/L and subacute myocardial infarction 9,1 IU/L. Patients with ACS had increased levels in comparison to stable angina ($p<0.001$), however ACS patients with presentation after 48 hours (subacute myocardial infarction) had no different levels to stable angina ($p=0.27$). Total PAPP-A levels had prognostic utility in ACS patients in Kaplan-Meier curves and cardiovascular mortality increased in quartiles of rising PAPP-A levels in the cohort with ACS ($P=0.01$), but not in the cohort with stable angina ($P=0.29$). Patients with a troponin I concentration below 0.03 ng/mL presenting as ACS, rising PAPP-A levels were able to identify those individuals with an increased rate of cardiovascular death during follow-up ($p=0.01$). A cut-off concentration of 11,4 IU/L was useful to identify patients with an adverse outcome during follow-up in the overall CAD cohort.

Conclusion: Total PAPP-A levels increased in ACS patients depending on clinical presentation. Patients presenting late after onset of ACS had no different levels to stable angina patients, although heparin was administered. Total PAPP-A levels were not predictive in stable angina patients but in individuals presenting with ACS and here especially the cohort presenting with troponin I concentration below the 99th percentile for the contemporary sensitive troponin assay used.

PI05

Does the BNP value at admission correlate with the prognosis of takotsubo cardiomyopathy? A multicenter portuguese study

R A Pontes Dos Santos,¹ M Oliveira,²
AR Almeida,³ J Almeida,⁴ K Domingues,⁵
B Marmelo,⁶ L Reis,⁷ P Magalhaes,⁸ B Picarra⁹ and
B Marques¹⁰

¹Hospital Centre do Tamega e Sousa, Penafiel, Portugal ²Alto Ave Hospital Center, Guimaraes, Portugal ³Hospital Garcia de Orta, Almada, Portugal
⁴Hospital Center of Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal
⁵Hospital of Santarem, Santarem, Portugal ⁶Hospital Sao Teotonio, Viseu, Portugal
⁷University Hospitals of Coimbra, Coimbra, Portugal
⁸Hospital Center of Tras-os-Montes and Alto Douro, Vila Real, Portugal
⁹Hospital Espirito Santo de Evora, Evora, Portugal
¹⁰Faro Hospital, Faro, Portugal

Introduction: Takotsubo cardiomyopathy (TC) is characterized by a transient left ventricular (LV) dysfunction. BNP has been used as a marker of heart failure (HF) and LV dysfunction. It has not been determined if the BNP value at hospital admission correlates with the prognosis of TC.

Aim: To determine if the BNP value at hospital admission is associated with in-hospital and medium term prognosis in patients diagnosed with TC. To determine whether patients diagnosed with TC presenting an admission BNP value greater than 100 ng/L have worse in-hospital and medium term prognosis.

Methods: A Portuguese multicenter study involving 12 hospital centers and including all patients diagnosed with TC in the last 10 years. We analyzed the BNP value at hospital admission and determined if it was associated with in-hospital and medium term prognosis.

Results: We included 83 patients with TC with a mean follow up of 40.8 ± 25.7 months. An admission BNP value greater than 100 ng/L was present in 85.5% of TC patients.

The value of BNP at admission was not associated with the occurrence of atrial fibrillation, ventricular tachycardia, complete AV block, LV thrombus, stroke or in-hospital death ($p = ns$). However, it was associated with the development of HF during hospitalization ($p < 0.001$).

The value of BNP at hospital admission was not associated with death, stroke / TIA or recurrence of TC in the follow-up ($p = ns$).

A cut-off value of BNP greater than 100 ng/L was not associated with the occurrence of atrial fibrillation, ventricular tachycardia, complete AV block, LV thrombus, HF, stroke, or in-hospital death ($p = ns$), neither death, stroke / TIA or recurrence of TC in the follow-up ($p = ns$).

Conclusion: In this Portuguese multicenter study, a higher BNP value at hospital admission was associated with the development of in hospital HF. The BNP value at admission was not associated with any other prognostic factor. This study suggests that the cut-off of 100 ng/L, for the BNP at admission, is not the most appropriate cut-off for predicting the in-hospital and medium term prognosis of patients with TC.

PI06

Correlation of bone metabolism parameters and osteopenic syndrome in patients with coronary artery disease

V Kashtalap,¹ OL Barbarash,¹ ON Hryachkova¹ and
AN Kokov¹

¹Research Institute for Complex Issues of Cardio. Dis. -
Siberian Branch RAMS Institution Scientific, Kemerovo,
Russian Federation

Aim: To assess the parameters of bone metabolism according to the presence of osteopenic syndrome in patients with chronic coronary artery disease (CAD).

Material and Methods: 66 male patients aged 59.8 (55; 70) years with documented CAD and coronary artery calcification were observed. Bone mineral density (BMD) was measured using volumetric dual-energy x-ray absorptiometry (DXA, g / cm^3) and a T-score at the femoral neck and lumbar spine (vertebral bodies LI-LIV). Either plasma or serum samples were used to measure the level of markers of bone metabolism. The ELISA was used to measure the concentration of the analytes, namely parathyroid hormone (PTH), calcitonin, osteocalcin, bone alkaline phosphatase isoenzyme, osteoprotegerin, osteopontin, cathepsin K.

Results: All the patients were enrolled into two groups according to BMD measurements: Group 1 ($n = 12$, 20%) – patients with normal BMD values (T-score of +2.5 to -1.0) and Group 2 ($n = 53$, 80%) - patients with osteoporosis and osteopenia (T-score -1.1 or

worse). Thus, osteopenic syndrome of various degrees was determined in the majority of patients with documented coronary artery disease and coronary artery calcification.

The assessment of biomarkers of bone metabolism reported a significant decrease of osteocalcin levels in patients with coronary artery disease and osteopenic syndrome (17.51 [12.83; 22.13] ng/ml) compared to patients with normal BMD values (11.37 [8.03; 16.14] ng/ml, $p < 0.05$); thus, suggesting severe osteoporosis in these patients. Moreover, a reduction of osteopontin levels was found in patients with osteopenic syndrome (6.42 [5.44; 7.16] ng/ml) compared to patients with normal BMD values (6.84 [6.07; 7.50] ng/ml, $p < 0.05$). It may be association between this parameter and the severity of atherosclerosis. However, the current study demonstrated its significant decrease in patients with osteopenic syndrome, suggesting its protective effect against osteoresorption. There was a reduction of cathepsin K levels in patients with osteopenic syndrome (12.41 [0.01; 23.15] pmol/L) in comparison with patients with normal BMD values (23.59 [0.01; 36.55] pmol/L, $p < 0.05$). This may reflect the intracellular activity of this peptide in the development of bone resorption.

Conclusion: Male patients with coronary artery disease and coronary artery calcification demonstrated a high incidence rate of osteopenic syndrome according to the DXA test results. Patients with osteopenic syndrome also showed lower levels of markers of bone metabolism, namely osteocalcin, osteopontin and cathepsin K.

P107

The correlation between C-reactive protein levels and the progression of non-coronary atherosclerosis 1 year after myocardial infarction

V Kashtalap,¹ MV Zykov,¹ EN Usoltseva¹ and OL Barbarsh¹

¹Research Institute for Complex Issues of Cardio. Dis. - Siberian Branch RAMS Institution Scientific, Kemerovo, Russian Federation

Aim: to assess the correlation between the rate of non-coronary atherosclerosis progression and C reactive protein (CRP) levels in patients 1 year after myocardial infarction (MI).

Material and Methods: 168 patients with STEMI were examined. All patients underwent coronary

angiography and percutaneous coronary intervention (PCI). Doppler ultrasound screening of non-coronary arteries (brachiocephalic artery (BCA), the main arteries of the lower limbs) was performed at 10 days of STEMI and 1 year after MI. Levels of C-reactive protein (CRP, mg/L) were measured by ELISA at days 10 and 1 year after MI. All MI patients were enrolled into 4 groups according to the presence and severity of initial non-coronary stenoses: Group 1 without stenosis, Group 2 - < 30% stenosis, Group 3 - 30-49% stenosis, Group 4 - $\geq 50\%$ stenosis.

Results: any signs of polyvascular disease were found in 95% of patients present with STEMI. Non-coronary atherosclerosis progressed in the majority of patients with MI over a 1-year follow-up period. The incidence rates of the progression of brachiocephalic artery stenosis and lower extremity arterial stenosis increased over a 1-year follow-up period in Group 2 from 21.4% to 44%; in Group 3 from 8.3% to 22.6% and in Group 4 from 35.7% to 54.8% and in Group 3 from 13.1% to 22.6%, respectively. Significant progression of stenosis occurred in 32 (19%) patients with BCA stenosis and 42 (25%) patients with lower extremity arterial stenosis. There were no significant differences in CRP levels, measured at 10-14 days of the in-hospital period in patients with progression of non-coronary atherosclerosis and without it. Thus, the mean serum levels of CRP in patients with progression of BCA atherosclerosis were 13.08 (11.77; 16.40) mg/L and in patients without its progression - 15.21 (12.96; 17.46) mg/L ($p > 0.05$). Patients with progression of atherosclerotic lesions demonstrated significantly higher levels of CRP compared to patients without atherosclerosis 1 year after MI. CRP levels in the progression group were 8.04 (4.48; 11.60) mg/L ($p = 0.01$), whereas in the group without progression - 2.40 (1.06; 3.83) mg/L.

Conclusion: Non-coronary atherosclerosis progression was observed in the majority of patients over a 1-year follow-up period. The progression of BCA stenosis is associated with persistent elevated levels of CRP in the acute phase of MI. Reduction in CRP levels within 1 year and the levels of this biomarker 1 year after myocardial infarction suggest a correlation between inflammation and the progression of atherosclerosis.

Cardiac surgery

P108

Pulmonary hypertension and right ventricular dysfunction after cardiac surgery: is there a place for sildenafil?

S Ledot,¹ F Caetano¹ and S Kaul¹

¹Harefield Hospital, London, United Kingdom

Background: Pulmonary hypertension (PH) and right ventricle dysfunction (RVD) are important risk factors for mortality (M) in patients (P) after cardiac surgery. Treatment with intravenous (IV) pulmonary vasodilators is hampered by its lack of selectivity. Inhaled nitric oxide (iNO) is expensive, requires mechanical ventilation, and weaning can cause rebound.

Purpose: Evaluate the safety and efficacy of sildenafil (SLD) as adjunctive therapy for postoperative PH and RVD.

Methods: Retrospective study of 18 P (56% male; age 57±10 years) who received SLD, after cardiac surgery, to facilitate weaning of IV and inhaled pulmonary vasodilators. Hemodynamic data were recorded and echocardiography (Echo) was performed before hospital discharge and at follow-up (FU). A FU (11.9±6.9 months) concerning readmission and M was done.

Results: Mitral valve repair/replacement was the most frequent surgery (44%) performed. 83% of P underwent combined procedure; 39% had a redo surgery. The EuroScore was 7.5±8.2%. Total cardiopulmonary bypass time was 103±40 minutes.

SLD was started 2.5±3.6 days after surgery. The initial IV administration was the preferred one (55.6%, cumulative dose 72±46mg), subsequently converted to oral (75mg/day) after 2.1±1.7 days. The therapeutic strategy consisted of: milrinone in 94%, adrenaline and nitrates in 83% and iNO in 67%.

Table 1 shows the evolution of the hemodynamic and Echo parameters.

The duration of ventilation was 4.6±4.6 days and the ITU length of stay was 12.0±10.4 days. SLD was progressively weaned and stopped after 143±149 days.

M was 0% both during hospital stay and at FU. During FU: 61.1% presented in NYHA I and 22.2% were readmitted.

Conclusions: This study demonstrates that SLD can be used safely to facilitate weaning of inhaled and IV pulmonary vasodilators when cardiac surgery is complicated by RVD and PH.

Table 1.

Hemodynamic parameter	Baseline	After 1 hour	After 24 hours
Mean arterial pressure, mmHg	78.0±12.3	75.1±11.8	75.3±7.7
Mean pulmonary artery pressure, mmHg	32.6±6.9	31.7±5.6	33.0±5.9
Cardiac index, L/min/m ²	3.13±0.59	3.15±0.63	3.31±0.54
Echo data	Before surgery	At hospital discharge	After weaning SLD
Tricuspid regurgitation velocity, m/sec	3.19±0.64	2.84±0.46	2.42±0.29
TAPSE, mm	15.6±4.7	11.9±4.4	13.7±1.9

PI09

Aortic valve replacement surgery referral: population characterization and 1 year follow-up results

J M Amado,¹ D Bento,¹ D Silva,¹ J Guedes,¹ N Marques,¹ W Santos,¹ P Gago,¹ J Mimoso¹ and I Jesus¹

¹Faro Hospital E.P.E., Faro, Portugal

Introduction: Aortic valve disease is one of the most frequent indications for cardiac surgery. Our goal was to characterize the patients referred from our cardiology center to aortic valve replacement surgery and to determine their prognosis, describing their mortality and hospital admission rate at one year of follow-up

Methods: A retrospective, descriptive and correlational study was performed, evolving all patients referred to aortic valve replacement surgery from a cardiology center between 1 of January of 2008 and 31 of October of 2013. Patients basal characteristics were evaluated. A 12 month follow-up by telephone was realized by a cardiologist. A statistical univariate and multivariate analysis regarding mortality or cardiovascular hospital admissions at one year follow-up was performed. To realize the statistical analysis SPSS 20.0 was used.

Results: Our center referred 301 patients to aortic valve surgery in the study period. Their mean age was

69,7±11,3 years, 206 (68%) were male. We referred 183 (60,8%) patients to isolated aortic valve replacement, 84 (27,9%) to aortic valve replacement plus myocardial revascularization surgery and 34 patients (11,3%) had mitral valve disease and aortic valve disease needing surgery. The mean logistic Euroscore found was 7,3±5,8, and the patients mean left ventricle ejection fraction was (LVEF) was 65,2±13,1%.

The hospital admission rate at one year of follow-up was 15,9%. This was associated to a increasing age ($p=0,00$) and need to other surgery than isolated aortic valve replacement ($p=0,00$). No association was found among follow-up hospital admissions and Euroscore, LVEF, cardiovascular risk factors or patients previous diseases. Age and kidney failure (stages IV or V) were found to be independent predictors of hospital admission during the first year after surgery.

Cardiovascular mortality at one year of follow-up was 7%. This mortality was associated with age ($p=0,00$), Euroscore ($p=0,00$), and indication for surgery being other than isolated aortic valve replacement ($p=0,00$). It wasn't possible to found independent predictors of mortality.

Conclusion: Among the patients referred to aortic valve replacement from our center the hospital admission rate at one year was 15,9%, beign associated with age and the need for a surgery other than isolated aortic valve replacement.

Age and advanced kidney failure stages were independent predictors of hospital admissions at one year after surgery.

The one year mortality in our study was 7%, being associated with age, Euroscore and indication for surgery different than isolated aortic valve replacement.

PI11

The role of amiodarone in prevention of atrial fibrillation after surgical myocardial revascularization

B Orbovic,¹ B Obrenovic Kircanski,¹
M Vranes,² B Ivanovic,¹ LJ Soskic,³
M Velinovic² and S Matic¹

¹Clinical Center of Serbia, Clinic for Cardiology, Belgrade, Serbia

²Clinical center of Serbia, Clinic for Cardiosurgery, Belgrade, Serbia

³Clinical Center of Serbia, Clinic for Anesthesiology and Reanimathology, Belgrade, Serbia

Introduction: Atrial fibrillation (AF) is common complication after surgical myocardial revascularization

(SMR) which may be associated with serious complications.

Purpose: To test whether preoperative use of amiodarone has influence on development of AF after SMR.

Methods: Study included 110 patients scheduled for elective SMR who were all randomly assigned whether to receive amiodarone (amiodarone group, 55 patients) with other daily therapy or just daily therapy (control group, 55 patients). Amiodarone was orally given before elective surgery in dosage of 600 mg per day and 200 mg per day after surgery until discharge. The mean preoperative total doze of amiodaron was 5.23 ± 1.62 g over a period of 8.71 ± 2.70 days and 1.29 ± 0.49 g postoperatively over a period of 6.45 ± 2.43 days.

Results: Postoperative AF was more frequent in control than in amiodarone group (19/55 patients vs. 5/55 patients, $p = 0.001$). There was no difference in the mean day of occurrence of postoperative AF (2.11 ± 1.49 vs. 2.00 ± 1.22 , $p = 1.00$). The maximal ventricular rate during AF was significantly lower in the amiodarone than in control group ($118.00 \pm 12.1/\text{min}$ vs. $139.11 \pm 12.20/\text{min}$, $p = 0,002$). Measured echocardiographic parameters showed no difference except lower end-systolic left ventricular dimension in the control group (34.73 ± 5.06 mm vs. 37.29 ± 7.22 mm). Significant difference between groups was observed in the incidence of previous myocardial infarction, a number of these patients was higher in amiodarone group than in the control (69.1% vs. 50.9%, $p = 0.05$). There was no statistically significant difference in other risk factors, in age (the average age of all patients was 63.30 ± 7.94 years), selective coronary angiography findings, aorta cross-clamp time, by-pass pump-time, myocardial protection with cold cardioplegia and number of arterial and venous grafts between groups. In the control group, postoperative AF was converted to sinus rhythm by intravenous (i.v.) amiodarone in 14 (73.7%) patients, by i.v. digoxin in 3 (15.8%) and by i.v. metoprolol in 2 (10.5%) patients. In all 5 (100%) patients of amiodarone group who developed postoperative AF, conversion to sinus rhythm was achieved by i.v. amiodarone application. Fatal complications had 2 patients, both were in amiodaron group and without postoperative AF.

Conclusion: In patients undergoing surgical myocardial revascularization, oral amiodarone given preoperatively reduced the incidence of postoperative AF and maximal ventricular rate during postoperative AF.

PI12

Semi-critical care unit for initial post-operative in adult cardiac surgery

C Labata Salvador,¹ T Oliveras Vila,¹
E Berastegui Garcia,² X Ruyra Baliarda,²
M Camara Rosell,² O De Diego Soler,¹
F Rueda Sobella,¹ C Garcia Garcia,¹
J Serra Flores¹ and A Bayes Genis¹

¹Germans Trias i Pujol University Hospital, Department of Cardiology-IGTP, Badalona, Spain ²Germans Trias i Pujol Hospital, Department of Cardiac Surgery, Badalona (Barcelona), Spain

Background: Cardiac surgery involves a significant consumption of healthcare resources. The creation of semi-critical care units aims to optimize hospital resources ensuring a close post-operative clinical control.

Objectives: Analyze the semi-critical care unit impact on clinical evolution of post-operative cardiac surgery patients.

Methods: 1324 consecutive patients who were admitted for cardiac surgery at our hospital between November 2012 and April 2015 were retrospectively analyzed. We compare those admitted before and after the semi-critical cardiac care unit (SCCCU) setting-up, which was in May 2014 (pre-SCCCU: 674 patients, post-SCCCU: 650 patients). Hospital stay (days in intensive care or conventional unit) and in-hospital mortality rates were analyzed.

Results: Global baseline characteristics: age 67 ± 12 years, hypertension 65%, dyslipidemia 59%, diabetes 33%, lung disease 13%, kidney failure 14%, vascular disease 15%, stroke 6.5%. Type of surgery: valvular 54.5%, coronary 27%, valvular plus coronary 11.8%, aorta 1.5%, others 5.2%. No significant differences were found in baseline characteristics or logistical Euroscore1: 9.3 (pre-SCCCU) vs 8.4 (post-SCCCU), $p = 0.074$. Average intensive care unit stay: 4.9 ± 11 days (pre-SCCCU) vs 2.9 ± 6 (post-SCCCU), $p < 0.001$. Average SCCCU stay: 3.5 ± 2.6 days. Average total hospital stay: 13.5 ± 15 days (pre-SCCCU) vs 12.7 ± 11 (post-SCCCU), $p = 0.012$. Readmission to intensive care unit from SCCCU: 8 patients (1.2%). Mortality in SCCCU: 2 patients (0.3%). In-hospital mortality of post-operative cardiac surgery patients were similar (4.9% pre-SCCCU and 3.5% post-SCCCU, $p = 0.275$).

Conclusions: The creation of a semi-critical care unit for post-operative cardiac surgery patients reduces global hospital stay and intensive care unit stay, without worsening in-hospital prognosis.

PI13

Referral to cardiac surgery: characteristics of the population and 1 year follow-up results

JP Moura Guedes,¹ J Amado,¹ D Bento,¹
D Carvalho,¹ J Chin,¹ N Marques,¹ W Santos,¹
J Mimoso,¹ V Brandao¹ and I De Jesus¹

¹Faro Hospital, Cardiology, Faro, Portugal

Introduction and Objectives: In Portugal there are few data from patients referred for cardiac surgery (CS). The purpose of this study was to characterize the patients referred by our center to CS to another hospital with cardiac surgery facility, to determine its prognosis and to establish which predictors of hospitalization and mortality in the first year after CS.

Methods: A retrospective, descriptive and correlational study was conducted encompassing all patients referred to CS in a Cardiology Service from 1st January 2008 to 31st October 2013. Baseline characteristics of the patients were evaluated and a follow up in the medium term 12 months was carried out by telephone contact made by a cardiologist. Univariate and multivariate analysis of hospitalization for cardiovascular causes and cardiovascular mortality at 1 year after CS were performed. Statistical analysis was performed using SPSS 20.0.

Results: Our center referenced 755 patients to CS between 1st January 2008 and 31st October 2013, with an average age of 66 ± 11.7 years. Of these, 522 (66.9%) were male. 289 patients (38%) were referred for coronary heart disease (CHD), 183 (24%) for aortic valve disease (AVD), 86 (11.3%) for mitral valve disease, 137 (18%) for combined CS and 105 (14%) for other indications. Euroscore had an average of 6.3 ± 6.4 and a systolic left ventricle ejection fraction (LVEF) of $64.4 \pm 12.3\%$.

Hospitalization rate for cardiovascular causes in the 1st year after CS was 12.8% and was associated with increased age ($p < 0.01$) and the need for combined surgery ($p < 0.01$). No independent predictors of hospitalization were identified in the 1st year after CS.

The cardiovascular mortality rate in the first year after CS was 4.1% and was associated with increasing age ($p < 0.01$), higher EuroSCORE ($p < 0.01$) and combined surgery ($p < 0.01$). In the multivariate analysis, the number of days waiting for surgery ($p < 0.01$) and performing combined surgery ($p < 0.01$) were independent predictors of mortality.

Conclusion: 1. In our center, CHD was the most frequent cause of referrals to CS.

2. Increasing age and performing combined CS were associated with higher hospitalization rate in the 1st year post CS.
3. Mortality in 1st year after surgery was 4.1 % and was associated with increasing age, higher EuroSCORE, combined CS and non-coronary CS.
4. Number of waiting days for surgery and combined CS were independent predictors of cardiovascular mortality in the 1st year after CS.

P114

Long-term outcome of coronary artery bypass graft for unprotected left main disease

F Imperadore,¹ A Graffigna² and M Del Greco¹

¹Santa Maria del Carmine Hospital, Department of Cardiology, Rovereto, Italy ²Santa Chiara Hospital in Trento, Cardiovascular Surgery, Trento, Italy

Background: The Syntax trial indicates that coronary artery bypass graft (CABG) should remain the standard of care for patients with unprotected left main (LM) disease, however in those with less complex disease such as ostial or shaft LM lesions (isolated or with 1-vessel disease), isolated distal disease or coexisting 1-vessel disease, and LM disease coexisting with 2 or 3 vessel disease with low Syntax scores, percutaneous coronary intervention (PCI) is an acceptable alternative. We have employed CABG for LM disease even in those who would be recommended for PCI as class IIa or IIb. We retrospectively analyzed the long-term outcome of use of CABG in this setting.

Methods: From June 2008 through December 2013, CABG was employed in 85 consecutive patients with LM disease (mean age 71 ± 9 years). LM disease was defined as at least LM 50% stenosis with or without stenosis in other vessels. CABG was performed with or without extracorporeal circulation. The lesions were bypassed with single or bilateral internal mammary arteries (IMA) as in-situ and free grafts, and vein grafting. Long-term analysis was performed, looking at major adverse cardiac and cerebrovascular events (MACCE) which included all-cause death, stroke, myocardial infarction and repeat revascularisation.

Results: 54 patients (64%) had distal LM lesions, 17 (20%) had shaft lesions and 14 (16%) ostial lesions.

In 53 patients (62%) there was a coexisting 3-vessel disease, in 22 (26%) a 2-vessel disease and in 7 (8%) a 1-vessel disease. Isolated LM disease was present in 3 patients (4%). Ejection fraction was less 40% in 8 patients (9%). CABG was performed without cardiopulmonary by-pass (off-pump) in 56 patients (66%) and with cardiopulmonary by-pass (on pump) in 25 patients (29%). 4 patients (5%) (mean age 85 ± 38 years) were on medical treatment. In 7 patients (8%) vessels were bypassed with bilateral IMA. 7 patients (8%) underwent concomitant mitral and aortic valve surgery. At follow-up there were 5 PCI (6%) for symptomatic graft occlusion and acute coronary syndromes and 1 repeat CABG for graft occlusion. 3 patients (4%) died, 2 for operative death due to heart failure and 1 for sudden cardiac arrest. There were no strokes and myocardial infarctions.

Conclusions: Using our routine strategy of CABG for LM disease, patients had excellent outcome in terms of MACCE. This is due to the performance of CABG off pump to reduce complications related to the heart-lung machine. Low was the need for repeat revascularisation with PCI or CABG. Our data provide a benchmark against which long-term outcome of PCI for LM disease can be compared.

P115

Effect of preoperative levosimendan administration on myocardial injury and renal function markers in patients with left ventricular dysfunction undergoing elective cardiac surgery

M J Garcia Gonzalez,¹ P Jorge Perez,¹ JJ Jimenez Rivera,¹ JL Iribarren Sarrias,¹ P Barrio Martinez,¹ C Bellejo Alkasesm,¹ JJ Ferrer Hita,¹ G Yanes Bowden,¹ M Vargas Torres¹ and F Bosa Ojeda¹

¹Hospital Universitario de Canarias, S. Cristóbal de La Laguna - Tenerife, Spain

Aims: Levosimendan is a drug with inotropic, vasodilatory and organ-protective properties due to a triple mechanism of action: 1) increases calcium sensitivity of troponin C without increasing calcium release of into the cytosol or modify the levels of intracellular cyclic AMP; 2) activates vascular smooth muscle cells sarcolemmal ATP sensitive K⁺ channels in , and 3) activates cardiomyocyte mitochondrial ATP sensitive K⁺ channels. We study the effects of preoperative levosimendan administration (PLA) on myocardial injury and renal function markers in

patients with left ventricular systolic dysfunction (LVSD) undergoing elective cardiac surgery.

Methods: study of a cohort of patients with LVEF $\leq 45\%$ undergoing elective cardiac surgery from January 2006 to December 2013. Patients who received PLA (infusion of 0.05 to 0.2 mcg / kg / min for 24 hours without loading dose) - (Group I) within 72 hours prior to surgery were compared with those who did not receive it (Group II). Demographic, clinical, hemodynamic, operative characteristics and postoperative outcome were analyzed.

Results: 146 patients, 80% male; mean age 66 ± 9.7 years; LVEF $36 \pm 5\%$; and Euroscore 8.7 ± 8.6 were studied. Group I included 13 and Group II 123 patients. Among both groups there were no significant differences in age, sex, cardiovascular risk factors, preoperative functional class, LVEF and operative characteristics. Group I patients had a postoperative lower troponin I peak levels (1.9 ± 1.8 ng/mL vs 10.4 ± 32 ; $p=0.02$) and creatinine peak levels (0.98 ± 0.4 vs 1.3 ± 0.7 mg/dL; $p=0.03$ than Group II patients.

Conclusions: preoperative administration of Levosimendan is associated with reduced myocardial injury and renal function markers in high-risk patients with LVSD undergoing elective cardiac surgery.

P116

Postoperative bleeding in cardiac surgery for acute coronary syndrome: ticagrelor versus other platelet aggregation inhibitors

TT Kok,¹ M Hoekstra,¹ B Hiemstra,²
JG Regtien,² M Mariani,³ MW Nijsten² and
ICC Van Der Horst²

¹University Medical Center Groningen, Anesthesiology, Groningen, Netherlands

²University Medical Center Groningen, Critical Care, Groningen, Netherlands

³University Medical Center Groningen, Thoracic Surgery, Groningen, Netherlands

Purpose: In patients with acute coronary syndrome ticagrelor compared with clopidogrel is associated with both increased reperfusion and increased bleeding complications. We investigated whether ticagrelor is associated with bleeding complications as compared to other platelet aggregation inhibitors in patients who underwent cardiac surgery.

Methods: In an observational study from June 2012 till February 2013 we included all patients diagnosed with

acute coronary syndromes who underwent coronary artery bypass grafting (CABG) for reperfusion therapy.

The introduction of the prescription of ticagrelor differed per region over time, so that the referring region, not the condition of the patient, determined whether ticagrelor was given in the ambulance.

Patients were divided in two groups according to preprocedural platelet aggregation inhibitor treatment (ticagrelor versus non-ticagrelor). All other aspects of treatment of patients with ACS were equal. Endpoints were the use of procoagulants, transfusion needs and amount of blood loss within the first 24 hours after surgery.

Results: In this period 365 CABGs were performed, from which 174 CABGs due to ACS. From 6 out of these 174 patients preoperative antiplatelet therapy could not be identified with certainty. For the 51 ticagrelor and 117 non-ticagrelor patients baseline clinical and surgical characteristics were equal, including mean age (65 vs 68 years), Euroscore II (2.0 vs 2.3), duration of procedure (222 vs 205 minutes), CABG off pump (67 vs 67%), CABG on pump (24 vs 22%) and CABG combined with additional valve, heart rhythm or thoracic vascular surgery (1 vs 4%). In the ticagrelor group 47 (92%) patients received acetylsalicylic acid. In the non-ticagrelor patients 109 (93%) received acetylsalicylic acid and/or 62 (53%) clopidogrel and/or 22 (19%) tirofiban. The postoperative use of fibrinogen, tranexamic acid and protamine was 16 vs 11% ($p=0.46$), 40 vs 26% ($p=0.06$), 14 vs 11% ($p=0.58$) respectively. Fresh frozen plasma was used in 32 vs 15% ($p=0.01$). Blood loss in the first 24 hours of ICU stay was 1090 ml (IQR 675 - 1560 ml) in the ticagrelor group vs 815 ml (IQR 580 - 1140 ml) in the non-ticagrelor group ($p=0.01$). In the ticagrelor group, mean ICU stay was 5.6 days vs 2.4 in the non-ticagrelor group ($p=0.01$). Mean hospital stay was 23.2 days (ticagrelor) vs 15.3 (non-ticagrelor) ($p=0.01$).

Conclusions: In our study, treatment of patients with ACS with ticagrelor as compared to clopidogrel or tirofiban in a same period of inclusion was associated with more blood loss and higher transfusion need of fresh frozen plasma after CABG.

P117

Is emergency and salvage coronary artery bypass grafting justified? The Nordic Emergency/Salvage (NES) CABG study

TA Axelsson,¹ A Mennander,² M Malmberg,³
J Gunn,³ A Jeppsson⁴ and T Gudbjartsson¹

¹Landspítali University Hospital, Cardiothoracic Surgery, Reykjavik, Iceland ²Tampere University Hospital, Cardiothoracic Surgery, Tampere, Finland ³Turku University Hospital, Cardiothoracic Surgery, Turku, Finland ⁴Sahlgrenska Academy, Department of Cardiothoracic Surgery, Gothenburg, Sweden

Purpose: According to the EuroSCORE-II criteria, patients undergoing emergency coronary bypass grafting (CABG) are operated on within 24 h after presentation. The outcome of patients undergoing salvage CABG requiring cardiopulmonary resuscitation en route to the operating theatre is unknown. The objective of this multicentre study was to investigate the outcome of emergency and salvage CABG.

Methods: We performed a retrospective analysis of all 619 patients (mean age 67±10 years, 56% males) who underwent emergency CABG (n=584) or salvage CABG (n=35) at four North-European university hospitals from 2005 to 2014. Mean follow-up time was 32 months (range 0–103 months).

Results: All patients had an acute coronary syndrome: 236 (38%) had a STEMI and 292 (47%) had an NSTEMI. Haemodynamic instability requiring inotropic drugs and/or IABP preoperatively occurred in 90 (15%) and 85 (14%) of the patients, respectively. Three hundred and thirty-three patients (54%) were transferred to the operating room immediately after angiography and 205 (33%) had a failure of an attempted PCI. Cardiopulmonary resuscitation within 1 h before the operation was performed in 46 patients (7%), and 10 patients (2%) received cardiac massage during sternotomy. Hospital mortality for emergency and salvage operations was 13% and 42%, respectively. Early complications included reoperation for bleeding (15%), postoperative stroke (6%), and de novo dialysis for acute kidney injury (6%). Overall 5-year survival was 76% for emergency operations and 39% for salvage operations. According to multivariate analysis, age, extracardiac arteriopathy, STEMI, and use of preoperative inotropic agents or IABP were risk factors for early mortality.

Conclusions: Up to a third of the patients undergoing emergency and salvage CABG had a failed PCI attempt due to ongoing myocardial infarction. The denominators for early mortality included extracardiac arteriopathy and STEMI, and long-term survival was acceptable. Life-saving emergency and salvage CABG is justified.

Circulatory support, extracorporeal

P118

The role of sildenafil in the treatment of right ventricular dysfunction and pulmonary hypertension after heart transplant and LVAD implantation

F Caetano,¹ S Ledot,¹ A Simon¹ and S Kaul¹

¹Harefield Hospital, London, United Kingdom

Background: Superimposed acute right ventricular (RV) failure in the setting of preexisting pulmonary hypertension (PH) is a nearly fatal complication after heart transplant (HT). Despite inhaled nitric oxide (iNO) being the “milestone” in the treatment of PH, the debate regarding the role of new selective pulmonary vasodilators is still open.

Purpose: Evaluate the safety and efficacy of sildenafil (SLD) in patients (P) with RV dysfunction and PH, detected by echocardiography (Echo) and/or pulmonary artery catheter, after HT and left ventricular assist device (LVAD) implantation.

Methods: Retrospective study of 33 patients (P) (85% male; age 45.5±13.1 years) who received SLD to facilitate weaning of IV and inhaled pulmonary vasodilators after HT or LVAD implantation. Hemodynamic data were analyzed and Echo was performed in different moments in time. A follow-up (FU) (9.5±6.5 months) regarding readmission and mortality was done.

Results: 39.4% of P underwent HT; 21% had a redo surgery; LVAD P had 89±30 minutes of bypass time. 75.8% of cases were urgent procedure. SLD was started 4.7±5.3 days after surgery, as an infusion in 72.7% of P (cumulative dose: 156±195mg), converted to oral (77±17mg/day) after 3.3±3.6 days. Remaining therapy: adrenaline in all patients, milrinone in 97%, iNO in 94%, nitrates in 64% and right VAD in 9.1%. Table 1 shows hemodynamic parameters evolution during SLD administration. The duration of ventilation was 8.1±6.8 days and ITU length of stay was 19.6±19.0 days. SLD therapy was completely stopped after 53±47 days. RV function was assessed by TAPSE: before SLD – 8.0±4.8mm; at hospital discharge – 9.8±3.7mm and at FU – 9.7±3.4mm.

In hospital mortality was 6.1%. During FU: 87% were classified NYHA ≤ 2; 55% were re-admitted in the hospital and 6.5% died.

Conclusions: In this study SLD allowed a gradual weaning from inotropic and pulmonary vasodilator drugs in P suffering from RV failure and PH after HT and LVAD implantation. Its low cost and possible oral administration are two important advantages in comparison with other therapies currently available.

Table 1.

Hemodynamic parameter	Baseline	After 1 hour	After 24 hours
Mean arterial pressure, mmHg	75.5±14.6	68.8±8.9	71.1±8.6
Mean pulmonary artery pressure, mmHg	28.5±8.4	27.5±8.1	27.7±6.9
Cardiac index, L/min/m ²	2.83±0.69	2.95±0.67	3.03±0.55

P119

The unexpected rescuer in electrical storm: the use short-term mechanical circulatory support as a temporary measure to overcome refractory ventricular fibrillation in subacute myocardial infarction

T Adrega,¹ E Molinos,² C Gavina,³ L Santos¹ and R Araujo²

¹Centro Hospitalar do Baixo Vouga, Cardiology service, Aveiro, Portugal

²Hospital Pedro Hispano, Intensive Care Unit, Matosinhos, Portugal

³Hospital Pedro Hispano, Cardiology, Matosinhos, Portugal

The field of medical devices is contemplating a gigantic leap towards more powerful, safer and economically competitive solutions, granting novel and audacious resources to demanding clinical challenges. Regarding short-term mechanical circulatory support [ST-MCS], important advances, such as more biocompatible membranes and miniaturised devices, have been achieved. The present case illustrates the role ST-MCS as a compelling resource in the demanding scenario of refractory electric storm in a patient with recent acute MI.

A 61-year-old male patient with intense thoracic oppression is admitted in the ER in acute pulmonary oedema and shock. The ECG showed posterior STEMI, echocardiographically confirmed. Coronary angiography showed a thrombotic occlusion in the left circumflex

artery (the culprit lesion) and a proximal occlusion in the left anterior descending artery, both being stented. The evolution in the ICU was of parsimonious clinical response, dominated by heart failure. At the 8th day after admission, the patient initiated an incessant electrical storm of ventricular fibrillation [VF], with no electrical premonition and consisting in R-on-T phenomenon. The arrhythmic disruption was refractory to pharmacological, ionic and sedative measures. Recrudescence of ischaemia was angiographically excluded and the precedent blood study showed normal ionogram and thyroid function. A multidisciplinary discussion between cardiologists and intensive care physicians resulted in the implantation of femoro-femoral venoarterial ST-MCS in order to alleviate mechanical and catecholaminergic stress and ensure adequate systemic perfusion. The clinical effect of ST-MCS [set at 3500 rpm, 3.35 L/min of flow] was almost immediate, with cessation of the electrical storm and it was possible to discontinue the mechanical support after 5 days of treatment without serious iatrogeny. The clinical evolution was benign, allowing discharge from hospital at the 28th day.

To the best of our knowledge, this was the first described case of using ST-MCS as a rescue of intractable electrical storm after subacute MI without ensuing heart transplantation. Although antiarrhythmic drug therapy remains the cornerstone to control electrical storms, sometimes it is not enough. Overdrive suppression was halted due to absence of a dysrhythmic trigger and the haemodynamic instability precluded radiofrequency catheter ablation. This case illustrates that, as more field experience is being gained, a broader range of applications regarding cardiac pump support materializes, and emphasizes the paramount role of cardiac expertise in the ICU setting.

P120

Percutaneous extracorporeal membrane oxygenation support in acute myocardial infarction complicated by refractory cardiogenic shock

I Sousa Casasnovas,¹ F Diez-Delhoyo,¹ M Juarez-Fernandez,¹ A Ayesta-Lopez,¹ F Noriega,¹ M Martinez-Selles,¹ H Bueno-Zamora¹ and F Fernandez-Aviles¹

¹University Hospital Gregorio Maranon, Madrid, Spain

Background: Patients suffering acute myocardial infarction (AMI) complicated by refractory cardiogenic shock (RCS) have high in-hospital mortality. IABP seems to be useless in this setting so devices are being increasingly used. One option is the use of venoarterial extracorporeal membrane oxygenation (VA-ECMO), that can be implanted percutaneously in the catheterization laboratory (Cath Lab).

Methods: We analyzed our initial experience with percutaneous VA-ECMO since July 2013, when our program started, to January 2015. ECMO was percutaneously implanted in the Cath Lab by interventional cardiologists in all cases, using femoral approach.

Results: 6 patients were supported with percutaneous VA-ECMO due to AMI complicated with RCS. Mean age was 55.1 ± 7.3 years and 4 (66.7%) were men. Mean left ventricular ejection fraction prior to ECMO support was $14 \pm 8\%$ (n=5), while one patient presented with right ventricular infarction and preserved left ventricular ejection fraction. All of them were implanted in the cath lab by femoral approach. Sizes of cannulae were as follows: Venous cannula 21F (100%), Arterial cannula 1 15F, 2 17F and 2 19F, in 2 patients a distal perfusion sheath was inserted. Time from decision to beginning of therapy was 26.67 ± 15 minutes. Lactic acid before VA-ECMO was 8.1 ± 2.8 mmol/L and dropped to 1.8 ± 0.8 mmol/l after 24 hours of circulatory support.

Three patients developed bleeding complications. One patient had acute arterial ischemia related to the arterial cannula, solved with subclavian artery cannulation.

Mean patient circulatory support duration was 4.8 ± 2.9 days. Weaning from ECMO was possible in four patients (due to partial myocardial recovery), one patient was bridged to heart transplantation with biventricular Berlin Heart Excor and one patient was bridged with Levitronix to transplantation. Hospital discharge was achieved in 5 patients (83.3%). The only patient who died, was successfully weaned from ECMO, but his clinical course was complicated by cerebrovascular accident and electric storm.

Conclusion: This initial experience shows favourable outcomes with percutaneous ECMO support in the setting of AMI complicated with RCS, a scenario with poor prognosis using conventional therapies.

PI21

Clinical outcomes of critically ill patients who underwent extracorporeal membrane oxygenation support: a single-center experience for 9 years.

DH Kim,¹ JM Cho,¹ IS Sohn,¹ ES Jin,¹ HJ Hwang,¹ CB Park,¹ CJ Kim¹ and YT Kwak¹

¹Kyung Hee University Hospital at Gangdong, Department of Cardiology, Seoul, Korea, Republic of

Purpose: The use of ECMO has been expanded and applied to critically ill adults with hemodynamic compromise from a variety of etiologies. The aim of this study is to evaluate outcomes of adult patients supported by ECMO and to compare the clinical outcomes among certain indications of ECMO.

Methods: We reviewed retrospectively characteristics and clinical outcomes of 64 patients who had applied ECMO from May 1, 2006 until July 17, 2014.

Indications of ECMO included cardiogenic shock, respiratory distress, septic shock, hypovolemic shock and failure of weaning from cardiopulmonary bypass (CPB) during cardiac surgery.

Results: 40.6% of patients (26/64) have successfully been weaned from the ECMO, 1 month survival rate was 21.3% (13/64), 1 year survival rate was 15.6% (10/64).

Between 1 year survivor and non-survivor, there are significant difference in CPR duration (4.1 ± 6.9 min vs 24.9 ± 28.7 min, $P=0.0001$), hemoglobin concentration at admission (13.0 ± 2.6 g/dl vs 11.2 ± 2.3 g/dl, $p=0.031$), lowest hemoglobin concentration during ECMO support (9.9 ± 2.1 g/dl vs 7.7 ± 2.0 g/dl, $P=0.004$), ALT at admission (98.7 ± 88.2 U/L vs 286 ± 600 U/L, $P=0.014$). The 1 year survival rate was higher for CPR lasting < 30 min than for CPR lasting > 31 min (24% vs 0%, $P=0.0001$).

Table 1. Comparison of CS and non-CS patients.

Variable	Cardiogenic shock (n=40)	Non-cardiogenic shock (n=24)	P value
1 month survivor-no.(%)	12 (30%)	1 (4%)	0.022
1 year survivor-no.(%)	10 (25%)	0 (0%)	0.010
IABP use-no.(%)	8 (20%)	0 (0%)	0.021
LV EF- mean \pm SD(%)	$43.0 \pm (16.2)$	$61.8 \pm (8.8)$	0.0001
Hb ($\times 10^6/\mu\text{l}$) at admission	$12.1 \pm (2.4)$	$10.3 \pm (1.9)$	0.004
Hb ($\times 10^6/\mu\text{l}$) lowest during ECMO	$8.7 \pm (2.1)$	$7.0 \pm (1.9)$	0.003
CRP (mg/dL)	$3.3 \pm (5.1)$	$8.9 \pm (10.8)$	0.023

CS: cardiogenic shock, non-CS: non-cardiogenic shock, IABP: intra-arterial balloon pump, LV EF: left ventricular ejection fraction, Hb: hemoglobin, CRP: C-reactive protein.

Patients with cardiogenic shock showed 45% of weaning rate (18/40), lower LV EF(43±16.2% vs 61.8±8.8%, P=0.0001), higher 1 year survival rate than non-cardiogenic shock(25% VS 0%, P=0.01).

Conclusion: Early application of ECMO provides more effective outcomes for patients with cardiogenic shock than patients with non-cardiogenic shock.

PI22

Platelet-neutrophil complex formation and platelet activation in patients requiring vvECMO links to hemostasis and inflammation

H Seeba,¹ T Wengenmayer,¹ D Duerschmied,¹ C Bode¹ and I Ahrens¹

¹University of Freiburg, Department Of Cardiology And Angiology I, Freiburg, Germany

Background: Anticoagulation management in ECMO therapy is challenging since bleeding complications are known to be associated with this therapy. Inflammation is also a challenge during ECMO therapy. Therefore we look at platelet-neutrophil complexes (PNCs) as they are important for subsequent neutrophil activation and migration. We hypothesized that platelet activation and formation of PNCs is a read-out and could serve as a therapeutic target to decrease bleeding events and inflammation.

Method: Patients with acute respiratory failure were recruited in a single center prospective study. We constructed a control group consisting of 8 mechanically ventilated patients with a PEEP > 10 mbar and a septic constellation. Arterial blood was collected before initiation of ECMO and at 24, 72 and 168 hours afterwards. Platelet activation was assessed by P-selectin expression and binding of the GPIIb/IIIa activation specific antibody PAC-1. 10.000 platelets were counted and left alone or treated with ADP, collagen or TRAP. PNC formation was analysed in a triple staining approach detecting CD45/CD41/CD15.

Results: We included 19 patients with a mean age of 55 ± 16 years and a mean time of ECMO 4.4 days. In the control group we included 8 patients with the mean age of 65 ± 11 years and a mortality rate of 55%. In patients on ECMO therapy mortality rate was 26%, bleeding events occurred in 39%. There was no

significant change in ECMO settings. Platelet count decreased over time whilst leukocyte count was not affected. C-reactive protein increased not significant from 178 to 232 mg/dl after 72 hours on therapy. Platelet P-selectin decreased significantly after 24, 72 and 168 hours on therapy (p= 0,0057). ADP-induced P-selectin expression also significantly decreased after 24 hours on ECMO (p= 0,0091). PNCs are increased by initiation and decreased significantly throughout ECMO therapy (p=0,0225). The same pattern were shown in ADP-induced PNC formation. However, ADP-induced PAC-1 bindings to platelets are significantly increased by initiation and at 24 hours on therapy.

Conclusion: Platelet reactivity is significantly increased upon initiation of extracorporeal circulation. Platelet P-selectin expression decreased within the first 72 hours during ECMO. Circulating platelet-neutrophil complexes are increased by initiation of ECMO and decreased over time. Therapeutic approaches to reduce platelet reactivity within the first 24 hours on ECMO therapy could therefore offer a novel concept to prevent bleeding complications and may have a positive influence on inflammation.

PI23

Short-term outcomes of patients undergoing CF-LVAD implantation: Significance of pre-operative tricuspid insufficiency

M T Petrovic,¹ S Nathan,² T Hebar,³ I Rajapreyar,² P Loyalka,² B Kar² and I D Gregoric²

¹Clinical Center of Serbia, Institute for Cardiovascular Diseases, Belgrade, Serbia ²University of Texas Health Science Center, Center for Advanced Heart Failure, Houston, United States of America ³University Medical Centre Maribor, Maribor, Slovenia

Background: Tricuspid valve regurgitation (TR) in patients undergoing implantation of continuous left ventricular assist device (CF-LVAD) can result in post-operative right ventricular (RV) dysfunction, and lead to renal impairment, right ventricular assist device implantation (RVAD), prolonged ICU and hospital stay, early hospital mortality.

The aim of our study was to evaluate if severity of pre-operative TR may predict short-term outcomes in CF-LVAD recipients.

Methods: Between 2012-2014, 64 consecutive patients underwent CF-LVADs implantation without

concomitant tricuspid valve (TV) repair. HeartMateII was implanted in 45 patients (70.3%). 58 patients had no TR, or had trivial, mild, mild-to-moderate TR (Group 1) and 6 patients had moderate-to-severe, or severe TR (Group 2). Between these groups we compared patients' demographics, treatment strategies and outcomes.

Results: Between groups 1 and 2 there was no statistical significance in age (56 ± 12 years vs. 53 ± 13 years, $p=0.613$), median INTERMACS score (2 vs. 2, $p=0.260$), and median post-LVAD model of end-stage liver disease (MELD)XI score (31 vs. 40, $p=0.107$). Pre-operative MELD XI was statistically lower in Group 1, 32 (IQR: 28-39) than in Group 2, 56 (IQR: 35-75) ($p=0.023$). Groups 1 and 2 had similar percentages of patients receiving CF-LVADs as bridge-to-transplant therapy (60.3% vs. 50%) and destination therapy (39.7% vs. 50%), $p=0.623$. No differences ($p < 0.05$) were seen with respect to gender, RVAD implantation, 30-day overall and cardiovascular (CVS) mortality, post-operative renal failure, and in hospital length of stay (Table 1). Group 2 patients showed significant drop in 30-day-MELD XI score comparing to pre-operative values ($p=0.040$).

Conclusion: In our study groups the degree of preoperative TR didn't seem to affect short-term patients' outcomes. MELD XI score may indicate improvement of TR and RV function.

Table 1. Patients' short-term outcomes.

Parameter	Group 1 (N=58)	Group 2 (N=6)
Male, N (%)	54 (93)	6 (100)
RVAD, N (%)	1 (1.7)	0 (0)
Renal failure, N (%)	4 (6.9)	0 (0)
30-day mortality, N (%)	4 (6.9)	0 (0)
30-day CVS mortality, N (%)	2 (3.4)	0 (0)
Median post-implantation hospital length of stay, days (IQR)	24.5 (15-37)	24 (14-55)

PI24

Innovation in materials and design for ventricular assist device

AF Plesoianu,¹ CE Plesoianu¹ and G Tinica¹

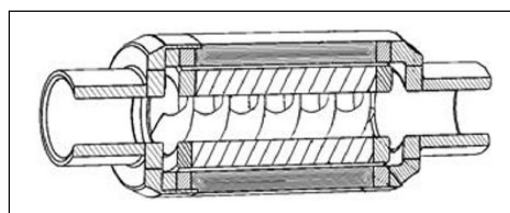
¹University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania

Objective: Research within a multidisciplinary team (surgeon, cardiologist, engineer) in order to assess new approaches in terms of design and materials for partial ventricular assist devices (VAD) characterized by endovascular and minor surgery implantation.

Materials and Methods: We designed a new device for endovascular and minor surgery implantation based upon the analysis of present VAD in terms of addressability, complexity of the intervention and postoperative evolution of the patient.

Results: New approaches in design and materials seem to be the solution for the inconveniences of existing devices. The evolution of partial VAD with endovascular implantation from the classical VAD significantly increased the patient's addressability and the success of the intervention. However, the problem of infectious risk and damage of the blood cells still remain. Our experience in the fields of heart surgery, cardiology and interventional cardiology set the boundaries for designing a new VAD.

Accomplishments: We have created a prototype based on an innovative design where the blood does not circulate through the space between the rotor and the stator of the motor, avoiding centrifugation and sudden changes in flow direction. New materials developed for mechanical valves will be used. Due to its minimal invasiveness this PVAD might be used in earlier stages of heart failure with a huge potential benefit in terms of survival and quality of life.



Schematic view of the proposed design.

Databases, Registries and Surveys

PI25

Screening of OSAS in patients admitted in an intensive cardiac care unit (ICCU) for ACS

S Morra,¹ D Corrado,² K Solecki,¹ F Bughin,¹ F Gouzi,¹
F Leclercq,¹ Y Dauvilliers,¹ S Cade,¹ F Cransac¹
and F Roubille¹

¹University Hospital of Montpellier, Montpellier, France

²University Hospital of Padova, Padua, Italy

Purpose: Nowadays, there are increased evidences that OSAS is involved in the pathophysiology of various cardiac diseases, including CAD. However, OSAS is still largely underestimated in cardiology practice.

Aim: The aim of this study was to determine 1/ the estimated prevalence of OSAS in patients admitted to ICCU for ACS by a validated portable monitoring device 2/ the feasibility of the screening in an ICCU setting.

Patients and methods: This prospective study recruited 36 patients hospitalized for ACS without clinical evidence of heart failure in ICCU between January and April 2015. All patients gave informed consent and underwent an overnight sleep study using 3-channel portable (nasal airflow, pulse, and oxygen saturation) device (ApneaLink) with automatic analysis in the 24-72h following their admission.

Results: The basic characteristics of the population was: 29 men/9 women; the mean age : 63+/-12 years; : mean BMI : 25,7+/-3.7 kg/m² ; smoking was in 66% of patients and Hypertension in 47% of patients; dyslipidemia in 36%; diabetes in 8.33%; previous ischemic cardiopathy was found in 11%, stroke in 0%, atrial fibrillation in 5.5%. Among the type of ACS, STEMI was observed in 77,7% , NSTEMI in 19.4%, UA in 2.7%.

The mean of LVEF was 50.97+/-5.75%.

The GRACE score was 19,2+/-5.6% .

The mean of AHI is 15.33+/-17.49 per hour.

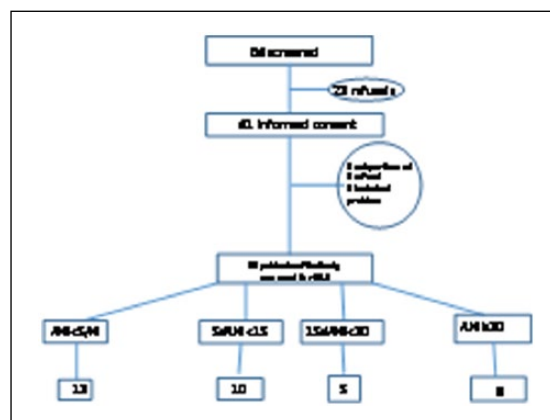
Estimated prevalence of OSAS based on the AHI was 63.9%: mild OSAS in 27.8% of case, moderate OSAS in 13.9%, severe OSAS in 22.2%.

Conclusion: 1/ Estimated prevalence of OSAS is significantly high in patients admitted for ACS in an ICCU.

2/Screening of OSAS is feasible in ICCU.

These findings and the interest of the screening in ICCU are to be confirmed in a larger population.

The consistency with respiratory polygraphy results remains currently under study.



PI26

Direct evidence of the relationship of peak troponin level and pain severity in acute coronary syndrome as an indirect evidence of the relationship of ischemia size and pain severity

R Alrezk,¹ M Al Rezk,² M Assaf,³ F Al Rezk,⁴ CH Tseng⁵ and N Weintraub⁶

¹University of California Los Angeles, Geriatrics Medicine/Biomathematics, Los Angeles, United States of America ²Greater Los Angeles VA Hospital, Geriatrics , Los Angeles, United States of America ³Damascus University, Endocrinology , Damascus, Syrian Arab Republic ⁴JW Goethe University, Frankfurt am Main, Germany ⁵University of California Los Angeles, Internal Medicine, Los Angeles, United States of America ⁶University of California Los Angeles, Geriatrics Medicine, Los Angeles, United States of America

Purpose: We aim to investigate the relationship between chest pain severity in Acute Coronary Syndrome (ACS) presentation and troponin level. If this relationship exists, it can be used as indirect evidence for the relationship of severity of pain and the size of the ischemia. Possibly adding chest pain severity as an important variable in current risk stratification models for ACS. In addition, it will provide evidence that pain expression as a result of myocardial infarction is quantitatively related cardiac innervation signals.

Methods: We interviewed 566 patients presenting to the Emergency Room, in prospective fashion, with chief complaint of chest pain. We collected data related to the chest pain; including location, quality, features, pain severity on a scale (0-10), as well as patient data including ethnicity, age, associated symptoms, translator use, in addition to laboratory data including current and peak

troponin levels. We followed the patients until discharge and recorded the final diagnosis as ACS vs Non-ACS.

For analysis purposes, we dichotomized the pain variable as severe if pain ≥ 8 or non-severe if ≤ 7 . We transformed the troponin to achieve linearity using log transformation. We started with univariate analysis and then proceeded to multivariate logistic regression analysis with covariates of log troponin, age, female, female by age interaction, diabetes, nausea, pain quality, pain features and history of prior MI.

Results: A total of 566 patients were interviewed (N=566, ACS=99, Non-ACS=467). Univariate analysis showed that log troponin peak level is significantly associated with pain severity with odds ratio of 11.8 CI (1.74- 104.8) and P-value of 0.016. Multivariate Logistic Regression Analysis also showed significant association between log-troponin peak level and pain severity with adjusted odds ratio of 5.4 (CI: 1.58-45, p-value=0.033).

Conclusion: Troponin peak level is independently related to Acute Coronary Syndrome chest pain severity upon patient's presentation to the Emergency Room. This finding provides direct evidence of the quantitative nature of cardiac innervation pain signals firings and the extent of myocardial ischemia. In addition, this finding serves as indirect evidence for the relationship between ischemia size and area and the pain severity in ACS, opening new doors to further research that examines the value of adding chest pain severity to the current risk stratification tools for ACS.

P127

Quantitative analytical evaluation of chest pain

R Alrezk,¹ M Al Rezk,² M Assaf,³ CH Tseng,⁴ F Al Rezk⁵ and N Weintraub⁶

¹University of California Los Angeles, Geriatrics Medicine/Biomathematics, Los Angeles, United States of America ²Greater Los Angeles VA Hospital, Geriatrics, Los Angeles, United States of America ³Damascus University, Damascus, Syrian Arab Republic ⁴University of California Los Angeles, Internal Medicine, Los Angeles, United States of America ⁵JW Goethe University, Frankfurt am Main, Germany ⁶University of California Los Angeles, Geriatrics Medicine, Los Angeles, United States of America

Purpose: We have conducted a quantitative analytical evaluation of the described quality of chest pain as a chief complaint for patients presenting to the emergency room in an attempt to provide a new insight into this common complaint, which is responsible for 25%

of non-traumatic ER visits in the United States. We investigated the differences in chest pain presentation across different ethnic and age groups.

Methods: The data was collected prospectively from patients presenting to the ER with a chief complaint of chest pain. Patients were followed until discharge and final diagnoses were recorded. All data was recorded and verified in a safe online database. A cardiologist adjudicated all the cases for accuracy.

We begin with univariate analysis then we proceeded to multivariate logistic regression analysis using stepwise backward selection method using the criteria of minimum BIC. In addition, we conducted trend analysis using density function to compare the pain severity/location trending among geriatric vs. non-geriatric patients.

Results: The study sample of 566 patients (ACS=99/17%, Non-ACS=467/83%) had an ethnic breakdown of 215 non-Latino Whites, 232 Latin, 87 African American, 10 Hmong, 9 Indian and 1 Native American. Non-Significant difference in the quality of pain was observed in ACS (P-value=0.22). Quality of pain analysis by ethnicity in ACS showed that African Americans are more likely to have pain described as "sharp" (P-Value= 0.0529). When a translator was used, the report of maximum pain severity was reduced (P-value= 0.007). Multivariate logistic regression analysis revealed some factors that are associated with reporting severe pain such as the presence of nausea (P-value= 0.021 OR=4.5, CI (1.41-9.33)). Diabetes, Age, and Female-Age Interaction term are associated with decreased pain expression. The final Model for predicting pain severity has 12 variables and the model evaluation shows C-statistic=0.92, Sensitivity=77%, Specificity=94%, Accuracy=85.5%. Trend Analysis of pain/location using density function showed that geriatric patients had more dispersed expression of pain than younger patients.

Conclusion: The analysis provides analytical and quantitative evaluation of chest pain. We hope this new insight will improve our understanding of this complex complaint across different ethnic and age groups.

P128

Main clinical parameters and outcomes comparison between groups of patients with type I and II myocardial infarction

P Serpytis,¹ A Skujaite,² R Serpytis¹ and R Navickas¹

¹University Hospital Santariskiu Klinikos, Vilnius, Lithuania ²Vilnius University, Vilnius, Lithuania

Aim: To evaluate the clinical onset, course, treatment and outcome differences between patients with type I or II myocardial infarction (MI).

Methods: Retrospective study was conducted to analyse data of 1668 patients with MI diagnosis registered in the database of Acute coronary syndromes monitoring system during the year 2011-2015 in Vilnius University Santariskiu Hospital. Patients with type I or II MI were analyzed. The average age of these patients was 66.74±11.98 years. Demographic parameters: age, sex; clinical parameters: anaemia, tachycardia, new onset atrial fibrillation, functional capacity; laboratory tests: troponin, creatinine, BNP concentrations; coronary angiographic data, intervention and medical treatment application and disease outcomes were examined.

Results: Type I MI was diagnosed for 1467 patients (87.95%), type II MI – 116 patients (6.95%). Comparing groups of patients with type II and I MI significant differences were found between the number of patients with anaemia (65% vs. 27%; $p<0.001$), tachycardia (38% vs. 9%; $p<0.001$), new onset atrial fibrillation (13% vs. 4%; $p=0.001$) and significantly (<100 m.) impaired functional capacity (44% vs. 19%; $p=0.008$). Group of patients with type II MI also had lower troponin concentration (8.95±18.8 vs. 22.83±70.0; $p<0.001$). Meanwhile, age (67.56±13.0 vs. 66.68±11.9; $p=0.546$), gender (females 39% vs. 34%; males 61% vs. 66%; $p=0.388$), GRACE risk score (131.74±42.7 vs. 122.15±32.0; $p=0.32$) and creatinine (122.53±126.6 vs. 104.75±142.9; $p=0.329$) and BNP (1346.39±1714.4 vs. 959.17±2445.6; $p=0.283$) concentrations did not have significant differences. Patients with type II MI were characterized by lower number of damaged coronary arteries (49% vs. 28%; $p=0.004$) and a lower degree of stenosis (56% vs. 14%; $p<0.001$). Coronarography (87% vs. 96%; $p=0.002$), percutaneous coronary intervention (42% vs. 82%; $p<0.001$) and antiplatelet treatment (54% vs. 76%; $p<0.001$) were applied less often for these patients. Number of MI complications was equal in both groups. Group of patients with type II MI stood out with higher hospital mortality (10% vs. 4%; $p=0.049$).

Conclusions: Type II MI is diagnosed almost 12 times less frequent than type I MI, however patients with type II MI have higher hospital mortality. Type II MI patients are more frequently diagnosed with anaemia, tachycardia, new onset atrial fibrillation, significantly impaired functional capacity and lower troponin concentration than those with type I MI. Interventional and antiplatelet treatment is applied less often in type II MI patients.

P129

Adverse early-life environment and premature acute coronary syndrome: a case-control study

A Qanitha,¹ BAJM De Mol,¹ DR Pabittei,² I Mappangara,² Y Van Der Graaf³ and CSPM Uiterwaal³

¹Academic Medical Center of Amsterdam, Cardio-thoracic Surgery, Amsterdam, Netherlands ²Hasanuddin University, Faculty of Medicine, Makassar, Indonesia ³University Medical Center Utrecht, Julius Center for Health Sciences and Primary Care, Utrecht, Netherlands

Background: Infections in young children may affect the vasculature and initiate early atherosclerosis. Whether sustained infections in childhood and maternal gestational problems elicit the adulthood atherosclerosis remains unclear. We investigated the association between adverse environments in early life with the occurrence of premature coronary heart disease.

Methods: We conducted a population-based case-control study of 153 patients with a first acute coronary syndrome before the age of 56 years and 153 age- and sex-matched controls. History of severe infections in childhood and adolescence as well as maternal history of pregnancy complications were obtained together with the clinical and laboratory measurements and other cardiovascular risk factors. Conditional logistic regression was performed to assess the association.

Results: Both positive sustained early-life infection and intrauterine gestational problem increased the risk for acquiring acute coronary syndrome at young age with odds ratio (OR) 2.67 (95% confidence interval (CI): 1.47-4.83, $p=0.001$), and OR 2.57 (95% CI: 1.07-6.16, $p=0.034$), respectively. After adjustments for classical risk factors, lifestyle, dietary pattern, socio-economic status, and parental history of cardiovascular events, these significant associations remain unchanged.

Conclusion: Infections in early life and maternal pregnancy complication are associated with premature coronary heart disease in adulthood.

P130

Contemporary in-hospital STEMI management of elderly patients. Is there room for improvement? Data from HULAR

M Santas Alvarez,¹ R C Vidal Perez,¹ E Pereira Lopez,¹
J Elices Teja,¹ J Bayon Lorenzo,¹ R Franco Gutierrez,¹
R Rios Vazquez,¹ M Freire Tellado,¹ A Testa Fernandez¹
and C Gonzalez-Juanatey¹

¹University Hospital Lucus Augusti, Cardiology, Lugo, Spain

Purpose: There are few studies about the management of ST elevation myocardial infarction (STEMI) in elderly patients (≥ 75 years old) to support the current invasive approach recommended by guidelines, as many of these patients are excluded for this option. We aimed to investigate the in-hospital prognosis and management of this group of patients not well represented in clinical trials.

Methods: HULA registry is a cohort study of consecutive patients with STEMI diagnosis. For this analysis we included patients ≥ 75 years-old hospitalized from 2010 to 2013 in our cardiology department. Follow-up was done by clinical review or telephone contact and death or CV events were recorded, as well as the cause of death

Results: 157 patients were included, 63.1% (99) male sex, age at inclusion 81.8 ± 4.5 years old. We found hypertension 68.2%, diabetes 28%, hyperlipidemia 49.7% active smoker 18.7%, prior coronary artery disease 11.5% (only 6.4% were prior revascularized), COPD 14.8%, chronic kidney disease 12.1%, prior stroke 10.2%, atrial fibrillation 6.4%. Risk stratification of the patients showed a GRACE score 200.6 ± 32.2 and TIME score 6.48 ± 2.6 . The bleeding risk score by CRUSADE was 41.9 ± 13.6 . The STEMI therapeutic strategy at admission was mainly primary PCI 59.9%, thrombolysis 8.9%, 31.2% were managed conservatively at the diagnosis, during the admission coronary angiography was performed in other 29 patients outside primary PCI. Killip at admission was I-51% II-27.4% III-8.3% IV-13.4%. 48.4% suffer some degree of heart failure during admission, 10.9% bleeding episodes, in hospital stroke 1.9%, significant arrhythmias 14.6%. We found a 15.9% in-hospital mortality for this group of patients. Logistic regression analysis for in-hospital mortality in elderly patients shown as only predictor of mortality the Killip Class III or IV at admission (hazard ratio 8.7, 95% Confidence Interval 3.3-22.5, $p < 0.001$).

Conclusions: The elderly patients showed an important in-hospital mortality in STEMI, and the main determinant of this mortality was a Killip class III or IV at admission. We didn't find any prognosis influence of the treatment strategy at admission. There is room yet for an improvement in the use of the invasive strategy in this group of patients that could show a prognostic benefit

PI31

Prevalence of prehypertension in young adults and the related variables of technical high school

I P Borges,¹ ECS Peixoto,² C Souza,² RTS Peixoto,¹
RTS Peixoto³ and AAB Aragao¹

¹Military Police from Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Fluminense Federal University, Rio de Janeiro, Brazil

³Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil

Background: Worldwide, several studies have been conducted about the association between hypertension in childhood and adolescence and socio-demographic factors: lifestyle, family history and anthropometry. Objective: This study aims to identify the prevalence of prehypertension and related variables in young adults.

Methods: Cohort study. The variables were collected by questionnaire or measures. Univariate analysis was performed using the chi square and it was performed five multiple logistic regression models for the variables with $p < 0.10$ in the univariate analysis. The students were from three courses, either college as vocational school, were evaluated: gender, age, course, skin color, income, education, lifestyle, history of hypertension, weight, waist circumference and prehypertension defined as VII Joint National Committee: systolic 120-139 and diastolic 80-89 mmHg.

Results: A total of 394 students were evaluated. There were 309 (78,43%) in the normal group (NG) and 85 (21,57%) in prehypertension group (PH) of students. It was found in NG and PG, respectively: females 254 (82.2%) and 44 (51.8%) ($p < 0.001$); age (three age ranges: until 19 years, 20-25 and 25-30) more frequent in older ($p = 0.001$); ethnicity (self declared) black 16 (5.2%) and 11 (12.9%) ($p < 0.001$); 62 mother's hypertension (20.1%) and 28 (32.9%) ($p = 0.024$); overweight 34 (11.0%) and 17 (20.0%) ($p = 0.045$); obese 3 (1.0%) and 10 (11.8%) ($p < 0.001$); increased abdominal circumference 37 (12.0%) and 19 (22.3%) ($p = 0.024$). At least one of five multiple logistic regression models were associated with absence or presence of prehypertension (OR, 95% CI): females (4,026, 2.373 to 6.828), age (1.081, 1.004 to 1.164), hypertensive mother (1.838, 1.027 to 3.289) and greater waist circumference (1.067, 1.035 to 1.100).

Conclusion: About a fifth of the students were considered to be in prehypertension group. Factors associated with prehypertension this study: male, older, mother with hypertension and increased waist circumference.

General intensive care

PI32

Clinical spectrum and prognosis of patients with acute kidney injury in acute coronary syndromes.

V Vicar¹ and GAZALA Sheenam Gazala¹¹Sher -i- Kashmir Institute of Medical Sciences, Cardiology, Srinagar, India

Acute kidney injury (AKI) is common in patients hospitalized with acute coronary syndromes developing 1 in 5 patients. Development of AKI is associated with adverse long term outcomes including permanent renal impairment and end-stage renal disease. Minor increases in serum creatinine levels are associated with increased mortality. A prospective study was conducted in 200 patients with ACS. Serum creatinine at time of admission, 24 hours, 48 hours and at discharge were taken along with eGFR. Follow up for short term (30 days) and long term (1 year) was done. There was a significant increase in mortality and morbidity in patients who developed AKI. Incidence of AKI was 17.5%. Mortality in AKI patients with ACS was 17.1% while without AKI, it was 3%. Smoking and dyslipidemia were the main risk factors in patients with AKI. 77.1% of AKI patients developed CKD. We concluded that development of AKI was an independent risk factor for 1 year mortality in patients with ACS and highlighted importance of dynamic serum creatinine monitoring for short term risk stratification of ACS patients.

PI33

Clinical characteristics, management and outcomes of patients with severe heart failure requiring hospitalization in the hybrid intensive cardiology care/intensive care unit - preliminary report

M Gasior,¹ M Ostrega,¹ G Slonka,¹ A Kurek,¹ R Koba,² P Nadziakiewicz,² M Zembala,³ A Cislak,¹ P Knapik² and M Gierlotka¹

¹Silesian Center for Heart Diseases, Medical University of Silesia, 3rd Department of Cardiology, Zabrze, Poland ²Silesian Center for Heart Diseases, Medical University of Silesia, Clinical Department of Cardiac Anesthesia and Intensive Care, Zabrze, Poland ³Silesian Center for Heart Diseases, Medical University of Silesia, Department of Cardiac Surgery and Transplantation, Zabrze, Poland

Background: There is a small amount of data on clinical outcomes of patients with severe heart failure (SHF) treated in the hybrid intensive cardiology care / intensive care (HICC/IC) unit.

Objectives: To define the model of patient with SHF hospitalized in the hybrid ICC / IC unit and to find independent factors influencing in-hospital outcomes.

Methods: We present retrospective, single-center, observational registry including consecutive patients with SHF hospitalized in HICC/IC from. Patients with acute coronary syndromes were not included to the registry.

Results: A total of 120 patients were enrolled. The mean age was 58.7 ± 12.9 and 74.2% of patients were male. Ischemic etiology occurred in 44.2% of study population, whereas non-ischemic was presented in 55.8% cases. The incidence of previous myocardial infarction among 40% patients was noted, while prior percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) were performed respectively in 40.0% and 12.5%. In the medical history of analyzed group, the percentage of hypertension was 55.0%, diabetes mellitus 42.5% and chronic kidney disease 41.7%. On admission, the mean Acute Physiology and Chronic Health Evaluation in HF scale (APACHE-HF) scoring amounted to 3.5 ± 1.4 points, cardiogenic shock was present in 14.2%. The median value of left ventricular ejection fraction was 20.0% (15.0% - 33.0%).

The necessity for use mechanical ventilation, intravenous catecholamines and intra-aortic balloon pump was 26.7%, 58.3% and 23.3% respectively. The coronary angiography was performed in 46.7% whereas PCI in 12.5%. The median maximal therapeutic intervention scoring system (TISS-28) value during the hospitalization was 28.0 (24.0-33.0) points. All-cause mortality during index hospital stay maintained at 20.0%. The independent predictors of in-hospital deaths are presented in the table.

Conclusions: This is preliminary report on patients with SHF hospitalized in the HICC/IC unit. Presented data prompt to continuous monitoring of the results and optimize the treatment in the routine clinical practice.

Table 1.

Parameter	Odds Ratio	95% Confidence Interval	P value
Shock	29.00	5.40–155.68	<0.001
Hemodiafiltration	7.04	1.66–29.78	0.007
Performed coronary angiography	0.17	0.04–0.84	0.027

P134

Predictors of long-term mortality in patients hospitalized in intensive cardiac care unit.

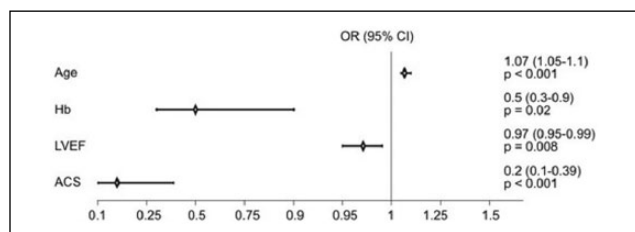
A Tycinska,¹ B Sobkowicz,¹ E Uscinska,¹ A Lisowska¹ and WJ Musial¹

¹Medical University of Bialystok, Department of Cardiology, Bialystok, Poland

Methods and Aim: Patients admitted to Intensive Cardiac Care Unit (ICCU) are heterogenous with a high mortality rate. We investigated, which clinical, biochemical and echocardiographic parameters routinely assessed may affect long-term mortality in non-selected ICCU population.

Results: 392 patients hospitalized between 2007-2011 (mean age 70±13.8 years, 43% women) were consecutively, prospectively assessed with the following admission diagnosis: 168 with acute coronary syndromes (ACS), 122 acute decompensated heart failure, and 102 with other acute cardiac disorders. Patients were treated according to the current ESC guidelines. During mean 29.3 (±18.9) months of observation 152 (38.8%) patients died. Patients who died were significantly older and had lower levels of hemoglobin (Hb), serum iron concentration (SIC), total iron binding capacity (TIBC), and left ventricle ejection fraction (LVEF) as well as lower eGFR values, higher white blood cells (WBC) count and C-reactive protein (CRP) levels ($p < 0.05$). Predictors of death in multivariate regression analysis were: Hb, LVEF and hospitalization for non-ACS, Figure. The risk of long-term mortality increased with decreasing levels of Hb ($p < 0.001$), SIC ($p = 0.001$), TIBC ($p = 0.009$) as well as the diagnosis other than ACS ($p = 0.007$).

Conclusions: In ICCU patients some of the routinely assessed variables, like Hb, parameters of iron status as well as LVEF are useful in the prediction of long-term mortality. Among ICCU patients ACS seems to be an indicator of better survival.



P135

Safety and efficacy on ultrasound guided central venous catheterization

I Sousa Casasnovas,¹ E Gomez-Gomez,¹ M Juarez-Fernandez,¹ F Diez-Delhoyo,¹ A Ayesta-Lopez,¹ H Gonzalez-Saldivar,¹ L Diaz-Gonzalez,¹ M Valero-Masa,¹ H Bueno-Zamora¹ and F Fernandez-Aviles¹

¹University Hospital Gregorio Maranon, Madrid, Spain

Background: There is an increasing recommendation of ultrasound guidance of central venous access. There is little information about this strategy in a Cardiovascular Intensive Care Unit (CICU).

Methods: We started using ultrasounds to guide central venous catheter placement in our CICU in 2013. The choice of whether to use the landmark (LM) technique or ultrasound (US) guidance was left to the operator. We prospectively collected data about central venous catheterization from March 2013 to March 2015. We considered as safety parameters: number of arterial punctures, vascular complication and pneumothorax (only for the yugular access), The efficacy parameters collected were: number of punctures and failed insertion. We excluded of analysis subclavian access, due to little benefit of ultrasound guidance.

Results: During the study period 155 central venous cannulation attempts were performed. 22 subclavian vein access were excluded from analysis. 133 central venous catheterization were finally analyzed: 74 US guided and 59 LM. Descriptive analysis showed: Male sex 77% US group vs 71.2% LM group ($p = ns$); Age 67.5 vs 75.1 ($p < 0.001$); anticoagulation 33.8% vs 23.7% ($p = ns$); mechanical ventilation 35.1% vs 22% ($p = ns$); emergent procedure 29.7% vs 81.4% ($p < 0.001$); yugular access 95.9% vs 72.9%. Comparative analysis showed: vascular complication 1.4% US vs 3.4 LM ($p = ns$); arterial puncture 4.1% vs 13.6% ($p = 0.048$); pneumothorax 0% vs 1.9% ($p = ns$); failed insertion 5.4% vs 18.6% ($p = 0.016$); number of punctures 1.6 vs 2.6 ($p = 0.032$).

Conclusion: In our experience, ultrasound guided central venous catheterization showed better efficacy (mainly in terms of less failures and lower number of puncture) and more safety (mainly in terms of less arterial puncture) than landmark catheterization.

P136

Role of assessment of left ventricular function in mechanically ventilated obese patients

D Zidan¹ and TAMER Abdallah¹¹Alexandria University, critical care, Alexandria, Egypt

The management of haemodynamic instability in patients on the intensive care unit (ICU) traditionally relies on a combination of clinical skills and measurement of physiological variables.

However, the assessment of LV systolic function remains a challenge in a small proportion of patients with poor image quality, caused mainly by obesity, lung disease, tachycardia, mechanical ventilation or cardiac translocation.

Patients: This study was conducted on 60 invasive mechanically ventilated patients with the following criteria:

Inclusion criteria:

- Adult patients < 18 years old
- BMI > 30 Kg / m²
- Stable haemodynamics defined as maintaining mean arterial blood pressure > 70 mmHg

Exclusion criteria:

- Pregnant females
- External chest trauma

Methods: Transthoracic echocardiography (TTE) was performed within 12 hours after admission and daily for a 2 -day observation period.

Images were acquired using a VIVID 3 scanner and a 3 MHz transducer. Two-dimensional (2D) imaging examinations were performed in the standard apical four- and two- chamber views (2C- and 4C views). Tissue harmonic imaging was used to enhance 2D image quality. LV ejection fraction (LVEF) was assessed by visual estimation of EF, based on "eyeball" ejection fraction.

M-mode images were obtained at the LV septal, lateral, anterior, and posterior borders of the mitral ring [18] in the apical 2C- and 4C views, and an average mitral annular plane systolic excursion (MAPSE) value was calculated. Pulsed-wave (PW) tissue Doppler recorded the peak systolic velocity (TDIs) of the LV septal wall at the level of the mitral annulus in the apical 4C view.

All TTE studies were recorded over three consecutive cardiac cycles independently of the respiratory cycle and averaged. In patients with non-sinus rhythm measurements were collected over 5–10 heartbeats.

Conclusion: MAPSE is a good parameter of left ventricular function in mechanically ventilated obese patients

Table 1. Correlation between MAPSE & EF.

	MAPSE 1	MAPSE 2	P
EF 1	0.888	-----	< 0.001
EF 2	-----	0.904	< 0.001

P137

Correlation of obesity with nosocomial mortality in patients with acute systolic cardiac failure

A Sianni,¹ E Ntoli,¹ A Ganotopoulou,² P Krezias,³
P Paraskevas,¹ I Matsoukis,¹ CH Konsanti,¹ P Milonas,¹
A Masgala¹ and I Liouris¹¹Konstantopoulou General Hospital, Pathology, Athens, Greece ²Private Pathologist, Piraeus, Greece ³Private Cardiologist, Athens, Greece

Introduction: Acute systolic cardiac failure is the sudden failure of the cardiac pumping ability attributed to agents that affect the cardiac muscle and lead to acute pulmonary edema.

Obesity is a major factor of cardiovascular disease. It is known the paradox which suggests better prognosis of obese patients with acute coronary syndromes.

Aim: In this study it is investigated the correlation of obesity with nosocomial mortality in patients with acute systolic cardiac failure.

Methods: The study lasted 2years and included 286 patients, 120(42% men-166(58%)women who were hospitalized in the department of Internal Medicine with acute systolic cardiac failure and other random pathology. Of 286 patients,142 (49,6%) had BMI>30, 44 men(45%)-78 women (55%). The obese patients were younger, 59 yrs versus 68 non-obese patients. They presented hypertension 48% versus 32% , (p<0.01), diabetes 66% versus 34% p<0.001), chronic renal disease 32% versus 40% and ischemic heart disease 16% versus 18%. The nosocomial mortality in patients with acute systolic cardiac failure and obesity was 21 patients(1,5%) versus 4 (3%) non obese patients (p<0.001).Obesity was

an independent prognostic factor of low nosocomial mortality ($p=0.02$)

Conclusions: Obesity correlates with low nosocomial mortality in patients with acute systolic heart failure.

P138

Comparison of mortality after cardiogenic shock complicating an acute coronary syndrome in two time periods 2007-2010, 2011-2014

M Nunez Torras,¹ J Aboal,¹ A Fageda,¹ D Bosch,¹ N Coma,¹ J Pascual,¹ J Iglesias,¹ G Vazquez,¹ R Brugada¹ and P Loma-Osorio¹

¹University Hospital de Girona Dr. Josep Trueta, Girona, Spain

Purpose: Recent publications suggest that the high mortality of cardiogenic shock after infarction, which remained relatively unchanged, has declined. Our aim was to detect a temporal trend in mortality of cardiogenic shock complicating an ACS.

Methods: All consecutive patients with a diagnosis of cardiogenic shock in the context of ACS were included in a prospective registry of patients admitted to the acute cardiac care unit from 2007 to 2014. To evaluate the relationship between hospital mortality and period, we created two groups (2007-2010 and 2011-2014)

Results: 228 patients (124 in the first period and 104 in the second) were recorded. Mortality was 50% vs 35.6% ($p = 0.03$). There were no significant differences in age, GRACE score, diabetes, % mechanical ventilation, use of balloon counterpulsation, or 3 vessels coronary artery disease between the two periods. In the second period there was more use of norepinephrine (22.4% vs 35.8%, $p = 0.015$), coronary angiography (73.4% vs 84.6%, $p = 0.028$) and less use of dopamine (48.4% vs 38.6%, $p = 0.043$) and swan ganz catheter (37.1% vs 22.1%, $p = 0.02$). Only the study period and the practice of coronary angiography were shown to be independent predictors of mortality in the multivariate analysis.

Conclusions: A decrease in hospital mortality in cardiogenic shock related to the period was shown. An increase in coronary angiograms performed and a tighter application of current clinical guidelines may have been related with the results.

Interventional Cardiology

P139

Short term outcome of post pci patients given antiplatelet drugs according to bleeding risk score

J Maddury,¹ O Oruganti Harish¹ and J Janaswamy Vibhav Sri Narayana²

¹NIMS University Hospital, Hyderabad, India ²osmania hospital, internal medicine, Hyderabad, India

Objectives Aim: of this study is to evaluate the importance giving antiplatelet regimen to patients according to their Bleeding risk score.

Background: Initial few months following the PCI the event rates for subsequent mortality are more and we require proper management. One of the important sector requires attention is peri-procedural antiplatelet regimen. Recent knowledge about the calculation of individual bleeding risk score and application of personalized antiplatelet regimen accordingly has inspired us to study the significance of bleeding risk score calculation to decide the DAPT in our patients.

Methods: Total of 192 (ACS- 87, CSA – 105) patients were analyzed. Mehran etal. Bleeding risk score (MBRS) assessment followed by tailored antiplatelet regimen (aspirin 325mg + clopidogrel 600mg if MBRS is > 10 or Prasugrel 60 mg if MBRS is < 10) was done in 52 patients whereas remaining 140 patients received DAPT depending on ACS or CSA without bleeding risk score calculation. Six months MACE (acute or sub-acute stent thrombosis –AST or SAST leading to MI, exertional angina, death) were compared between the two groups.

Results: out of 192 patients 49 were females, mean age of 59.3±11.2 yrs, 121 (63%) were hypertensive, 97 (50.5%) diabetic and 42(21.9%) smokers. Presentation with ACS in 87 (45.3%) patients. LV dysfunction was present in 77(40.1%) patients. 36 (18.8%) patients undergone previous PCI and 3 (1.6%) had prior CABG.

In BMRS group, out of 52 patients, 28 were males and in second group 115 were males out of 140 patients. There is no difference in age (58.9±12 vs 58.1±11 yrs, $p = 0.6$), serum creatinine (1.3±0.6 vs 1.2±0.9, $p = 0.5$), BMI (25.1±3.3 vs 24.2±4.1, $p = 0.1$) in between the two groups. Average BMRS was 14.1 ± 7.5, no of patients with < 10 BMRS were 12(23.1%). Patients with ACS are more in BMRS group (16 - 30.8% vs 17 – 12.1%).

All 52 patients of BMRS group did not have any bleeding or thrombotic complications in hospital and at 6 months. The bleeding/thrombotic puncture site complications (pseudo-aneurysm of femoral artery in 2, AV fistula at radial puncture site in 1, asymptomatic radial occlusion in 1) were 4 (2.9%) and MACE at 6 months was 5 (3.6% –AST in 1, SAST in 4, out of them 2 deaths and one patient with exertional angina) in second group.

Six months MACE rate was statistically significant ($p = 0.01$) when compared between the two groups.

Conclusions Calculation of bleeding risk and appropriate personalized decision- making for DAPT for patients undergoing PCI improved patient outcomes.

P140

Long term all cause mortality outcomes in octogenarians undergoing percutaneous coronary intervention for stable or unstable coronary artery disease, single center experience

A Ahmed,¹ SAROSH Khan,¹ JAYMIN Shah,¹
J Cookson,¹ ISABEL Mcluskie,¹ NEDA Noroozian¹
and A Elghamaz¹

¹Northwick Park Hospital, Department of Cardiovascular Medicine, London, United Kingdom

Background: Per-cutaneous coronary intervention (PCI) is being increasingly performed in very elderly population with acceptable short and medium term results. We provide data on the long term outcome of patients over the age of 80 years undergoing PCI.

Methods and results: We performed retrospective analysis of 439 octogenarian patients (mean age 83.0 ± 3.0 years, who underwent PCI between January 2007 and December 2013. The mean follow up time was $3.0 \text{ years} \pm 2.0$ years. 309 (70.4%) patients had PCI due to an acute coronary syndrome (ACS) and 130 (29.6%) underwent elective PCI for stable angina. Cumulative event rates of all-cause mortality were analysed using the Kaplan-Meier method. Between 2007 and 2013 there was a 4 fold increase in octogenarians undergoing PCI, with a steady proportion of ACS (70%) and elective PCI (30%) cases. There was no change in in-hospital, 30 day and 1 year mortality for patients when stratified for the year of the procedure despite the increase in the volume of patients. However, the in-hospital mortality for patient undergoing elective vs ACS related PCI was 0% vs 4.2%, (OR 0.7 (95% CI = 0.65, 0.74), $p = 0.01$), 30 day mortality was (0% vs 5.8%, OR 0.7 (95% CI = 0.65, 0.74, $p = 0.003$, respectively) and 1 year mortality was (5.4 vs. 13.9, OR 0.8 (95% CI = 0.7, 0.9), $p = 0.009$. At 5 years 69% of the population undergoing

elective PCI was alive compared to 50% of those having ACS related PCI (Chi-squared = 9.3, $p = 0.002$).

Conclusions: Elderly patients undergoing ACS related PCI have a higher risk of mortality in short, medium and longer term compared to those having elective PCI. Further work is needed to assess whether medical stabilization of the patient followed by elective coronary intervention in this elderly population may improve longer term outcomes.

P141

Percutaneous treatment strategies for saphenous vein graft disease: clinical results and long-term predictors

Al Azevedo,¹ D Caeiro,¹ G Pires De Morais,¹
M Goncalves,¹ B Melica,¹ L Santos,¹ A Rodrigues,¹
P Braga,¹ A Dias¹ and
V Gama Ribeiro¹

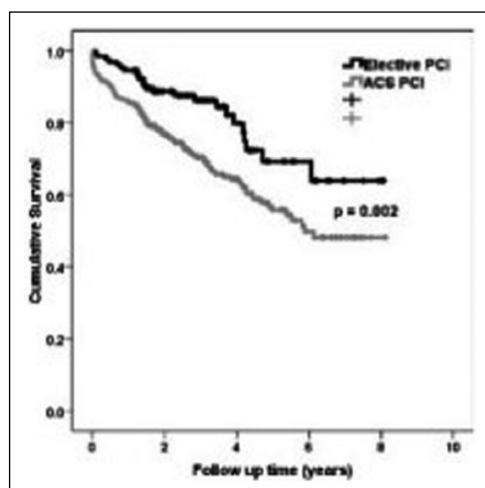
¹Hospital Center Vila Nova Gaia, Porto, Portugal

Purpose: Saphenous vein grafts (SVG) are the most frequently used surgical conduits in coronary artery bypass graft surgery (CABG). SVG disease is an important cause of morbidity of these patients and percutaneous intervention represents a lower risk alternative of revascularization, compared to reoperation. However, the best strategy of percutaneous treatment has not been established. The authors present the Centre's experience in percutaneous intervention in SVG disease, analysing predictive factors of adverse outcomes.

Methods: Retrospective analysis of percutaneous interventions on SVG. Data of procedures undertaken over a 5-year period (from October 2009 until October 2014) was collected. Follow-up was done by telephone interview and clinical file review.

Results: 59 patients (mean age 70.2 ± 8.9 years-old, 78.0% male), underwent percutaneous SVG treatment (mean 11.3 ± 6.8 years after CABG). Indication for percutaneous intervention was stable angina in 49.2% of the patients and acute coronary syndrome (ACS) in 50.8% (6.8% with ST elevation ACS). Reintervention in the same SVG was done in 8 (13.6%) patients (median of 13.0 months (IQR 5.7-20.7) after the first intervention).

36 (61.0%) patients received drug-eluting stents and 19 (32.2%) received bare-metal stents. Embolic protection devices (EPD) were used in 10.2% of the patients, most proximal protection devices. Complications during the procedure were reported in 10.2% of the patients, with periprocedural acute myocardial infarction (AMI) (13.6%) and no-reflow phenomenon (10.2%) being the most frequent.



At one year follow-up, AMI had occurred in 5.1% of the patients and mortality was 6.8%. After a mean follow-up of 29.2 ± 17.6 months, 22.0% had a combined endpoint of AMI and/or death of cardiovascular cause. After multivariate logistic regression analysis (adjusted for cardiovascular risk factors and time since CABG), age was the only predictor of long-term reintervention, AMI and/or death (OR 1.11, 95% confidence interval (CI) 1.11-1.22, $p=0.04$). Use of EPD determined a reduced risk of long-term reintervention, AMI and/or death (OR 0.09, CI 95% 0.01-0.83, $p=0.03$).

Conclusion: Percutaneous intervention in SVG disease is an effective revascularization alternative in patients with ACS or stable angina refractory to medical therapy. In this population, EPD reduced the risk of reintervention, AMI and/or death; the type of stent used did not predict adverse events. Future investigation will probably take into account the distinct physiopathology of SVG disease in the development of specific devices for its percutaneous approach.

PI42

Ultrasound guided venous access for pacemaker and defibrillators. Randomized trial.

M Liccardo,¹ P Nocerino,¹ AC Urso,² A Borrino,¹ C Carbone,¹ P Follero,¹ C Ciardiello,³ L Prato⁴ and G Salzano⁴

¹Azienda Sanitaria Locale Napoli 3 - Outpatient cardiology, cardiology of the hospital santa maria delle grazie of pozzuoli, napoli, Napoli, Italy ²New York University School of Medicine, New York, United States of America ³H.T.MED, Napoli, Italy ⁴BOSTON SCIENTIFIC, MILAN, Italy

Worldwide the techniques used for venous access for the system leads to cardiac pacing and defibrillation are not ideal. With the increase in the number of installations of systems used for cardiac resynchronization (CRT) and then with the increasingly growing need to insert three leads, is becoming more urgent the need for a approach to a large vein. In recent years more interesting is approach to the axillary vein (extrathoracic subclavian vein) presenting the advantage of presenting less risk of pneumothorax, not to present a risk of breakage of the leads, it can be used for the implantation of more leads, but it has the disadvantage of a low success rate when using the traditional approach. We want to evaluate the safety and efficacy approach to the axillary vein methodically drove to the eco system leads to stimulation and cardiac defibrillation. After disinfection of the skin in the region clavicular and preparation of the sterile field was used a sterile covers for cardiac probe that was previously coated with sterile gel. To improve visualization of the images and reduce the air-skin interface probe cover was used saline. The operator right-handed wielding the probe with

the left hand and the syringe with the needle with your right hand. It identified the anatomical region extrathoracic axillary vein was pricked after local anesthesia in the area of interest, with Seldinger technique. The progression of the needle was guided by ultrasonography. The puncture was possibly carried out two or three times depending on the type of plant programmed. After a learning period of the echo-guided technique were enrolled 90 patients in which consecutive, randomly 1:1, was chosen the initial approach (echo or subclavian). If in a maximum time of 5 minutes the first approach failed in the cannulation is passed to the second approach. In the learning period the frequency of failure is lower than 30%. In the period of enlistment randomized, the frequency of success at the first attempt of the approach echo is comparable with that for subclavian (42/45, 93.3% vs. 43/45, 95.6%). Are not reported to the system and major events in the postoperative period. Are registered minor events such as dislodgment during the procedure and / or raising the threshold post-procedure to be comparable in the two groups (Eco: 2.2% vs 6.7%Subclavian).

The proposed technique appears to be effective and safe as the classical technique for subclavian, also presents the advantage of being free from risk of pneumothorax and breaking of leads. Ratings on a follow-up in the medium and long term are in place to assess their reliability.

PI43

Follow-up results of periprocedural myocardial protection after elective PCI

V Kobyliak,¹ M Sokolov¹ and Y Sokolov¹

¹NSC Institute of Cardiology M.D. Strazhesko, Kiev, Ukraine

Background: over the past two decades, technical advances in percutaneous coronary intervention (PCI) have resulted in a better and safer therapeutic procedure with minimal procedural complications. However, about 30% of patients undergoing elective PCI sustain myocardial injury arising from the procedure itself have been associated with higher risk of cardiac events during follow-up. Several studies have suggested that pretreatment with statins may be associated with a reduction in periprocedural myocardial injury.

The purpose of this study was to compare a reloading dose of rosuvastatin, trimetazidine and their combination administered within 24 h before PCI in reducing the rate of major cardiac and cerebrovascular events (MACCE) in patients on chronic statin treatment undergoing elective PCI.

Methods: 139 patients with stable angina who underwent elective PCI were randomly assigned to receive a pre-procedural reloading dose of rosuvastatin (40 mg) (Group

B; n=36), trimetazidine (140 mg within 30 min to PCI) (Group D; n=32) or their combination (Group C; n=36) and a control group on chronic statin therapy without reloading (Group A; n=35). The primary endpoint was the assessment of MACCE [cardiac death, spontaneous (type 1) and periprocedural (type 4a) myocardial infarction (MI), stroke, and hospitalization due to unstable angina or target vessel revascularization (TVR)] at a 30-day, 3 and 12-month follow-up. Periprocedural MI was defined by rise of troponin I above the 5× 99th percentile upper reference limit (URL).

Results: At the 30-day follow-up we observed MACCE only in control and group D with cumulative incidence in 14.3 and 6.2 % (p=0.017) respectively. The difference between the groups was mainly due to the periprocedural myocardial injury incidence (11.4% vs. 3.1%; p=0.031). In other cases patient was rehospitalized due to TVR (2.9% vs. 3.1%; p=0.534). At 6-month follow-up the rate of cardiac death, spontaneous MI, TVR, and stroke were similar in all groups but incidence of in control group (A) was 40.0 %, that was significant higher compared to rosuvastatin (8.3 %, p=0.002) and combine therapy (11.4 %, p=0.005) groups. In trimetazidine the cumulative MACCE rate was 25.0%, that was no differ from other studies groups.

Conclusions: both high-dose rosuvastatin reloading alone and in combination with trimetazidine improves procedural myocardial injury and long term clinical outcomes in stable patients on chronic statin therapy. Both intervention therapeutic approach showed similar beneficial effects on procedural and long-term outcomes.

PI44

Periprocedural myocardial injury and protection during elective PCI

V Kobylak,¹ M Sokolov¹ and Y Sokolov¹

¹NSC Institute of Cardiology M.D. Strazhesko, Kiev, Ukraine

Background: Elective percutaneous coronary intervention (PCI) may be complicated with elevation of cardiac biomarkers. Several studies suggested that pretreatment with statins may be associated with lower the risk of periprocedural myocardial injury.

The purpose of this study was to compare a reloading dose of rosuvastatin, trimetazidine and their combination administered within 24 h before PCI in reducing the rate of periprocedural injury in patients on chronic statin treatment undergoing elective PCI.

Methods: 139 patients with stable angina who underwent elective PCI were randomly assigned to receive a pre-procedural reloading dose of rosuvastatin (40 mg) (Group

B; n=36), trimetazidine (140 mg within 30 min to PCI) (Group D; n=32) or their combination (Group C; n=36) and a control group on chronic statin therapy without reloading (Group A; n=35). The main end-point was to assess the incidence of periprocedural myocardial injury, which defined by rise of troponin I above the 5× 99th percentile upper reference limit (URL).

Results: we found significant difference at 12-hour post-PCI Troponin I elevation above 5× 99th percentile URL among all studies groups (p=0.034). The highest prevalence of periprocedural myocardial injury pronounced in the control group (A) – 37.1%, which was significant higher compared to rosuvastatin (13.9%, p=0.024) and combine therapy (11.1 %, p=0.01) groups. Trimetazidine (25%) alone do not lead to significant reduction of this complication relatively to control group (p = 0.282) and was higher as compared to other intervention groups: p=0.254 for group B and p=0.134 for group C respectively. At 24-hour post-PCI we detected no significant elevation of periprocedural injury in the control group to 45.7% (p=0.602) and group D to 37.5% (p=0.545) respectively. In interventional group B and C the prevalence of 24-hours troponin I elevation were 11.1%, which was significantly lower than in control group (p=0.001) and group D (p=0.062). Interesting, that only in group C we observed reduction of serum troponin I values on 0.062±0.05 ng/ml in the dynamics after PCI.

Conclusions: Both high-dose rosuvastatin reloading alone and in combination with trimetazidine improves procedural myocardial injury 12 and 24-hour post-PCI. Despite similar prevalence and lack of a significant difference between the mean troponin I values in groups B and C, the most effective therapeutic approach aimed to protect the myocardium during PCI are used the combination of rosuvastatin and trimetazidine due to additional reduction of serum troponin I levels in dynamics.

PI45

Left atrium percutaneous closure. The experience of a single center.

L Reis,¹ A Faustino,¹ L Paiva,¹ F Caetano,¹ A Botelho,¹ R Teixeira,¹ M Costa,¹ J Nascimento¹ and L Goncalves¹

¹University Hospitals of Coimbra, Coimbra, Portugal

Purpose: Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia; thromboembolism is a devastating complication due to its high morbi-mortality. More than 90% of thrombus originates in left atrium appendage (LAA). LAA closure presents as an alternative therapy in patients (P) with high thromboembolic risk and contra-indication to oral anticoagulants. Our aim was to characterize a population of

P submitted to LAA percutaneous closure and evaluate short and long term results.

Methods: We studied 43 consecutive P (72±8 years old, 65% male) undergoing LAA percutaneous closure with AMPLATZER device, between May 2010 and October 2014. Imaging characterization with transesophageal echocardiogram was performed before, during and 12 months after the procedure. Twenty months follow up (FU) concerning clinical results was done.

Results: 70% of P had permanent AF, 35% paroxysmal and 5% persistent. Regarding embolic and hemorrhagic risk factors: CHA2DS2-VASc 4.8±1.3, HAS-BLED 3.3±1.4; 42% P had history of stroke and 60% severe bleeding with oral anticoagulant therapy. LAA percutaneous closure indications were: severe bleeding or anemia (65%), high hemorrhagic risk (14%), labile INR (16%) and thromboembolic events despite proper anticoagulation (5%). Medium size of device was 23±3mm and rate success of procedure was 95%. LAA percutaneous closure was not possible in two P, due to its small dimensions. There were no major immediate complications; minor complications: 4 vascular access hematoma (in two of them blood transfusion was required). An adherent thrombus was identified at one month FU, that resolved after three months of treatment with enoxaparin. During FU, one P had a stroke and 4 died (3 due to colorectal cancer, 1 of unknown cause). There was no evidence of device migration or leak, incomplete closure, mitral damage or pulmonary vein obstruction.

Conclusion: In this high risk group of P, LAA percutaneous closure was an amenable and safe procedure with long term efficacy and safety.

Risk Stratification

PI46

Usefulness of CRUSADE risk scores for predicting major bleeding in chronic kidney disease in acute coronary syndromes

M Gomez-Molina,¹ PJ Flores-Blanco,¹
M Sanchez-Martinez,¹ E Guerrero-Perez,¹
MJ Sanchez-Galian,¹ F Cambronero-Sanchez,²
Jl De Las Heras-Gomez,¹ A Garcia-Narbon,¹
M Valdes³ and S Manzano Fernandez³

¹University Hospital Virgen De La Arrixaca, Murcia, Spain ²University Hospital Morales Meseguer, Murcia, Spain ³University of Murcia, School of Medicine, Department of Cardiology, Murcia, Spain

Purpose: The CRUSADE Risk Score (CBRS) was developed in pts with non-STEMI to predict in-hospital bleeding. However, CBRS has not been previously validated specifically in pts with chronic kidney disease (CKD). Our aim was to assess predictive ability of the CBRS in pts with acute coronary syndromes (ACS) and CKD.

Methods: From January 2012 to August 2014, we prospectively included 1234 pts with ACS. In hospital bleeding was defined according to CRUSADE criteria. CKD was defined as a estimated glomerular filtration rate less than 60 mL/min. Predictive ability of the CBRS was assessed by the area under the ROC curve.

Results: The mean eGFR was 72±23 mL/min and 380 (31%) pts had CKD. Mean CBRS value was 31±16 points. Based on CBRS bleeding risk categories, 394 (32%) pts had very low-risk, 244 (20%) had low risk, 257 (21%) had moderate risk, 186 (15%) had high risk and 153 (12%) had very high risk. A total of 20 (1.6%) pts had major bleeding. Compared to pts without CKD, those with CKD had higher CBRS (24±13 vs 45±12, p <0.001) and a trend towards a higher major bleeding rate (1.3% vs 2.4%, p = 0.16). Table 1 shows the rates of major bleeding across the CRUSADE risk categories according to kidney function status. The predictive ability of the CBRS in pts with CKD was lower than in pts without CKD: 0.59 (95%CI 0.44-0.74) vs 0.71 (95%CI 0.55-0.87), p = 0.03).

Conclusions: CBRS shows a poorer accuracy for predicting in-hospital major bleeding in pts with CKD compared to those without CKD. Further studies are needed to confirm these findings, and to explore alternative scores that predict more accurately in-hospital major bleeding in CKD pts.

Table 1. Major bleeding as a function of CRUSADE.

CBRS categories	Non-CKD					P
	Very low	Low	Moderate	High	Very high	
N	382	216	159	74	23	
CRUSADE major bleeding	2 (0.5%)	2 (0.9%)	3 (1.9%)	2 (2.7%)	2 (8.7%)	0.002
BARC major bleeding	4 (0.5%)	2 (0.9%)	5 (3.1%)	4 (5.4%)	2 (8.7%)	0.001
CBRS categories	CKD					P
	Very low	Low	Moderate	High	Very high	
N	12	28	98	112	130	
CRUSADE major bleeding	0 (0%)	0 (0%)	1 (1%)	5 (4.5%)	3 (2.3%)	0.283
BARC major bleeding	0 (0%)	0 (0%)	2 (2%)	6 (5.4%)	4 (3.1%)	0.288

P147

Complementary prognosis value of BARC bleeding complications and GRACE Risk score in acute coronary syndromes

M Gomez-Molina,¹ PJ Flores-Blanco,¹
AA Lopez-Cuenca,² MJ Sanchez-Galian,¹
E Guerrero-Perez,¹ M Sanchez-Martinez,¹
A Garcia-Narbon,³ MM Antonio-Gonzalez,⁴ M Valdes⁵
and S Manzano Fernandez⁵

¹University Hospital Virgen De La Arrixaca, Murcia, Spain ²de la Vega Lorenzo Guirao Hospital, Cieza, Spain ³University Hospital Morales Meseguer, Murcia, Spain ⁴Hospital Clínico Univeristario Virgen de la Arrixaca, Health Center, Murcia, Spain ⁵University of Murcia, School of Medicine, Department of Cardiology, Murcia, Spain

Purpose: Bleeding Academic Research Consortium (BARC) recently proposed a novel standardized bleeding definition. The Purpose of the present study were: a) to assess whether BARC defined bleeding complications are associated with short- and mid-term all-cause mortality; and b) to evaluate whether they provide complementary prognosis information to GRACE risk score in patients with acute coronary syndrome.

Methods: The in-hospital occurrence of bleeding defined according to the BARC bleeding criteria was assessed in consecutive patients with acute coronary syndrome between January 1, 2012 and September 30, 2013. Patients were clinically followed and 1-year mortality was recorded in 98.9% of subjects.

Results: We included 789 patients (68±13 years, 75% male and 31% ST-segment elevation myocardial infarction). The GRACE risk score was 140±37 points. A total of 41 (5.2%) patients had an in-hospital BARC bleeding. BARC types 2, 3a, 3b, 4 and 5b bleeding occurred in 2.8%, 0.9%, 0.9%, 0.4% and 0.3% of subjects, respectively. Forty three (5.4%) patients died during index hospitalization and 99 (12.5%) patients died at 1-year of follow-up. The rates of in-hospital and 1-year mortality were higher in patients who experienced BARC bleeding, especially in those with BARC bleeding types ≥ 3 ($p < 0.001$). In multivariate analyses, BARC bleeding types 3 to 5 were associated with a higher risk for both in-hospital (HR: 6.8, 95%CI 1.7 to 27; $p = 0.007$) and 1-year mortality (HR: 5.2, 95%CI 1.9 to 14; $p = 0.001$). The NRIs from the addition of BARC bleeding to GRACE risk scores were 8% for in-hospital mortality and 3% for 1-year mortality, while the IDIs were 10% and 12%, respectively (all $p < 0.01$).

Conclusions: In ACS patients, in-hospital BARC bleeding types ≥ 3 (but not type 2) confer a high risk for short- and mid-term mortality, and adds complementary prognosis information to GRACE risk score.

P148

Testosterone level can be considered as an independent risk factor for coronary artery disease in men

L Bica¹ and PROF Lezha²

¹University Hospital Center Mother Theresa, cardiology: S.U. SH Ndroqi, Tirana, Albania ²University Hospital Center Mother Theresa, Tirana, Albania

Men, more than women are risked, to develop CAD. In this gender disparity, is thought that are involved sex hormones.

Purpose: To evaluate the correlation between testosterone levels and CAD in men.

Methods: Are included in this study 933 men (27-74 years), hospitalized in the Department of Cardiology, University Hospital Center "Mother Teresa". Patients performing coronary angiography because of symptomatology suggestive of CAD. Are assessed cardiovascular risk factors and testosterone level

Results: Patients with CAD had average testosterone level (499.1 ± 0.064 nmol/ml) lower than the control group (719.6 ± 0.150 nmol/ml), $p < 0.000$. The difference was significant for each age group. Pt under 50 years: 5.2 ± 1.8 nmol / ml in ill group, 7.6 ± 2.4 nmol / ml in the control group $p < 0.000$. Reduce by 1 nmol / ml of testosterone level, increases the possibility of CAD with about 42.4 percent. This correlation was independent of the other cardiovascular risk factors.

Conclusion: Patient's men with CAD have lower levels of testosterone, compared with normal men. A low level of testosterone related to the development of premature CAD. The Testosterone can be considered as an independent risk factor for CAD.

P149

The potential clinical application of genetic polymorphisms associated with lipid disorders in the assessment of clinical severity and in-hospital prognosis in patients with ST-segment elevation myoca

AA Inozemtseva,¹ EN Usoltseva,¹ OL Barbarash,¹
VV Kashtalap¹ and LA Gordeeva¹

¹Research Institute for Complex Issues of Cardiovascular Diseases, Kemerovo, Russian Federation

Objective: To study the clinical and prognostic significance of gene polymorphisms APOA1 rs670 and APOA5 rs662799 in patients with ST-segment elevation myocardial infarction and to assess the changes in lipid profile of these patients according to the different genotypes.

Materials and Methods: 358 patients (242 (67.2%) males and 116 (32.8%) females, the mean age 61.8 ± 11.1 years) admitted with STEMI and undergoing diagnosis and treatment at the Kemerovo Cardiology Clinic were included in the study. Blood samples were collected at days 2-14 for genotyping. Clinical and demographic data, laboratory and instrumental findings were assessed. Data analysis was performed using the STATISTICA program (version 8.0; StatSoft, Tulsa, Oklahoma) and the genetic calculators (GeneXpert).

Results: The T allele of the T-1131C (rs662799) polymorphism variants of apolipoprotein A5 (Apo A5) gene was associated with a 1.5-fold increased rate of a positive history of myocardial infarction (OR = 1.75, 95% CI = 1.05 – 2.92, $p = 0.03$). The TT genotype was associated with a higher risk of ischemic stroke (OR = 3.00, 95% CI = 1.02 – 8.86, $p = 0.04$) and type 2 diabetes (OR = 2.29, 95% CI = 1.03 – 5.11, $p = 0.04$). Thickening of the intima-media complex was more commonly found in the carriers of the TT genotype (OR = 1.60, 95% CI = 1.01 – 2.53, $p = 0.04$).

The carriers of the CC genotype demonstrated significantly higher triglyceride levels (2.48 mmol / l [1.83; 3.44] vs. 2.02 mmol / l [1.48; 2.57], $p = 0.008$), whereas the levels of high density lipoprotein cholesterol and ApoA5 protein were lower (0.975 mmol / l [0.75; 1.16] vs. 1.135 mmol / l [1.00; 1.29] $p = 0.0005$ and 1.18 g / l [0.97; 1.43] vs. 1.43 g / l [1.29; 1.75] $p = 0.02$, respectively).

The apoA1-GG genotype is proved to be associated with a positive history of severe heart failure. The presence of severe heart failure increased 3.1-fold in these carriers (OR = 3.11, 95% CI = 1.37 – 7.05, $p = 0.005$) compared to the carriers of the AA and GA genotypes. The carriers of the GG genotype had a 3-fold increased risk of recurrent myocardial infarction (OR = 2.99, 95% CI = 1.33-6.73, $p = 0.006$), and a 2.12-fold increased risk of in-hospital death (OR = 2.12, 95% CI = 1.14-3.94, $p = 0.02$).

The carriers of apoA1-GG genotype this genotype reported significantly higher blood triglyceride levels on the day of admission (2.11 mmol / l [1.6; 2.74], $p = 0.02$ vs. 1.74 mmol / l [1.44; 2.22]).

Conclusion: The polymorphic variants of genes apoA1, apoA5 may be used to assess the clinical severity and in-hospital prognosis in patients with myocardial infarction.

Purpose: To identify the major metabolic and psychosomatic predictors of myocardial infarction in women of different age groups.

Methods: The study involved 76 women of middle-aged and elderly with myocardial infarction, their average age was 63.5 ± 1.0 years. All patients were evaluated lipid, carbohydrate metabolism, insulin level was determined with the calculation of the index of insulin resistance HOMO-IR, assessed the level of depression and anxiety using a questionnaire HADS.

Results: The majority of women of middle age and elderly AMI had abdominal adiposity. Essential hypertension (EH) was present in 27 (84.4%), middle-aged women and 40 (90.9%) of elderly patients, $p = 0.6$. HOMO-IR index of middle-aged women was $2,3 \pm 0,3$, the elderly – $2,6 \pm 0,4$, $p = 0.5$. Lipid metabolism were detected in 31 (96.9%) patients of middle age, mainly due to higher levels of total cholesterol to $5,1 \pm 0,2$ mmol / l, LDL to $2,8 \pm 0,2$ mmol / l, and increase triglyceride levels up to $2,5 \pm 0,1$ mmol / l, HDL cholesterol in this group amounted to $1,0 \pm 0,08$ mmol / l ($p=0,07$). In elderly patients with MI lipid metabolism were detected in 42 (95.5%) ($p = 0.8$), mainly due to higher levels of LDL to $2,75 \pm 0,1$ mmol / L ($p = 0.7$) to increase the level of triglycerides $2,08 \pm 0,12$ mmol / l ($p = 0.018$) as well as to reduce the level of HDL $0,99 \pm 0,04$ mmol / l ($p = 0.5$). In groups of women depression was diagnosed in 5 (16.5%) and 19 (43.2%) patients of middle and old age, respectively, $p = 0.02$, indicating that the increase in the incidence of depressive disorders with age-related cognitive decline as well as the significant impact of clinical and subclinical depression of myocardial infarction in the female population, especially in the elderly.

Conclusions: Thus, for women of middle-aged and elderly the most important metabolic factors of myocardial infarction were: dyslipidemia, mainly due to higher levels of LDL and TG, carbohydrate metabolism disorders. Found that middle-aged women an important determinant of myocardial infarction is increased levels of anxiety, and for elderly patients - depressive disorder. The findings suggest the need for timely diagnosis and correction of metabolic and psychosomatic disorders as the leading risk factors for myocardial infarction in primary and secondary prevention with medication and medical methods.

P150

Metabolic and psychosomatic predictors of myocardial infarction in women.

I Sukmanova¹

¹Altay region cardiologist hospital, acute infarction, Barnaul, Russian Federation

P151

Gender features predictor of myocardial infarction.

I Sukmanova¹ and IJ Jeltova¹

¹Altay region cardiologist hospital, acute infarction, Barnaul, Russian Federation

Materials and Methods: The study involved 188 patients of middle and old age with myocardial infarction were divided into 4 groups, the mean age was $60,8 \pm 0,6$ years. Dominated by middle-aged men - 66 (35.1%), older men were 46 (24.5%), older women were 44 (23.4%) patients, respectively, the average age - 32 (17%). All patients were evaluated risk factors, lipid, carbohydrate metabolism with the calculation of the index of insulin resistance HOMO-IR.

Results: Abdominal type of obesity was diagnosed in 30 (45.5%), middle-aged men with obesity and in 28 (60.8%) elderly, $p = 0.02$. Essential hypertension (EH) was diagnosed in 40 (60.6%) and middle-aged men in 40 (87%) of the elderly, $p = 0.005$. Fasting glycemia middle aged men was higher than that of older and was $5,1 \pm 0,1$ mmol and $5,6 \pm 0,2$ mmol / l, $p = 0.03$, respectively. In middle-aged women with MI average fasting glucose was $5,7 \pm 0,1$ mmol / l, the elderly - $6,0 \pm 0,1$, $p = 0.1$. Average insulin levels among middle-aged men was $13,9 \pm 1,9$, the elderly - $12,9 \pm 1,6$, $p = 0.6$. In the women surveyed average insulin was $8,7 \pm 1,2$ in middle age and $9,5 \pm 1,2$ in the elderly, $p = 0.6$. HOMO-IR index in men middle-aged and elderly was higher than normal and was $3,17 \pm 0,46$ and $3,44 \pm 0,55$ ($p = 0.7$), respectively, in women HOMO-IR index was $2,2 \pm 0,3$ and $2,6 \pm 0,4$ ($p = 0.5$) for patients of middle and old age. Lipid metabolism were detected in 57 (86.4%), middle-aged men and 43 (93.5%) of the elderly, mainly due to higher levels of LDL to $2,52 \pm 0,1$ and $2,84 \pm 0,2$ mmol / l respectively ($p = 0.1$) and decrease in HDL (middle-aged men) to $0,96 \pm 0,2$ mmol / l ($p = 0.2$). In 31 (96.9%) patients of middle age and 42 (95.5%) of elderly with them diagnose various disorders of lipid metabolism, mainly due to higher levels of LDL to $2,8 \pm 0,2$ and $2,75 \pm 0,1$ mmol / L, respectively ($p = 0.7$) and to improve the level of TG and $2,56 \pm 0,1$ $2,0 \pm 01$ mmol / L, respectively ($p = 0.01$).

Conclusions: Thus, for men of middle-aged and elderly the most significant predictors of myocardial infarction are: smoking, GB, dyslipidemia (due to higher levels of LDL and HDL preferential reduction for middle-aged patients), metabolic disturbance with the development of insulin resistance, the development of type 2 diabetes type - often to older men. For women predictors of myocardial infarction are obesity with the formation of its abdominal type, carbohydrate metabolism, mainly due to the development of diabetes 2tipa, uncontrolled for GB and lipid metabolism (due to higher levels of LDL for all women and increase the level of TG primarily for women of middle age).

PI52

Value of the mean platelet volume in evaluation of patients with acute coronary syndrome

I Shehata¹ and I El-Dosouky¹¹Zagazig University, Zagazig, Egypt

Purpose: To determine the cut off value of mean platelet volume (MPV) for prediction of Troponin (Tn) +ve acute coronary syndrome.

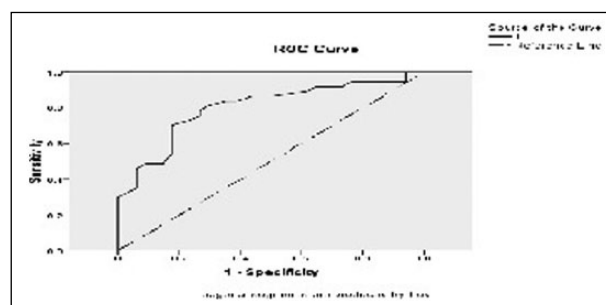
Methods: This study included 71 patients, divided into 2 groups; group I included 61 patients with acute coronary syndrome (ACS); group I a (37 Tn +ve patients) and group I b (24 Tn -ve patients) and group II included 10 completely healthy age matched as a control group; and all patients were subjected to assess serum mean platelet volume and lipid profile.

Results: Tn +ve patients had significantly higher MPV (13.3 ± 2.4 vs 11.2 ± 1.7 , $P < 0.001$), MPV correlated significantly with body mass index (BMI), serum total cholesterol level, serum LDL level, and serum Tn level, $P < 0.001$). By multivariate analysis, MPV was an independent predictor for Tn +ve ACS ($B \pm SE = 0.078 \pm 0.028$, $t = 2.8$, $P = 0.007$). An increase in MPV to 11.75 fl reflects a cut off value considered to detect Tn +ve ACS with a sensitivity of 73% and a specificity of 76.5 % ($P = 0.000$, 95% confidence interval & standard error = 0.053).

Conclusion: This study determined the MPV cut off point that is most useful to predict Tn +ve ACS in ER was 11.75 fl.

Table I. Correlation of MPV (fl) and other parame.

Variables	r	P-value
BMI	0.474	0.000
Total cholesterol	0.481	0.000
LDL	0.409	0.000
EF	-0.394	0.001
Tn	0.499	0.000



The sensitivity and specificity of MPV.

P153

Obstructive sleep apnoea and coronary artery disease: does non invasive ventilation have prognostic impact?

F Caetano,¹ M Madeira,² I Sanches,²
V Martins,² I Almeida,² J Moita² and
L Goncalves²

¹Harefield Hospital, London, United Kingdom ²Coimbra's Hospital Center and University, Coimbra, Portugal

Purpose: Obstructive sleep apnoea (OSA) has been recognized as a potential cardiovascular risk factor. Continuous positive airway pressure (CPAP) is an effective treatment, decreasing the morbi-mortality associated with this disease. However, its effect on cardiovascular events reduction is not consensual. Our aim was to evaluate the impact of CPAP, in patients (P) with OSA diagnosed during hospital admission for acute coronary syndrome (ACS).

Methods: Prospective study of 78 P admitted with ACS to an Intensive Cardiac Care Unit, in which screening for OSA was done. P were divided in two groups according to the result of the study (OSAp – positive to OSA, OSAn – negative). Treatment with CPAP was started in P with diagnosed OSA. Two years MACE follow-up was done.

Results: OSA incidence was 44%. P not compliant with CPAP were excluded (n=4).

OSAp P were older (60±8 vs 56±10, p=0.043), more frequently had high blood pressure (77% vs 52%, p=0.034) and past medical history of coronary artery disease (CAD; 27% vs 9%, p=0.044). No differences were found regarding ACS type (STEMI: 57% vs 68%, p=0.312), however OSAn group had higher maximum troponin I (41±81 vs 108±175ng/mL, p=0.031).

Haemoglobin, cystatin C and NTpro-BNP were similar between groups.

In echocardiogram, only interventricular septum thickness was higher in OSAp group (12±3 vs 10±2mm, p=0.024); with no differences in left ventricle ejection fraction (45±12% vs 50±14%, p=0.383). In coronariography, the number of vessels with significant disease was similar (1.9±0.9 vs 1.6±0.8, p=0.271). Regarding therapeutic strategy, coronary angioplasty more often was performed in OSAn group (73% vs 91%, p=0.044). There were no differences in the remaining medical therapy during hospital stay or at discharge.

During follow-up (26±8 months), MACE incidence was similar (mortality 10% vs 5%, p=0.359; ACS 3%

vs 2%, p=0.795; heart failure 3% vs 2%, p=0.795 or stroke 0%).

Conclusion: Our work reinforces the likely association between OSA and increased cardiovascular risk, as expressed by the higher prevalence of high blood pressure and CAD in those P. Treatment with CPAP might have a positive impact in the natural history of OSA, by approaching the prognosis of these P to the remaining population with CAD.

P154

Can we predict stroke after acute coronary syndrome?

R Ferreira,¹ J Martins,¹ T Adrega,¹ A Gonzaga¹ and
J Santos¹

¹Centro Hospitalar do Baixo Vouga, Cardiology, Aveiro, Portugal

Background: Patients with acute coronary syndrome (ACS) have an increased risk of ischemic stroke (stroke). The objective of this study is to evaluate independent predictors of stroke in this population.

Methods: Observational retrospective study of 508 patients admitted to the coronary intensive care unit for ACS for 3 consecutive years. The follow-up lasted until October 31st, 2014 or until another event (new ACS, stroke, hospitalization for heart failure, hospitalization for arrhythmic event or death).

Results: The study included 508 patients, 72.3% male, mean age 66 ± 13 years. 138 events were recorded during the follow-up (medium of 30 ± 18 months), 15 of which corresponded to stroke documented by computed tomography. On Cox multivariate analysis adjusted for potential confounding factors (sex, age, diabetes, hypertension, dyslipidemia, obesity, smoking, previous events, systolic blood pressure, diastolic blood pressure and heart rate on admission) only age, previous cardiovascular events (stroke or ACS), maximum troponin and pro B-type natriuretic peptide (pro BNP) were independent predictors of stroke (with respective Hazzard Ratios of 1.08, 1.90, 1.01 and 1.01 with a 95% confidence interval and p value <0.01). Hemoglobin, creatinine, glycemia on admission, atrial fibrillation, left ventricle ejection fraction and revascularization did not show significance as predictors of stroke. Pulse pressure was also a predictor of stroke but lost significance in the multivariate analysis. The analysis of Kaplan Meier survival curve showed an association between stroke and more advanced Killip class (log rank 15.37 with p value <0.02).

Conclusion: Age, previous cardiovascular events, maximum troponin value, pro BNP and Killip class shown to have predictive value for stroke in patients hospitalized for ACS and may be used to create a risk prediction score.

ST-elevation myocardial infarction - ACS

PI55

Hemorrhagic complications in patients with acute coronary syndrome of different age groups

A Kochergina,¹ V Kashtalap,¹ V Leonova¹ and O Barbarash¹

¹Kemerovo Cardiology Centre, Kemerovo, Russian Federation

The risk of hemorrhagic complications in elderly patients present with acute coronary syndrome has always been considered a subjective risk factor to perform primary percutaneous coronary intervention (PCI) by clinical cardiologists.

Aim: To assess and compare the incidence of bleedings in patients of different age groups undergoing primary percutaneous coronary intervention.

Material and Methods: 110 medical records of patients with acute myocardial infarction (mean age $61,75 \pm 10,46$ years), who were admitted in the hospital for the period 1, January 2012 to 31, December, 2012 and have undergone primary infarct-related artery PCI, were retrospectively reviewed. All the patients were assigned to two groups according to their age: Group 1 < 70 years and Group 2 ≥ 70 years.

Results: ACS patients, who have undergone PCI, demonstrated a 5% incidence of bleedings. Thus, there were no evidence to confirm a tendency of elderly ACS patients after PCI towards higher incidence of bleedings and transfusions (Table 1). Importantly, elderly ACS patients had higher initial disease severity. The treatment therapy did not differ significantly in both groups.

Conclusion: The incidence of hemorrhagic complications was insignificantly higher in elderly patients with acute coronary syndrome undergoing primary percutaneous coronary intervention, compared to younger patients. However, incidence of hemorrhagic complications should not cause unjustified refusal of percutaneous coronary intervention in these patients.

Table 1. The incidence of bleedings in ACS patient.

Parameters	Total number of patients (n=110)	< 70 years (n=79) (1)	≥ 70 years (n=31) (2)	P_{1-2}
puncture site hematoma, n (%)	5(4.54%)	3(3.79%)	2(6.45%)	0.5478
pulsating hematoma, n (%)	2(4.81%)	1(1.26%)	1(3.22%)	0.4896
Gastrointestinal bleeding, n (%)	5(4.54%)	2(2.53%)	3(9.67%)	0.1086
Transfusions, n (%)	5(4.54%)	2(2.53%)	3(9.67%)	0.1086

PI56

High-degree atrio-ventricular block complicating acute myocardial infarction treated with primary percutaneous coronary intervention

Y Shacham,¹ E Leshem-Rubinow,¹ A Steinvil,¹ G Keren,¹ A Roth¹ and Y Arbel¹

¹Tel Aviv Sourasky Medical Center, Tel Aviv, Israel

Purpose: Limited information is present regarding the incidence and prognostic significance of high degree atrio-ventricular block (AVB) in ST elevation myocardial infarction (STEMI) patients in the primary percutaneous coronary intervention (PCI) era. We assessed the incidence, time of onset, predictors and prognostic significance of high degree AVB in a large cohort of consecutive STEMI patients undergoing primary PCI.

Methods: We retrospectively studied 1244 STEMI patients undergoing primary PCI.

Patient records were reviewed for the presence of high degree AVB, its time of occurrence and relation to in-hospital complications as well as long term mortality over a 5 year period.

Results: High degree AVB was present in 33 patients (3.0%), 25 of whom (76%) the conduction disorder occurred prior to PCI. In 12 of the 33 patients having AVB (36%) temporary pacing was inserted, all prior to or during coronary intervention, and all AVB resolved spontaneously before hospital discharge. AVB was associated with a significantly higher 30 day (15.2% vs 2.0%; $P=0.001$) and long term mortality rate (30.3% vs 7.0%; $P<0.001$). Time of AVB had no effect on mortality. In multivariate regression models, AVB emerged as an independent predictor for both 30 day (HR 3.75, 95% CI

1.48-9.49; $P=0.005$) and long term mortality (HR 4.16, 95% CI 2.01-8.6; $P=0.001$).

Conclusion: High degree AVB remains a significant prognostic marker in STEMI patients in the primary PCI era, albeit being transient.

P157

Relation of pulmonary artery pressure and renal impairment in ST segment elevation myocardial infarction patients

Y Shacham,¹ E Leshem-Rubinow,¹
Y Topilsky,¹ A Steinvil,¹ G Keren,¹
A Roth¹ and Y Arbel¹

¹Tel Aviv Sourasky Medical Center, Tel Aviv, Israel

Purpose: Recent reports have demonstrated the adverse effects of venous congestion on renal function in patients having heart failure. None of the above trials however included patients with acute ischemia. We hypothesized that echocardiographic correlates of increased right ventricular afterload would be associated with an increased risk of acute kidney injury (AKI) in ST elevation myocardial infarction (STEMI) patients undergoing primary percutaneous coronary intervention (PCI).

Methods: We conducted a retrospective study of consecutive 930 STEMI patients who underwent primary PCI and had a full echocardiography study performed within 72 hours of hospital admission between June 2011 and December 2014.

Results: Echocardiography demonstrated that patients with AKI had significantly lower left ventricular (LV) ejection fraction, higher systolic pulmonary artery pressure (SPAP) and right atrial pressures ($P<0.001$ for all). Following the performance of logistic multivariate analysis model SPAP (HR 1.07, 95% CI 1.04-1.11; $p<0.001$) and LV ejection fraction (HR 0.95, 95% CI 0.92-0.99; $p=0.03$) emerged as independent predictor of AKI. On receiver operating characteristic (ROC) curve analysis, the optimal cut-off value of SPAP to predict AKI was measured as more than 32 mmHg, with 71% sensitivity and 62% specificity (AUC 0.739, 95% CI 0.671-0.806, $p<0.001$)

Conclusions: Among STEMI patients undergoing primary PCI SPAP is a strong, independent predictor of AKI.

P158

Admission glucose levels and the risk of acute kidney injury in non-diabetic ST segment elevation myocardial infarction patients undergoing primary percutaneous coronary intervention

Y Shacham,¹ E Leshem-Rubinow,¹ Y Arbel,¹
G Keren,¹ A Roth¹ and A Steinvil¹

¹Tel Aviv Sourasky Medical Center, Tel Aviv, Israel

Purpose: Hyperglycemia upon admission is associated with an increased risk for acute kidney injury (AKI) in ST segment elevation myocardial infarction (STEMI) patients undergoing primary percutaneous coronary intervention (PCI). However, the relation of this association with the absence of diabetes mellitus (DM) is less studied. We evaluated the effect acute hyperglycemia levels on the risk of AKI among STEMI patients without DM who were all treated with primary PCI.

Methods: We retrospectively studied 1065 non diabetic STEMI patients undergoing primary PCI. Patients were stratified according to admission glucose levels into normal (<140 mg/dl) mild (140-200 mg/dl) and severe (>200 mg/dl) hyperglycemia. Medical records were reviewed for the occurrence of AKI.

Results: Mean age was 61 ± 13 years and 81 % were males. Hyperglycemia upon hospital admission was present in 402/1065 patients (38%). Patients having severe admission hyperglycemia had significantly higher rate of AKI compared to patients with no or mild hyperglycemia (7% vs. 8% vs. 20 %, respectively; $p=0.001$) and had significantly higher serum creatinine change throughout hospitalization (0.09 mg/dl vs. 0.07 mg/dl vs. 0.17 mg/dl; $p=0.04$). In multivariate logistic regression severe hyperglycemia emerged as an independent predictor for AKI (OR= 2.46, 95% CI 1.16-5.28; $P=0.018$).

Conclusion: Severe admission hyperglycemia an independent risk factor for the development of AKI among non- diabetic STEMI undergoing primary PCI.

P159

High-degree atrioventricular block complicating ST-segment elevation myocardial infarction in the contemporary era

A Loirat,¹ V Auffret,² G Leurent,² E Filippi,³
JP Hacot,⁴ R Delaunay,⁵ P Castellant,¹
A Rialan,⁶ G Rouault⁷ and H Le Breton²

¹University Hospital of Brest, Cardiology, Brest, France ²University Hospital of Rennes - Hospital Pontchaillou, Department of Cardiology and Vascular Disease, Rennes, France ³Centre Hospitalier Bretagne Atlantique, Cardiology, Vannes, France ⁴Centre Hospitalier de Bretagne Sud, Cardiology, Lorient, France ⁵Centre Hospitalier, Cardiology, Saint-Brieuc, France ⁶Centre Hospitalier, Cardiology, Saint-Malo, France ⁷Centre Hospitalier, Cardiology, Quimper, France

Background: High-degree atrioventricular block (HAVB) is a common complication of ST-segment elevation myocardial infarction (STEMI). HAVB in STEMI is historically considered as a marker of worse outcome but overall data about HAVB in the contemporary era of mechanical reperfusion and potent antiplatelet therapies are scarce.

Aim: We aimed at analyzing incidence, clinical correlates and impact on in-hospital outcomes of HAVB in a large prospective registry (ORBI) of modern management of STEMI with a special focus on potential differences between patients with HAVB on admission and those who developed HAVB during hospitalization.

Methods: All patients enrolled in ORBI between June 2006 and December 2013 were included in the present analysis and were divided into 3 groups: patients without HAVB at any time, patients with HAVB on admission and those who developed HAVB during hospitalization.

Results: 6662 patients (age: 62.0 [52.0-74.0]; male: 76.3%) were included in the present analysis. HAVB was documented in 3.5% of patients, present on admission in 63.7% of patients and occurring during hospitalization in 36.3%. Patients with HAVB on admission or occurring during the first 24h of hospitalization had higher in-hospital mortality rates (18.1% and 28.6% respectively) than patients without (4.5%) or with HAVB occurring beyond the first 24h of hospitalization (8.0%). However by multivariable analysis, HAVB was not independently associated with in-hospital mortality.

Conclusion: Patients with HAVB had a higher mortality rate than patients without. However HAVB is not an independent predictor of in-hospital mortality.

PI 60

Percutaneous coronary intervention for nonagenarian patients with ST-segment elevation myocardial infarction

Y Mizuguchi,¹ A Takahashi,¹ S Hashimoto,¹
T Yamada,¹ N Taniguchi,¹ S Nakajima¹ and
T Hata¹

¹Sakurakai Takahashi Hospital, Kobe, Japan

Background: One of the prognostic risk factors in patients with ST elevation acute myocardial infarction (STEMI) is known to be older age; however, there is a paucity of data available for STEMI patients aged over 90 years.

Methods: We retrospectively evaluated the clinical indices and outcomes of 282 consecutive STEMI patients who underwent primary PCI in our hospital between January 2008 and December 2012.

Results: In total, 11 (3.8%) patients were aged over 90 years old. The mean door-to-balloon time in nonagenarians was significantly longer compared with in younger patients (66.2 vs. 44.0 minutes; $p < 0.001$). The cause of the longer door-to-balloon time was mainly attributed to delays in the decision-making regarding the invasive treatment by both the doctors and families. Nonagenarians more frequently had multiple coronary artery stenoses (36.4% vs. 15.0%; $p < 0.05$) and required intra-aortic balloon pumping (36.4% vs. 18.9%; $p = 0.15$) compared with patients aged ≤ 89 years. However, the peak creatinine kinase levels and the left ventricular ejection fraction were similar between the groups. Moreover, the in-hospital and 30-day mortality rates were also similar (9.1% vs. 4.6%, $p = 0.50$; 9.1% vs. 3.6%, $p = 0.34$, respectively) between the groups. The two-year survival rate was 81.8% in nonagenarians.

Conclusions: Despite the longer door-to-balloon time, higher use of intra-aortic balloon pumping, and the larger number of deceased vessels, the short- and long-term survivals of nonagenarians with STEMI were comparable to those of younger patients.

PI 61

Effect of ivabradine on the infarct size and remodeling in patients with STEMI

A A A S Eissa¹

¹Ain Shams University, cardiology division, Cairo, Egypt

Objective: To assess the effect of ivabradine on LV function and remodeling in patients with STEMI after primary PCI (PPCI).

Methods: Fifty seven patients who presented with STEMI within the time window of reperfusion (12hrs) were included in our study. The patients were divided into two groups: Group 1: optimal medical treatment (OMT) including beta-blockers +Ivabradine; Group 2: OMT including beta-blockers without Ivabradine. within 24 hours of PPCI all the patients did baseline echocardiography (LVEF, LVEDD, LVESD) and SPECT (LVEF, LVEDV, LVESV,17-segment score). After 21 days, echocardiography and SPECT study were repeated.

Results: our patients were predominantly males (84.2%) with mean age of 48.8±10.53 yrs. All the patients underwent PPCI and the most revascularized

vessel was LAD (93%). Admission HR was 95.71±12 bpm. Both groups revealed no significant difference after 21 days of treatment apart from significant HR reduction to 68 bpm with Ivabradine (group I) (P<0.001). Subgroup analysis of Group I diabetic patients with HR>100bpm showed significant reduction of echocardiographic LVESD by -4.80±2.09 mm; (P=0.015) and significant improvement of SPECT LVEF to +14.10±7.06 % (P =0.03).

Conclusion: In the setting of STEMI treated with PPCI, Ivabradine significantly reduced the HR. In a subgroup of Diabetic patients with HR > 100bpm, Ivabradine significantly reduced the echocardiographic LVESD and improve the SPECT LVEF

Table 1. Diabetic patients with HR>100.

	Diabetic patients with HR > 100 bpm on Ivabradine + BB (n=10)		Diabetic patients with HR > 100bpm on BB (n=6)	P.Value
	Mean ±SD	Mean ±SD	Mean ±SD	
HR on admission	106.50±5.79	107.00±3.89		0.855
% of HR reduction	38.00±7.22	24.66±3.93		0.001
Echo changes after 3 weeks	ESD _e mm	-4.80±2.09	-2.00±1.67	0.015
SPECT changes after 3 weeks	EF _{Sp} %	14.10±7.06	5.83±5.98	0.031*

PI62

Smoking impact on in-hospital mortality in ST elevation acute myocardial infarction (STEMI). Does smoking paradox exist?

A Duka,¹ L Simoni,¹ A Kristo,¹ E Zaimi,¹ L Kresto,¹ I Sharka,¹ T Gishto,¹ E Mile,¹ E Petrela¹ and I Balla¹

¹University Hospital Center Mother Theresa, Cardiology, Tirana, Albania

Purpose: The term Smoking Paradox was introduced in scientific discussion for more than 25 years, based in clinical experience where smoking patients in compare with non smoking patients had a lower mortality. Our purpose is to determine the impact of smoking on in-hospital mortality in STEMI patients.

Methods: Were included 456 patients, admitted in our hospital with STEMI within first six hours, in the period between September 2012 –May 2014 . For all the patients

were taken data about smoking status, age, sex, race , type 2 diabetes mellitus , hypertension, type of MI and they were observed during hospitalization according to mortality.

Results: Only 39% of total population (N=456 patients) were smokers. There was no significant difference between types of MI and smoking status. Using binary logistic regression analysis (death was considered as a depended variable) we founded a significant correlation between death and age (OR=0.94, 95% CI 0.91-0.97 p<0.001), diabetes (OR=0.397, 95% CI 0.21-0.76 p =0.005) and the inferior-RV myocardial infarction (OR=0.254, 95% CI 0.09-0.70 p=0.046), but there was not significant correlation between death and smoking status (OR =1.965 95% CI 0.85-4.5 p=0.114).

Conclusions: In our study there is no smoking impact on in-hospital mortality in STEMI patients. The factors that impact the mortality were patient's age, type 2 diabetes mellitus and inferior - RV infarction.

PI63

Effect of 1st cigarette smoking on endothelial function (comparative study with ACS chronic ex-smoker

R Gaber,¹ SUZAN Bayomy¹ and WESSAM Salah¹¹tanta univeristy hospital , Tanta, Egypt

Background: cigarette smoking is a major health hazard, and is associated with increased risk of cardiovascular mortality.

Aim of the work: The aim of the present study is to identify the level of circulating EPCs in healthy individuals after one cigarette smoking and compare it to patient who stopped smoking one year ago and patients with acute coronary syndrome chronic ex-smokers using flowcytometry

Methods: The present study was carried out on 50 subjects;10 control group (group I) ,10 patients who stopped smoking one year ago (group II) and10 healthy volunteers agreed for study protocol (to smoke one cigarette and follow up EPCs level 1 up to 24 hours) and 20 acute coronary syndrome ex-smokers(group IV). The level of CD34+ KDR+EPCs was determined in all of them by flowcytometry.

Results: There was no significant difference in the number per microliter of circulating EPCs in patients who stopped smoking when compared to controls (19.200+7.730 VS 27.800+ 4.840) but there was significant increase in the level of circulating EPCs in patients with smoking either 1st cigarette or with acute coronary syndrome chronic ex-smokers when compared to controls or patients who stopped (70.857 + 5.488, 72.769+ 14.899 VS 19.200+ 7.730). There was no significant difference between patients of 1st cigarette and patients of acute coronary syndrome ex smokers (70.857 + 5.488 VS 72.769+ 14.899).

There was significant increase in number per microliter of CD34+KDR+EPCs in patients after 4 hrs (P <0.001) than controls ,which begin to rise after 1 hr (P<0.001) although higher than that of controls and became comparable to that of controls within 24 hours .

Conclusion: Brief active smoking of one cigarette generated an acute release of EPC and acute endothelial dysfunction comparable to acute coronary syndrome patients ex-smokers which raise the possibility of acute coronary syndrome even after one cigarette smoking .

Abbreviations: ACS= acute coronary syndrome, EPCs= endothelial progenitor cells.

Key words: EPCs, smoking , acute coronary syndrome .

PI64

Leukocytosis in acute myocardial infarction- association with higher platelet count and poor response to acetylsalicylic acid, clopidogrel and thrombin receptor activating peptide

M Isailovic-Kekovic,¹ P Kekovic,¹ P Cvetkovic,² T Kostic,² I Aleksic³ and M Rihter³¹Hospital Dr Aleksa Savic, Prokuplje, Serbia ²Clinical Center of Nis, Nis, Serbia ³Institute of Cardiology Niska Banja, Nis, Serbia

Acute myocardial infarction (AMI), commonly known as a heart attack, is the irreversible necrosis of heart muscle. This usually results from an imbalance in oxygen supply and demand, which is most often caused by plaque rupture with thrombus formation in a coronary vessel, resulting in an acute reduction of blood supply to a portion of the myocardium.

The purpose of the present study was to investigate the relationship between leukocytosis and platelet count and response to acetylsalicylic acid(ASPI test),clopidogrel(ADP test) and thrombin receptor activating peptide(TRAP test) in patients with acute myocardial infarction (AMI).

We included 105 patients with AMI (72 males, 33 females).

Leukocyte count (WBC) and platelet count (PLT) were measured by Sysmex kx21n. Response to acetylsalicylic acid,clopidogrel and thrombin receptor activating peptide (ASPI,ADP,TRAP test) were assessed by the Multiplate® platelet function analyzer.

The study subjects were divided into 2 groups according to the values of leukocyte count (WBC). 77 patients fall into group with WBC <10x10⁹/l (I group) mean age 67.09±11.08, and 28 patients fall into group with WBC ≥ 10x10⁹/l (II group) mean age 70.14±10.17.

In I group value of platelet count (PLT) was 199.10±55.25x10⁹/l, and in II group PLT was 240.25±113.46 x10⁹/l. (P<0.05).

In I group value of ASPI test was 385.31±240.94 AU*min, in II group ASPI test was 638.17±338.13

AU*min. ($P<0.01$). In I group value of ADP test was 500.40 ± 192.92 AU*min, in II group it was 676.71 ± 167.74 AU*min. ($P<0.01$). In I group value of TRAP test was 978.16 ± 240.15 AU*min, but in II group it was 1220.05 ± 296.98 AU*min. ($P<0.01$).

Leukocytosis in AMI is significantly associated with higher value of platelet count and with poor response to acetylsalicylic acid, clopidogrel and thrombin receptor activating peptide.

P165

Lower uric acid blood level in anterior myocardial infarction treated by primary angioplasty is associated with better coronary flow and left ventricular systolic function

D Sharif,¹ W Abo-Zaid,² A Sharif-Rasslan,² Y Sharif² and U Rosenschein¹

¹Bnai Zion Medical Center, Haifa, Israel ²Technion, Haifa, Israel

Hyperurecemia is related to atherosclerotic disease, endothelial dysfunction, slow flow after coronary intervention and recently its prevalence is increasing.

Aim: To test the hypothesis that hyperurecemia on admission is related to coronary flow and left ventricular systolic function after primary percutaneous coronary intervention (PPCI).

Methods: 116 patients with first acute anterior STEMI and treated by PPCI who had results of uric acid (UA) blood levels on admission were evaluated. Coronary artery flow in left anterior descending (LAD) was assessed using the TIMI and myocardial blush grades (MBG). ST-elevation resolution after PPCI was evaluated. Transthoracic Doppler echocardiography was performed early after PPCI and 5 days late to assess left ventricular ejection fraction (LVEF) and wall motion score index (WMSI) of the left ventricle and LAD area. Sampling of LAD blood velocity was performed to measure LAD velocities and integrals, diastolic deceleration times (DDT) and pressure half times (PHT) both early after PPCI and at discharge.

Results: In patients with lowest quartile of UA (<3.4) there were more women 62.5%, all were in Killip class 1, presented with higher rates (42.3%) of TIMI 3 before PPCI, had more ST-elevation resolution, higher rates of complete ST-elevation resolution (66.6%), and higher rates (50%), of LAD-DDT >600 msec early after PPCI, $p<0.05$ compared to higher quartiles of UA blood levels. LAD-WMSI was lower, on admission 2.01 ± 0.25 vs 2.29 ± 0.24 , $p<0.05$, and at discharge, 1.64 ± 0.36 vs

1.86 ± 0.58 , $p<0.05$ in those with UA <3.4 mg/l compared to others.

Conclusion: Lower UA blood levels at admission in patients with acute anterior STEMI treated by PPCI present with a higher frequency of TIMI 3 before PPCI, had more ST-elevation resolution, higher prevalence of early LAD-DDT >600 msec, and better late left ventricular systolic function as evaluated by LAD-WMSI.

P166

Long-term outcome in young patients with ST-elevation myocardial infarction treated with primary percutaneous coronary intervention

L Savic,¹ I Mrdovic,² M Asanin,² G Krljanac,² R Lasica² and B Kastel²

¹Clinical Center of Serbia, Institute for Cardiovascular Disease, Belgrade, Serbia ²Clinical Center of Serbia, Institute for Cardiovascular Disease, Emergency Hospital, Belgrade, Serbia

Purpose: Age is one of the most important determinants of prognosis after ST-elevation myocardial infarction (STEMI). There are only few studies that have analysed clinical outcomes in young patients with STEMI who were treated with primary percutaneous coronary intervention (pPCI). The aim of this study is to analyse clinical profile and 5-year overall mortality in young patients with STEMI who were treated with pPCI.

Method: we analysed 1530 consecutive patients from the prospective Clinical Center of Serbia STEMI Register. Patients were divided in two groups: young patients (≤ 45 years) and older patients (>45 years). Patients presenting with cardiogenic shock were excluded.

Results: Out of 1530 patients, 174 (11.4%) were young (≤ 45 years) and 1356 (88.6%) were older (>45 years). Compared with older patients (>45 years) young patients were more likely to be male, smokers and to have family history of premature coronary disease; they were less likely to have previous coronary and cerebrovascular disease, diabetes, hypertension, renal dysfunction and multivessel coronary artery disease at initial coronary angiogram. Procedural success rate (postprocedural flow TIMI 3) was higher in young patients as compared with older patients (>45 years) - 5.3% vs 1.7% $p=0.040$. Five year mortality rates were 1.73% and 10.33% ($p<0.001$) in patients aged ≤ 45 years and >45 years respectively. In Cox regression model, age was an independent predictor for 5-year overall mortality. Patients aged ≤ 45 years had lower 5-year mortality (HR 0.29 (95%CI 0.08-0.92), $p=0.036$) when compared with older patients. Other independent predictors of low 5-year mortality were preserved left

ventricular ejection fraction (>50%), preserved renal function (creatinine clearance>60ml/min), no heart failure at admission and postprocedural flow TIMI 3. In patients aged ≤ 45 years (reduced) left ventricular ejection fraction was the only independent predictor of 5-year mortality - HR 0.77 95%CI 0.68-0.86, p=0.003.

Conclusion: Age ≤ 45 years is an independent predictor of favorable long term outcome after primary PCI. In this study patients aged ≤ 45 years had around 3-times lower 5-year overall mortality in comparison with older patients (>45 years).

PI67

Hospital outcome of acute hyperglycemia in patients with ST-elevation myocardial infarction

T Al-Maimoony¹

¹Cairo University, cardiovascular, Cairo, Egypt

Aims: To test whether hyperglycemia detected in patients with acute ST-elevation myocardial infarction (STEMI) is a predictor of in-hospital major adverse cardiovascular events (MACE).

Methods: 81 patients with an acute STEMI were enrolled in this clinical study. The studied patients were classified into 3 groups, group A included patients with a plasma glucose (< 200 mg/dl) and no previous history of diabetes, group B included diabetic patients with hyperglycemia and group C included patients with hyperglycemia and no history of diabetes. The primary end point was the composite of mortality, arrhythmia, recurrent nonfatal MI, or heart failure (MACEs) during the hospital stay.

Results: Compared with the other groups, group C patients had significantly higher plasma levels of cardiac biomarker (Troponin I and CK-MB) and inflammatory marker (TNF and WBCs, p < 0.01) while MACEs developed more among groups B and C groups. Seventeen (21.8%) patients suffered MACE (mortality in 6 patients, heart failure in 13, re-infarction in 3, atrial fibrillation in 3 and one patient developed heart block. TNF α level, Troponin I and the left ventricular ejection fraction were the most independent predictor of the MACEs after acute STEMI.

An admission cutoff value of blood glucose level > 230mg/dl cut-off showed sensitivity of 76.5% and specificity of 63.9% as predictor of MACEs.

Conclusion: Hyperglycemia is an important predictor of the outcome in patients hospitalized with acute STEMI. Hyperglycemia is associated with increased levels of inflammatory markers and cardiac biomarker. TNF α concentrations and hyperglycemia correlated with left ventricular ejection fraction.

PI68

Left main artery as culprit in acute coronary syndrome - presentation and outcome

S Aguiar Rosa,¹ AT Timoteo,¹ M Nogueira¹ and R Cruz Ferreira¹

¹Hospital de Santa Marta, Cardiology, Lisbon, Portugal

Background: Left main coronary artery (LMA) is an unusual location of acute coronary syndrome (ACS), correlating with severe clinical deterioration and worst outcome.

Objective: The aim is to characterize patients (P) with LMA as culprit artery in ACS, define predictors to perform percutaneous coronary intervention (PCI) or coronary bypass graft (CABG) and determine predictors of hospital mortality.

Methods: Retrospective analysis of LMA ACS population, admitted between October 2010 and October 2014, in a national ACS registry. Clinical, echocardiographic and angiographic characteristics and prognosis were compared between LMA and non-LMA (NLMA) P. The predictors for PCI vs CABG and mortality were determined by logistic regression.

Results: From 6787 P admitted with ACS that underwent coronary angiography, 146 (2.2%) had the culprit lesion in LMA. Comparing LMA and NLMA groups, P in the first group were older (66±13vs64±13years;p=0.019) with similar gender distribution (male 77.4%vs75.4%). LMA had more previous angina (33.1%vs20.8%;p<0.001), CABG (4.8%vs1.9%;p=0.025), heart failure (8.2%vs3.4%;p=0.002), without significant difference in valvular heart disease (2.8%vs2.0%;p=0.539). In LMA, only 19.2% of P had ST Segment elevation myocardial infarction (STEMI) comparing to 53.8% in NLMA (p<0.001). At admission LMA had higher heart rate (82±21vs77±19bpm;p<0.001), lower systolic pressure (130±28vs138±29mmHg;p<0.001), higher Killip class (Killip>1 26%vs11.8%;p<0.001) and renal impairment (creatinine ≥ 2mg/dl 8.3%vs4.2%; p=0.002). In LMA more P received diuretic (35.2%vs24.6%;p=0.004), inotropics (15.3%vs5.1%;p<0.001), intra-aortic balloon pump (13%vs0.9%; p<0.001) and invasive mechanical ventilation (10.3%vs2.6%; p<0.001). LMA had more severe left ventricular systolic function impairment (ejection fraction<30% LMA 8.0%vsNLMA 3.4%;p=0.013). Multivessel disease was more prevalent in LMA (97.9%vs45%;p<0.001). In LMA P no revascularization was performed in 2.0%, 47.3% received PCI, 49.3% CABG and 1.4% PCI+CABG. Hospital mortality was higher in LMA (11%vs2.7%; p<0.001), being STEMI a predictor of mortality (OR15.04;p<0.001) and beta-blockers of survival (OR0.03; p<0.001). The predictors of decision to

perform a PCI (vs CABG) were STEMI (OR7.99;p=0.001), creatinine>1.5mg/dl (OR 5.76;p=0.015) and normal weight (OR 2.69;p0.026).

Conclusion: P with LMA as culprit have worst clinical characteristics on admission as well as in-hospital complication/outcome. STEMI is a predictor of mortality and B-blockers of survival. The predictors to perform a PCI are STEMI, renal impairment and normal weight.

PI69

Cardiovascular risk and risk of cardiac arrest: another paradox in acute coronary syndrome

S Aguiar Rosa,¹ AT Timoteo,¹ M Afonso Nogueira¹ and R Cruz Ferreira¹

¹Hospital de Santa Marta, Cardiology, Lisbon, Portugal

Background: In patients(P)admitted with acute coronary syndrome(ACS) there is a subgroup whose pre-event stratification classified as low cardiovascular risk. The aim is to compare P without previously diagnosed risk factors(RF) and P with \geq 1RF admitted with ACS.

Methods: Retrospective analysis of P with first episode of ACS, without previous heart disease, included in an ACS registry. P were divided according to RF:0RF(G0),

1or2RF(G1-2) and \geq 3RF(G \geq 3). RF analysed: age>55years in men,>65years in women, hypertension, diabetes, dyslipidemia, smoking,family history of coronary artery disease(CAD). Clinical, laboratorial, echo and angiographic characteristics, in hospital outcome and 1year follow up(FUp) were compared between 3 groups.

Results: 5518P, 72.2%male, mean age 64 \pm 14years. G0 had more of ST Segment elevation myocardial infarction(STEMI), being left anterior descending artery the most frequently involved vessel with a lower prevalence of multivessel disease (table). Despite of this group on admission having a lower Killip class (96%P in Killip I;p<0.001) and higher ejection fraction (EF)(G0EF 56 \pm 10%vsG1-2 and G \geq 3EF 53 \pm 12%;p=0.024), there was a significant higher incidence of cardiac arrest(CA). Multivariate analysis identified the absence of RF as an independent predictor of CA(OR2.78;p=0.019). Hospitalar mortality was slightly higher in G0, although not significant. By Cox regression, the number of RF was not associated with mortality, being the predictors of death at 1 year: age(OR1.05;p<0.001), STEMI(OR1.94;p=0.003) and EF<50%(OR2.34;p<0.001).

Conclusion: Even though the group without RF is composed by younger P with less comorbidities, better left ventricular function and less extensive CAD, the absence of RF is an independent predictor of CA, however not correlated with mortality in FUp.

Table 1.

	G0(n=151)	G1-2(n=2858)	G \geq 3(n=2509)	p-value
Male	64.2%	73.5%	71.1%	0.014
Age (years)	49+8	62+15	67+12	<0.001
STEMI	57.6%	54.3%	47.3%	<0.001
Culprit artery - left anterior descending	41.0%	40.6%	36.6%	0.027
Multivessel disease	16.3%	39.7%	51.5%	<0.001
Cardiac arrest	6.6%	3.0%	2.7%	0.021
Mortality	4.0%	3.4%	3.5%	0.917

PI70

Importance of the metabolic syndrome in patients with acute ST-elevation myocardial infarction

M Mornar Jelavic,¹ Z Babic² and H Pintaric³

¹Health Center Zagreb - East, Center for Internal Medicine and Dialysis, Zagreb, Croatia ²University Hospital "Sestre Milosrdnice", Coronary Care Unit, Zagreb, Croatia ³University Hospital "Sestre Milosrdnice", Cardiac Catheterisation Laboratory, Zagreb, Croatia

Purpose: To investigate the influence of metabolic syndrome (MetS) on clinical severity and prognosis in patients with acute ST-elevation myocardial infarction (STEMI) treated with primary percutaneous coronary intervention (PCI).

Methods: We prospectively analysed 250 patients with acute STEMI treated with primary PCI, between September 2011-2012. MetS was diagnosed by revised National Cholesterol Education Program Adult Treatment Panel III criteria. Patients were divided in two groups (with/

without MetS and compared by their baseline (medical history, demographic and anthropometric data (body mass index (BMI), waist circumference (WC) and waist-to-hip ratio (WHR)) and parameters of severity (clinical, laboratory, echocardiography, coronary angiography, in-hospital complications) and prognosis (major adverse cardiovascular events (MACE) and sick leave duration (SLD) during 12 months of follow-up).

Results: MetS patients (136 (54.4%)) had statistically significant longer hospitalization, higher rates of total in-hospital complications, higher number of significant stenosed coronary arteries (CAs), higher stents diameter, higher rate of significant stenosed proximal/middle CAs segments and significant stenosis of ≥ 2 CAs, as well as longer SLD ($p < 0.05$). BMI < 25.0 kg/m² increases and BMI 25.0-29.9 kg/m² reduces the risk of dyspnea, while hyperglycemia increases the risk of heart failure ($p < 0.05$). Number of significantly stenosed CAs increases the risk of total MACE ($p < 0.05$).

Conclusion: MetS in acute STEMI is an independent predictor of in-hospital complications and severity of CAs disease, but not for parameters of prognosis. BMI is an independent predictor for some components of severity (but not prognosis) in acute STEMI, while WC and WHR seems to be inferior in that prediction with no impact on both severity and prognosis parameters in these patients.

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Importance of the anthropometric parameters in acute ST-elevation myocardial infarction

M Mornar Jelavic,¹ Z Babic² and H Pintaric³

¹Health Center Zagreb - East, Center for Internal Medicine and Dialysis, Zagreb, Croatia ²University Hospital "Sestre Milosrdnice", Coronary Care Unit, Zagreb, Croatia ³University Hospital "Sestre Milosrdnice", Cardiac Catheterisation Laboratory, Zagreb, Croatia

Purpose: To investigate the influence of the anthropometric parameters on clinical severity and prognosis in patients with acute ST-elevation myocardial infarction (STEMI) treated with primary percutaneous coronary intervention (PCI).

Methods: We prospectively analysed 250 patients with acute STEMI treated with primary PCI, between September 2011 and September 2012. They were divided in four groups according to the anthropometric parameters as follows: body mass index (BMI) (< 25.0 , 25.0-29.9, ≥ 30.0 kg/m²), waist circumference (WC) ($< 102/88$ and $\geq 102/88$ cm for males/females), waist-to-hip ratio (WHR) ($< 0.90/0.85$ and $\geq 0.90/0.85$ for males/females) and waist-to-height ratio (WHtR) ($< 53/49$, 53/49-62/57 and $\geq 63/58$ for males/females). The groups were analysed by their baseline (medical history,

demographic data) and parameters of severity (clinical, laboratory, echocardiography, coronary angiography, in-hospital complications) and prognosis (major adverse cardiovascular events (MACE) and sick leave duration (SLD) during 12 months of follow-up).

Results: Among 250 patients, there were 72 (28.8%) patients with BMI ≥ 30.0 kg/m², 149 (59.6%) with WC $\geq 102/88$ cm, 222 (88.8%) with WHR $\geq 0.90/0.85$ and 81 (32.4%) with WHtR $\geq 63/58$, respectively. BMI ≥ 30.0 kg/m² patients had lower rates of dyspnea, longer hospitalization and larger diameter of stents ($p < 0.05$). WHR $\geq 0.85/0.90$ patients more frequently had significant stenosis of proximal/middle coronary arteries (CAs) segments ($p < 0.05$). WHtR $\geq 63/58$ increases the risk of heart failure and total in-hospital complications ($p < 0.05$).

Conclusion: BMI, WHR and less often used WHtR are independent predictors of several parameters of severity in patients with acute STEMI, while WC was not. Anthropometry has no influence on prognosis in these patients.

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Admission N-Terminal pro-brain natriuretic peptide predicts poor myocardial perfusion after primary percutaneous coronary intervention for ST-segment-elevation myocardial infarction

I Eweda,¹ K Abdel-Dayem,¹ A El-Sherbiny,² M Dimitry² and W Nammas¹

¹Ain Shams University, Cardiology, Cairo, Egypt ²National Research Centre, Cairo, Egypt

Background: Despite achieving TIMI flow grade 3 in epicardial coronary arteries by primary percutaneous coronary intervention (PPCI), many patients have signs of impaired myocardial tissue perfusion as reflected by partial ST resolution (STR) and poor post-procedural myocardial blush grade (MBG).

Purpose: We explored the value of admission N-terminal pro-brain natriuretic peptide (NT-PBNP) level to predict poor myocardial tissue perfusion following PPCI in patients admitted with acute ST-segment-elevation myocardial infarction (STEMI).

Methods: We enrolled 90 consecutive patients admitted with acute STEMI who underwent PPCI, and achieved post-procedural TIMI flow grade 3 in the infarct-related artery. We measured NT-PBNP level from admission blood samples. Post-procedural MBG was assessed at the end of PPCI. STR was assessed 90 minutes following PPCI. The primary endpoint was STR $< 50\%$. The co-primary angiographic endpoint was post-procedural MBG 0/1.

Results: The mean age was 53.6 ± 10.9 years (25.6% females). NT-PBNP was higher in patients with $STR < 50\%$ versus those with $STR \geq 50\%$ (592 ± 126 versus 259 ± 122 ng/L, respectively, $p < 0.001$). Similarly, NT-PBNP was higher in patients with post-procedural MBG 0/1 versus those with MBG 2/3 (620 ± 144 versus 405 ± 177 ng/L, respectively, $p < 0.001$). A value of NT-PBNP ≥ 420 ng/L was the optimal cutoff value that best predicts $< 50\%$ STR. Using this cutoff value, NT-PBNP was able to predict $< 50\%$ STR with sensitivity, specificity, positive and negative predictive value of 98.4%, 92.2%, 96.9%, and 96%, respectively. Likewise, a value of NT-PBNP ≥ 570 ng/L was the optimal cutoff value that best predicts post-procedural MBG 0/1. Using this cutoff value, NT-PBNP was able to predict MBG 0/1 with sensitivity, specificity, positive and negative predictive value of 92.2% and 66.7%, 78.3%, and 86.7%, respectively.

Conclusion: In patients with STEMI who underwent PPCI, elevated admission NT-PBNP level predicted poor post-procedural microvascular perfusion with good sensitivity, and moderate specificity.

Non ST-elevation myocardial infarction - ACS

P173

Previous statin medication as a prognostic marker of coronary artery disease severity in acute coronary syndrome

R Rodrigues,¹ L Rassi,¹ C Sa,¹ S Goncalves¹ and F Seixo¹

¹Hospital Sao Bernardo, CHS, Setubal, Portugal

Introduction: The benefits of early statin administration in patients after acute coronary syndrome (ACS) are widely known. Statin treatment showed to promote plaque stabilization.

The prognostic impact of previous statin medication in patients with ACS is not well known.

Aim: To evaluate the prognostic impact of medication with statin before the ACS in terms of coronary artery disease (CAD) severity and in-hospital complications.

Methods: We studied 8340 patients included in a prospective national registry of ACS between 2010 and 2014. Patients with history of previous ACS, coronary artery disease and revascularization were excluded.

Total population was divided in two groups: Group 1 ($n=2194$) – patients already under treatment with statins before the ACS; Group 2 ($n=6146$) – patients statin naive.

Both groups were characterized and compared according to basal clinical characteristics, CAD severity and frequency of in-hospital adverse events.

Results: Of the 8340 patients, 70,3% were male (mean age 65 ± 14 years) and 47,6% had the diagnosis of ST elevation myocardial infarction (STEMI). The patients on Group 1 were older (68 ± 12 vs 64 ± 14 years, $p < 0.001$), had a higher prevalence of hypertension (80,9 vs 60,3%, $p < 0.001$), diabetes (37,9 vs 22,1%, $p < 0.001$) and dyslipidemia (90,8 vs 37,2%, $p < 0.001$), and a higher body mass index ($27,8 \pm 4,4$ vs $27,2 \pm 4,3$ kg/m², $p < 0,001$).

Three vessel disease and left main artery involvement was more frequent in Group 1 (respectively 17,2 vs 12,9%, $p < 0.001$ and 9,6 vs 5,8%, $p < 0,001$).

Although STEMI was less common in Group 2 (38,1 vs 50,9%, $p > 0,001$), the culprit artery was more frequently occluded (TIMI 0 flow) at diagnostic angiography in this group and cardiogenic shock was more prevalent on admission (2,2 vs 1,4%, $p = 0,022$).

Despite this, patients previously medicated with statin had more in-hospital complications: heart failure (43,8 vs 34,4%, $p < 0,001$), hemorrhagic events (5,6 vs 4,2%, $p = 0,034$) and combined endpoint of death, heart failure, reinfarction and/or hemorrhage (53,0 vs 44,1%, $p < 0,001$).

Conclusion: Although patients on treatment with statin before ACS had a higher cardiovascular risk, CAD severity and a higher rate of in-hospital adverse events; culprit artery with TIMI 0 flow at angiography and cardiogenic shock at admission were more frequent in the patients not under statins.

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Clinical features, treatment strategies and outcomes in type 2 vs. type 1 myocardial infarction.

M Gomez-Molina,¹ AA Lopez-Cuenca,²
PJ Flores-Blanco,¹ MJ Sanchez-Galian,¹
A Garcia-Narbon,¹ JI De Las Heras-Gomez,¹
M Sanchez-Martinez,¹ E Guerrero-Perez,¹
M Valdes³ and S Manzano Fernandez³

¹University Hospital Virgen De La Arrixaca, Murcia, Spain ²de la Vega Lorenzo Guirao Hospital, Cieza, Spain ³University of Murcia, School of Medicine, Department of Cardiology, Murcia, Spain

Purpose: We aimed to assess differences in incidence, clinical features, current treatment strategies and outcome in patients with type 2 vs. type 1 myocardial infarction.

Methods: We included 862 consecutive patients with a diagnosis of type 1 or type 2 myocardial infarction. During index hospitalization, clinical features and treatment strategies were collected in detail. At 1-year follow-up,

mortality, stroke, non-fatal myocardial infarction and major bleeding were recorded.

Results: Type 1 myocardial infarction was present in 707 (86%) of the cases while 117 (14%) were classified as type 2. Patients with type 2 myocardial infarction were more frequently female and had higher co-morbidities such as diabetes, previous non-ST segment elevation acute coronary syndromes, impaired renal function, anaemia, atrial fibrillation and malignancy. However, preserved left ventricular ejection fraction and normal coronary arteries were more frequently seen, an invasive treatment was less common, and antiplatelet medications, statins and beta-blockers were less prescribed in patients with type 2 myocardial infarction compared with type 1. At 1-year follow-up, type 2 AMI was associated with a higher crude mortality risk (HR 1.75, 95% CI 1.14 to 2.68; $p = 0.01$), but this association did not remain significant after multivariable adjustment ($p = 0.79$). Furthermore, we did not find type 2 AMI to be associated with other clinical outcomes (stroke (3% vs. 0.9%, $p = 0.35$), non-fatal MI (9.8% vs. 10.3%, $p = 0.87$) and major bleeding complications (5.7% vs. 7.8, $p = 0.39$)).

Conclusions: In this real-life population, compared with type 1, type 2 myocardial infarction were predominantly women and had more co-morbidities. Invasive treatment strategies and cardioprotective medications were less used in type 2, while the 1-year clinical outcomes were similar.

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Comparison of antithrombotic therapy and in-hospital outcomes after acute coronary syndrome in patients with and without atrial fibrillation

M Gomez-Molina,¹ PJ Flores-Blanco,¹
AA Lopez-Cuenca,² E Guerrero-Perez,¹
M Sanchez-Galian,¹ M Sanchez-Martinez,¹
F Cambronero-Sanchez,³ A Garcia-Narbon,¹
M Valdes⁴ and S Manzano Fernandez⁴

¹University Hospital Virgen De La Arrixaca, Murcia, Spain ²de la Vega Lorenzo Guirao Hospital, Cieza, Spain ³University Hospital Morales Meseguer, Murcia, Spain ⁴University of Murcia, School of Medicine, Department of Cardiology, Murcia, Spain

Purpose: To evaluate the influence of atrial fibrillation (AF) on antithrombotic therapy and in-hospital outcomes in patients with acute coronary syndromes (ACS).

Methods: From January 2012 to August 2014, we prospectively included 1238 consecutive patients with ACS (mean age 68 ± 13 years, 75% male, 393 (32%) had ST elevation myocardial infarction, 779 (63%) had non ST elevation myocardial infarction or unstable angina and 66 (5%) had undetermined myocardial infarction). During the hospitalization period, antithrombotic therapy

and in-hospital outcomes were collected in detail for each patient. The study endpoints were death and the combination of death, non-fatal myocardial infarction or stroke.

Results: A total of 189 patients (15%) had AF. AF was associated with a lower use of glycoprotein IIb/IIIa inhibitor (6% vs 15%, $p = 0.001$), aspirin (94% vs 98%, $p = 0.017$), prasugrel (1% vs. 16%, $p < 0.001$) and ticagrelor (1% vs. 9%, $p < 0.001$); whereas clopidogrel (78% vs 69%, $p = 0.034$) and oral anticoagulants (70% vs 4%, $p < 0.001$) were more frequently used in AF patients. Parenteral anticoagulants were similarly used regardless of AF status ($p > 0.05$). At discharge, the combination of clopidogrel, aspirin and vitamin K antagonist oral anticoagulant was the most commonly regimen used in patients with AF (48%), while clopidogrel plus aspirin was the preferred regimen in those without AF (65%). Direct oral anticoagulants were rarely prescribed in this clinical setting (0.6%). During the hospitalization period, 110 (9%) had the combined endpoint, 59 (5%) patients died, 42 (3.4%) had non-fatal MI and 16 (1.3%) had stroke. Patients with AF had a higher risk of experiencing all cause death (11.1% vs 3.6%), stroke (3.7% vs 0.9%) and the combination of death, non-fatal myocardial infarction or stroke (16.9% vs. 7.4%) (all $p < 0.001$). In multivariate analyses, AF was also associated with a higher risk for adverse in-hospital outcomes, including all cause death (HR 2.06, 95%CI 1.06 to 4.09; $p = 0.021$) and the combined endpoint (HR 1.66, 95%CI 1.01 to 2.75; $p = 0.039$).

Conclusion: In ACS patients, the presence of AF is associated with a higher use of vitamin K antagonist oral anticoagulant, and a lower use of newer more potent antiplatelet agents. The combination of clopidogrel, aspirin and vitamin K antagonist oral anticoagulant was the most commonly regimen used in patients with concomitant AF and ACS. Moreover, AF confers an increased risk for in-hospital mortality and thrombotic complications.

PI176

Usefulness of CRUSADE risk score for predicting major bleeding based on BARC standardized definition in acute coronary syndromes

M Gomez-Molina,¹ PJ Flores-Blanco,¹
AA Lopez-Cuenca,² M Sanchez-Martinez,¹
MJ Sanchez-Galian,¹ E Guerrero-Perez,¹
F Cambronero-Sanchez,³ JI De Las Heras-Gomez,¹
M Valdes⁴ and S Manzano Fernandez⁴

¹University Hospital Virgen De La Arrixaca, Murcia, Spain ²de la Vega Lorenzo Guirao Hospital, Cieza, Spain ³University Hospital Morales Meseguer, Murcia, Spain ⁴University of Murcia, School of Medicine, Department of Cardiology, Murcia, Spain

Purpose: The CRUSADE bleeding risk score (CBRS) accurately predicts major bleeding in acute coronary syndromes. However, little information exists about its application for predicting major bleeding based on the recently proposed Bleeding Academic Research Consortium (BARC) standardized bleeding definition. We aimed to assess the ability of CBRS to predict in-hospital major bleeding based on the BARC criteria in acute coronary syndromes setting.

Methods: From January 2012 to August 2014, we prospectively included consecutive patients with acute coronary syndromes. Major bleeding was defined according to BARC criteria as bleeding types 3 to 5. Predictive ability of the CBRS was assessed by the area under the ROC curve (AUC).

Results: We included 1234 patients (mean age 68 ± 13 years, 32% ST-segment elevation myocardial infarction and 64% radial access). Mean CBRS value was 31 ± 16 points. Based on CRUSADE bleeding risk categories, 394 (32%) patients had very low-risk, 244 (20%) had low risk, 257 (21%) had moderate risk, 186 (15%) had high risk and 153 (12%) had very high risk. A total of 29 (2.4%) patients had in-hospital major bleeding: 13 (45%) type 3a, 9 (31%) type 3b, 4 (14%) type 4 and 3 (10%) type 5b. The rates of in-hospital major bleeding across the CRUSADE risk categories were: 1% (very low risk), 0.8% (low risk), 2.7% (moderate risk), 5.4% (high risk), and 3.9% (very high risk); $p=0.001$. In the overall study population, AUC was 0.68 (95%CI 0.59-0.77), whereas in patients with and without ST-segment elevation acute coronary syndromes were 0.76 (95%CI 0.65-0.87) and 0.62 (95%CI 0.49-0.74), respectively. There were no differences in AUCs according to vascular access site (Radial: 0.66, 95%CI 0.51-0.80 and Femoral: 0.65, 95%CI 0.52-0.77).

Conclusions: CBRS shows a modest accuracy for predicting in-hospital major bleeding based on BARC criteria, especially in those subjects with non ST-segment elevation acute coronary syndromes. Further studies are needed to confirm these findings, and to explore alternative scores that predict more accurately in-hospital BARC major bleeding.

P177

Myocardial Infarction in octogenarians: frailty assessments for treatment

A Hayat,¹ P Rabase¹ and N Malik¹

¹Stockport NHS Foundation Trust, Cardiology, Stockport, United Kingdom

Aim: Universal application of ESC guidelines for management of myocardial infarction (MI) is recommended irrespective of age. We aimed to determine if patient's ≥ 80

years (octogenarians) with MI were treated optimally with regards to medication and invasive options, and whether any formal frailty assessment was carried out to guide treatment.

Method: 150 octogenarians admitted to our hospital with MI were identified through MINAP database. Data gathered included clinical assessment on admission, investigations and treatments offered. Each patient was also retrospectively assessed for frailty using the Clinical Frailty Scale.

Results: Most patients were on appropriate medications. The least likely to be omitted without reason was aspirin (2%) and the most likely were ACE Inhibitors (19%). Angiography was carried out in 11% (17/150) of patients, with 5% (8/150) going on to have PCI. Only 13% (19/150) of patients had undergone any formal screening (dementia only) to guide treatment. Retrospective application of the Clinical Frailty Scale confirmed that 43% (65/150) were frail. None of these underwent angiography; were less likely to be referred for cardiology assessment and were therefore treated by physicians. Of the 57% (85/150) of non-frail patients, 80% (68/85) did not undergo angiography, 46% (31/68) of whom had no documented justification for non-referral, and 22% (15/68) of whom had no listed significant co-morbidities either. 15% (23/150) died during index admission, most of who were retrospectively assessed as frail. Six-month mortality was 25% (37/150). Discussion Octogenarians are a high-risk group because of more complex coronary artery disease and significant co-morbidities. This study confirms that whilst optimal medical management is achieved in most patients, only a third (11%) of the approximately 30% eligible underwent invasive treatments. The routine use of robust clinical assessment tools, such as the Clinical Frailty Score, would minimise such oversights and help improve mortality in the non-frail group.

P178

Myocardial extracorporeal shock wave therapy seems to really work in refractory angina patients

MS Slavich,¹ FA Ancona¹ and AM Margonato¹

¹San Raffaele Hospital of Milan (IRCCS), Cardiovascular Dept - Intensive Coronary Care Unit, Milan, Italy

Introduction: Refractory angina (RA) represents a well defined population of patients with angina that are not suitable for further revascularization procedures and complain symptoms on top of medical therapy. Extracorporeal shock wave therapy (ESWT) represents an innovative non invasive tool capable to promote the release of angiogenic factors. The aim of the study is to evaluate the role of ESWT in patients with refractory angina.

Material and methods: 10 patients with RA underwent to ESWT. Before the treatment was started, they all filled Seattle Angina questionnaire (SAQ), and they all performed baseline echocardiography, myocardial SPECT, myocardial fibrosis markers quantification and 72 hours ECG monitoring. All the same evaluation were performed at the end of the treatment.

Results: The study is ongoing but will be completed in one month. In the 3 patients that finished the study an increased in tolerance capacity was documented with a delay in ST segment depression and symptoms onset. There was a reduction in the SAQ score, and an improvement in myocardial contractility assessed by speckle tracking echocardiography. Moreover a reduction in Galectin 3 ad ST2 was documented, suggesting a reduction both the inflammatory and fibrotic pathways. SPECT analysis documented an improvement in myocardial perfusion as well, while in 72 hours ECG monitoring less ST segments depression and non sustained ventricular tachycardia were observed.

Conclusion: This study is a preliminary assessment of ESMR in patients with refractory angina. The current results are highly encouraging as it seems to properly work reducing myocardial ischemia and improving patient's symptoms and myocardial function.

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Acute coronary syndromes in patients with prior myocardial infarction : secondary prevention and outcomes

A Ramirez Moreno,¹ JR Siles Rubio,¹ M Nouredine,² F Ruiz-Navas,² L Inigo-Garcia,³ R Bravo-Marques,³ J Munoz-Bellido,³ E Zambrano-Medina,³ A Milan-Pinilla³ and A Valle-Alberca³

¹Cardiology Department. Hospiten., Estepona, Spain ²Servicio de Medicina Interna. Hospiten, Estepona, Spain ³Hospital Costa del Sol, Marbella, Spain

Introduction: Long-term compliance with secondary prevention in patients with established cardiovascular disease is variable despite a high ongoing risk of cardiovascular events. We examined the prescription of secondary prevention medications and outcomes amongst patients with a prior myocardial infarction (MI) representing with an acute coronary syndrome (ACS).

Methods: Patients with a prior MI presenting with ACS over a one-year period were selected. Demographic, clinical and procedural characteristics were collected. One-year outcomes (death, recurrent MI and stent thrombosis) were prospectively collected.

Results: Of the 368 patients presenting with ACS, 112 (30.4%) had a previous MI. Of these, 90 were male with a

mean age of 65+/-10 years. Risk factor profile was diabetes 39 (34.8%), hypertension 91 (81.3%), dyslipidaemia 87 (77.7%) and current smoking 14 (12.5%). On admission, use of secondary prevention agents was: aspirin 89 (79.5%), statins 73 (65.2%), beta-blockers 65 (58.0%), ACE inhibitor/ARB 64 (57.1%).

These patients were managed with PCI 58 (51.7%), CABG 12 (10.7%), medically 42 (37.5%). Discharge medications were aspirin 103 (92.0%), statins 97 (86.6%), beta-blockers 90 (80.4%), ACE inhibitor/ARB 76 (67.9%). There were 19 adverse outcomes in 17 patients (death 8, recurrent MI 9, stent thrombosis 2). The end-point rate was 15% in patients with a prior MI compared to 5% in those without (p = 0.002).

Conclusion: Patients with prior MI representing with ACS have substantially worse clinical outcomes. The use of secondary prevention medications on the point of admission appears to be sub-optimal and improved significantly at the time of discharge.

Telemedicine

P180

Profile of patients with pacemakers in a program of decentralization of pacemaker follow-up visit. Health impact and technical aspects of its implementation.

J J Ferrer Hita,¹ A Rodriguez-Gonzalez,¹ R A Juarez-Prera,¹ P Jorge-Perez,¹ F Bosa-Ojeda,¹ MJ Garcia-Gonzalez,¹ E Gonzalez-Cabeza,¹ C Mendez-Vargas,¹ M Padilla¹ and I Lainez-Cerdena¹

¹University Hospital of the Canaries, Cardiology Department, Santa Cruz de Tenerife, Spain

Purpose: our objective was to analyze the profile of population included in a program of decentralization of the device follow-up visit (DFV) to the Specialty Care Centers (SCCs) and its health impact.

Methods: sample of 90 patients with pacemakers and internal loop recorder with automatic parameter checking functions and remote transmission capacity. Clinical characteristics, type and indication of pacemaker, pacing mode and recorded events were collected. An initial DFV was performed in the hospital for inclusion in the program. Later we performed the first remote consultation in the SCCs by the nurse with device interrogation remote transmission. All patients passed two evaluation questionnaires.

Results: 89 of 90 of the patients included in the program have performed a total of 151 remote transmissions. 89%

of the patients (80) were pacemakers (21 one chamber and 59 dual chambers) and 11% (10) ILR. 28% (26) of the patients was completely dependent on ventricular pacing. In relation to the DFV in the local SCCs, 77 patients (87%) considered it better and most of patients (97%) preferred it. 7 patients (8%) had to be reevaluated in the hospital (4 for our incorrect programming 2 for device problems and 1 for patient preference). The variables and technical aspects analyzed are shown in table.

Conclusions: the decentralization of the DFV to the SCCs is technically possible, with a time consumption comparable to the hospital follow-up consultation with a clearly positive health impact for patients.

Table 1. Technical aspects and health impact.

Principal pacing mode	AAI-DDD (27%)
Mean atrial lead impedance	552 ± 212 Ohms
Mean ventricular lead impedance	640 ± 220 Ohms
Mean battery longevity (months)	101 ± 39
Mean threshold atrial lead measured (0.4 ms.)	0.70 ± 0.25 V.
Mean threshold ventricular lead measured (0.4 ms.)	0.75 ± 0.32 V.
Mean interrogation time (minutes)	2 ± 1
Mean remote transmission time (minutes)	4 ± 4
Mean total time (minutes)	6 ± 5
Principal detected event	AF (14%)
Economic savings for the patient (euros)	9 ± 9
Kilometers savings for the patient with the program	26,2 ± 13,1

AF: atrial fibrillation.

P181

The use of pacemaker interrogation to identify patients with atrial fibrillation as a means to initiate anticoagulation for stroke prevention

N Denham¹ and S Osula¹

¹Warrington and Halton Hospitals NHS Foundation Trust, Cardiology, Warrington, United Kingdom

Purpose: Atrial fibrillation (AF) is a leading cause of acute stroke, which is a significant cause of mortality and long term disability in Europe. The risk of stroke can be significantly reduced by the use of anticoagulation, particularly now novel anticoagulants are available and are simple to initiate. Permanent pacemakers can detect asymptomatic episodes of rapid atrial rates (recognised on interrogation as mode switching) which has been shown to

correlate with AF. Interrogation of pacemakers is therefore a mechanism by which asymptomatic AF can be detected for prevention of stroke.

Methods: We identified individuals who underwent a permanent pacemaker insertion at our large district general hospital between the dates of 01/01/2010 and 31/12/2014 (n=362), and excluded all individuals who had a diagnosis of AF prior to implant (n=139). We collected data from pacing follow up clinics of the remaining 223 individuals between 01/01/2010 and 01/05/2015. We looked at whether AF had been detected, how it was detected and the demographics of the individuals in which AF was identified.

Results: 36/223 of our population had at least one episode of AF detected during the follow up period. Of these, two were symptomatic from the AF and had presented acutely to hospital. 27/36 had AF detected as a result of attendance at routine follow up. 16/27 were detected by at least one episode of mode switching of greater than 30 seconds duration, and 11/27 were detected by being in AF at the time of interrogation. The remaining 7/36 individuals had mode switching episodes of less than 30 seconds duration.

The mean time from previous interrogation to diagnosis was 6 months, with 10/27 having 12 months between follow up. The mean time from implant to diagnosis was 18 months. 26/27 individuals had a CHADS2VASC score of two or more (mean 3). 1/27 had a stroke inbetween pacing checks before AF was recognised and anticoagulation could be considered.

Conclusions: AF is an important risk factor for stroke which can be detected by pacemaker interrogation and can be used to improve prevention of stroke by anticoagulation. Our study shows the potential in terms of stroke prevention for increased monitoring of our pacemaker population for AF. Remote telemonitoring has become increasingly used in the follow up of devices and can allow for more frequent interrogations to be performed at greater convenience to the patient. We propose an increasing role for remote monitoring to detect AF earlier which will have a significant impact on the burden of stroke, both in terms of patient outcome and health economics.

P182

Usefulness of ECG digital photography and transmission through smartphones in patients with acute coronary syndromes

R Blanco,¹ A Garcia Escudero,¹ F Blanco,¹ J Gagliardi,¹ J Szarfer,¹ G Gigena,¹ F Albornoz,¹ A Alonso,¹ S Affatato¹ and M Riccitelli¹

¹Hospital Argerich, Buenos Aires, Argentina

Purpose: to present our experience in the use of smartphones to capture ECG images of patients with ST segment

elevation acute coronary syndrome (STE-ACS) and transmit them through social networks, and to determine its usefulness in ECG evaluation by the interventional cardiologist.

Methods: The study population includes patients suspected of STE-ACS, referred to Hospital General de Agudos Dr. Cosme Argerich from other hospitals of Buenos Aires and its outskirts. The referring hospitals attending physician was asked to send the digital ECG images to the interventional cardiologist via social network. The number of transmissions, delay in tracing reception, tracing quality (clarity, ability to evaluate magnitudes in millimeters, integrity of the tracing and standard visualization), reasons for not sending a tracing, consistency between both ECGs, diagnostic ability, and the possibility of generating algorithms to identify the culprit vessel were analyzed. The diagnostic report of each ECG performed by two independent cardiologists was compared to assess consistency. Categorical variables are expressed through frequency and percentage. Numerical variables are expressed as mean \pm standard deviation or median and interquartile range, depending on the distribution.

Results: between January 1 and October 30, 2013, referral for primary PCI was requested in 97 patients. Electrocardiographic images were requested and sent for 76 patients (78,3%) via WhatsApp. The images were received within 10 minutes in 95% of the cases. On five occasions (5,1%) images were not received in a timely manner. The images available from 69/71 patients (97,2%) were adequate for interpretation. Image quality: heart rate and cardiac rhythm were clearly identified in all cases. The lines equivalent to 1 mV were identified in 62/71 patients (87,3%), and the horizontal lines equivalent to 5 mV were identified in all patients (100%). The 0.04'' vertical lines were identified in 47 patients (66,2%) and the 0.20'' lines in 100% of cases. Sending multiple images (maximum 6) was necessary in 60 cases (84,5%) in order to obtain the leads of the original tracing. Consistency between both ECGs was found in 100% of cases with good quality images (69 patients); in these cases it was possible to determine the culprit artery.

Conclusions: Acquisition and transmission of the electrocardiographic tracing in STE-ACS, using smartphones, is feasible and useful. Its continuity will let us evaluate whether it translates into reduction of time intervals and improved outcomes in STE-ACS reperfusion.

DVT and pulmonary embolisms

P183

Renal function at admission as a prognostic marker in patients admitted for pulmonary embolism

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S Almeida,¹ JP Neiva,¹ P Bico,¹ R Duarte¹ and C Rabacal¹

¹Hospital de Vila Franca de Xira, Cardiology, Vila Franca de Xira, Portugal

Acute pulmonary embolism (PE) is a common, although frequently underdiagnosed, cardiovascular disease. Identifying prognostic markers in this population may help identify patients at bigger risk for an adverse outcome.

Chronic kidney disease is present in 3 to 10% of the population, it has been linked to higher rates of EP and a worst prognosis.

The purpose of this study was to determine the impact of renal function on length of stay and mortality rates during hospitalization for acute PE.

Methods: we retrospectively enrolled all patients hospitalized with the diagnosis of acute PE in our hospital since 2012. Demographic characteristics, clinical and laboratory parameter of the patients were collected from the electronic medical records. Renal function (RF) was estimated from the creatinine at admission, using the MDRD (Modification of Diet in Renal Disease) formula. Data was then analyzed using statistics software.

Results: the study population had 129 patients (P), with an average 66.95 years old, 64.3% of which were female. The average glomerular filtration rate (GFR) was 61.5 mL/min/1,73m² and 45.7% of the patients had an estimated GFR below 60 mL/min/1,73m².

The mortality rate during hospitalization was 12.4% and was significantly higher in P with a GFR below 60 mL/min/1,73m² (20.3%) than in other P (5.7%, p=0.012). When we analyze P with a sPESI (simplified pulmonary embolism severity index) above 1, the mortality rates were still significantly higher in patients with a GFR below 60 mL/min/1,73m² (25% vs 8.2%, p=0.025).

The average length of stay was 11.1 days, also significantly higher in patients with a GFR below 60 mL/min/1,73m², 12.5 days, than in the other patients, 9.9 days (0.04).

Conclusion: in patients admitted with acute PE, the GFR, determined from the creatinine level at admission, can identify a subgroup of patients with bigger risk for adverse outcomes.

P184

Acute pulmonary embolism, the value of risk scores and biomarkers on short and long term prognosis

S Almeida,¹ JP Neiva,¹ P Bico,¹ R Duarte¹ and C Rabacal¹

¹Hospital de Vila Franca de Xira, Cardiology, Vila Franca de Xira, Portugal

Acute pulmonary embolism (PE) is frequent and associated with high mortality, highlighting the importance of risk stratification in these patients.

Risk stratification in these patients can be done using risk scores such as PESI (Pulmonary Embolism Severity Index) or its simplified version (sPESI) or using biomarkers, including Troponin (Tn) and natriuretic peptides (BNP and proBNP).

The purpose of this study was to identify a population of patients admitted for acute PE, then determine the impact of sPESI, Troponin I and proBNP on mortality during hospitalization and in the first year of follow-up.

Methods: we assessed retrospectively the patient records of all patients admitted in our hospital with the diagnosis of acute PE since 2012. From these records, we collected and recorded demographic characteristics, the clinical evaluation, laboratory parameters and status at discharge and at one year of follow-up. When there was more than one assessment, the values of Tn and proBNP recorded were the highest during hospitalization. Status one year after discharge was confirmed by telephonic interview when necessary.

Results: our study population had 128 patients, 64.8% whom were female and the average age was 65.9 years old. Mortality rate was 12.5% during hospitalization and 32% at one year of follow-up.

Patients with a sPESI of 1 or more had a significantly higher mortality during hospitalization (16.5% vs 0%, $p=0.016$) and after one year (51.3% vs 4%, $p<0.01$).

A positive Troponin I (above the cut-off value of the laboratory) was also associated with worst prognosis, with a mortality rate of 19.4% during hospitalization, significantly higher than the other patients (5.2%, $p=0.027$). This was still true in patients with a sPESI of 1 or more, in this group an elevated Troponin was associated with an increase in mortality from 6.7% to 24.1% ($p=0.032$), allowing for a better risk stratification in this population. However, an elevated TnI had no impact on prognosis at one year (33.3% vs 37%, $p=0.74$).

An elevated proBNP (the optimal cut-off value in our population was determined to be 2000 pg/mL) was also linked with an increased mortality rate during both hospital stay (19.5% vs 0%, $p=0.18$) and after one year (44.1% vs 16.7%, $p=0.048$).

Conclusion: mortality remains high in patients admitted for PE. Simplified PESI, Tn I and proBNP remain useful, allowing us to identify a subgroup of patients with worst prognosis.

Mortality rate in the first year of follow-up was very high, suggesting that studies with a follow up longer than 3 months may be very important in these patients.

PI85

Clinical characteristics, risk factors and outcomes of south-east asian patients with acute pulmonary embolism

SW Wong,¹ KH Mok,¹ YM Wong,¹ DAVID Foo¹ and HH Ho¹

¹Tan Tock Seng Hospital, Cardiology, Singapore, Singapore

Purpose: Acute pulmonary embolism (PE) is a potentially lethal condition that is frequently under-diagnosed. The clinical features of acute PE have not been well studied in the South-East Asian population. We therefore sought to evaluate the clinical characteristics and clinical outcomes (in-hospital) of patients diagnosed with acute PE in our region.

Methods: From January 2008 to March 2013, 376 patients (53% female, mean age 63 + 16 years) were admitted to our tertiary institution with acute PE. Data were collected retrospectively on baseline clinical characteristics, presenting signs and symptoms, results of electrocardiographic and imaging studies, therapeutic modality and hospital course.

Results: 10% and 90% of the patients presented with massive and submassive PE respectively. 6% of patients had saddle PE. The most common presenting symptom was dyspnea (74%) followed by chest pain (13%), hemoptysis (4%), syncope (3%) and cardiovascular collapse (1.1%). 42% of patients had tachycardia at presentation and 38% were found to have underlying deep venous thrombosis (DVT).

The majority of patients (43%) had normal electrocardiogram at presentation followed by sinus tachycardia (24%), right bundle branch block/right heart strain (12%) and S1Q3T3 pattern (11.5%). Risk factors for PE were idiopathic cause (51%), immobilization (35%), malignancy (9.3%) and thrombophilic factors (4%). By modified Well's criteria for PE, majority of patients (85%) had moderate to high risk score.

Approximately 36% of the patients had evidence of right ventricular dysfunction/dilatation on transthoracic echocardiogram. Treatment strategies included low molecular weight heparin (81%), thrombolysis (8%), unfractionated heparin (7%) and Angiojet rheolytic thrombectomy (3%).

The overall in-hospital mortality was 5% with mortality rate associated with cardiogenic shock being 19%. Factors associated with mortality were massive/saddle PE, tachycardia at presentation, underlying DVT, elevated serum troponin, right ventricular dysfunction and cardiogenic shock.

Bleeding complications occurred in 9% of the patients (major bleeding in 2.4%) with 2 patients succumbing to fatal intracranial and retroperitoneal bleeding.

Conclusion: Acute PE in the South-East Asian patients is associated with a mortality rate of 3.5% to 19% depending on clinical presentation. A high index of suspicion is important in the prompt diagnosis of PE as majority of patients are symptomatic. The bleeding complications from treatment are also high.

P186

Acute pulmonary embolism: comparing prognostic risk scores in patients requiring invasive mechanical ventilation

J G Goncalves Pereira,¹ B Marmelo,¹ L Abreu,¹ A Delgado,¹ D Moreira,¹ H Antunes,¹ C Santos,² L Ferreira Dos Santos,¹ A Albuquerque² and J Oliveira Santos¹

¹Hospital Sao Teotonio, Cardiology, Viseu, Portugal ²Hospital Sao Teotonio, Intensive Care Unit, Viseu, Portugal

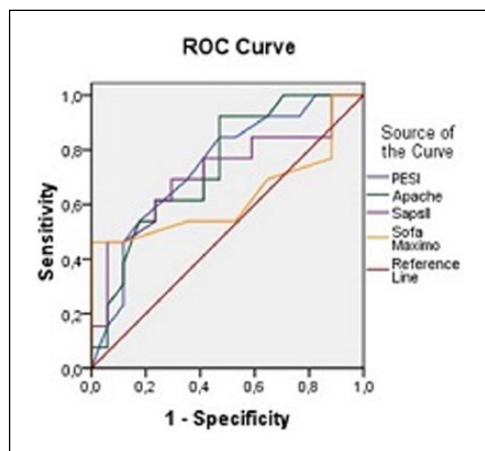
Purpose: Venous thromboembolism (VTE) is the third most frequent cardiovascular disease. Pulmonary Embolism (PE) represents the most serious presentation of VTE, possibly being lethal in the acute phase or leading to chronic debilitating disease. The objective is to find out which prognostic risk score is best at predicting in-hospital mortality in a specific population of patients requiring invasive mechanical ventilation.

Methods: Retrospective study of the patients admitted in a General Intensive Care Unit from 1997 to 2015 with a diagnosis of PE and in need of invasive ventilation. Clinical, analytical and imaging parameters were evaluated. The PESI, Apache II, SAPS II and maximum SOFA were obtained and a ROC curve was performed to ascertain the relationship between the risks scores and in-hospital mortality.

Results: The study population included 33 patients, 54.5% male, mean age of 59.1±16 years old. Mean values for each risk score were: PESI 138±51, Apache II 23±9, SAPS II 49±23 and maximum SOFA 8±3. The in-hospital mortality was 45.4%.

The following ROC curve in the picture was obtained.

Statistical significance was found in the PESI (AUC 0.740, $p=0.027$), Apache II (AUC 0.742, $p=0.025$) and SAPS II



ROC curve.

(AUC 0.715, $p=0.047$) scales, but not in maximum SOFA (AUC 0.629, $p=0.233$). The following cut-off values were obtained: PESI value of 130 (Sens 84.6% and Esp 52.9%), Apache value of 26 (Sens 61.5% and Esp 76.5%) and SAPS II value of 51.5 (Sens 69.2% and Esp 70.2%).

Conclusion: In this population, the PESI, the Apache II and the SAPS II scales were statistically significant at predicting in-hospital mortality, with a cut-off value of 130, 26 and 51.5 respectively, above which there is higher mortality risk. The same does not apply to maximum SOFA score.

P187

Outcomes and clinical characteristics of saddle versus non-saddle central pulmonary embolus: a nested case-control study

P Whittaker¹

¹Wayne State University, Cardiovascular Research Institute & Department of Emergency Medicine, Detroit, United States of America

Purpose: Risk stratification of pulmonary embolus (PE) is a subject of debate. Although characterization of presentation and outcome of PE at different locations remains incomplete, saddle emboli, which span the main pulmonary artery bifurcation, are considered to represent significant risk. However, emerging evidence suggests hemodynamically stable patients with saddle PE may not be at greater risk of adverse outcomes than PE at other locations. I examined this issue comparing saddle to non-saddle central PE.

Methods: Subjects were obtained from a cohort study of emergency department patients with venous thromboembolus (VTE). Demographic and clinical characteristics were used to determine patients' Pulmonary Embolism Severity Index (PESI). PE was considered "provoked" if there was current malignancy, surgery or trauma within 30 days, hypercoagulable state, or recent exposure to prolonged inactivity. Cases were considered acute onset (AO) if symptoms occurred within 24 hours of hospital visit. Length-of-stay (LOS) was determined and incidence of later VTE noted.

Results: I identified 24 saddle PE cases; incidence 4.6% [95% CI 3.0 to 6.8%], consistent with prior reports. Saddle cases did not differ in characteristics, PESI, in-hospital mortality, or LOS from non-saddle central PE ($n=28$). Tissue plasminogen activator was used more often in saddle cases (4 vs. 1 non-saddle; $P=0.11$); however, most patients received heparin. Saddle cases were more likely to have acute symptom onset (odds ratio 4.2 [95% CI 1.2 to 15.9; $P=0.013$]) and more likely "provoked" (odds ratio 3.5 [95% CI 1.1 to 11.0; $P=0.03$]). Conversely, later VTE was less likely in saddle cases (odds ratio 0.20 [95% CI 0.04 to 0.99; $P=0.048$]).

Conclusions: Saddle PE in hemodynamically stable patients was not associated with worse outcome or increased incidence of later VTE versus non-saddle central PE. In fact, non-saddle central PE may warrant

greater vigilance. This suspicion, based upon the finding that such PE may have been present for longer and may reflect underlying disease rather than provocation, merits further study.

Table 1. Characteristics.

	age (years)	SP (mmHg)	PESI	AO	in-hospital death	LOS (days)	follow-up (days)
saddle	56 ± 4	130 ± 5	89 ± 7	16 (67%)	1 (4%)	7.7 ± 0.9	1,220 ± 207
non-saddle	61 ± 4	139 ± 6	94 ± 5	9 (32%)	2 (7%)	6.6 ± 0.8	1,357 ± 229
P-value	0.40	0.22	0.59	0.013	0.65	0.37	0.66

means with standard error or n (%); SP - systolic pressure.

P188

On the verge of a paradoxical event: a case report.

J Neiva,¹ S Almeida,¹ R Duarte,¹ C Matias,¹ C Mendonca¹ and C Rabacal¹

¹Hospital de Vila Franca de Xira, Cardiology, Vila Franca de Xira, Portugal

Detection of thrombi in the right chambers is an incidental finding in 4-18% of all high-risk acute pulmonary embolism (PE) and is linked to higher hemodynamic compromise and worse prognosis, especially in the event of thrombi migrating to the left atrium. Therapeutic approach in these situations is still contentious, given the embolization risk of thrombolytic therapy.

The authors report a case of a 34 year-old woman with known cardiovascular risk factors of active smoking, oral contraception and prolonged immobilization period, presented at our emergency department with 3 day of sudden pleuritic chest pain, fatigue during ordinary activity and collapse. At admission, the patient had hypotension, tachycardia and polypnea, a systolic murmur grade II/VI audible in the left sternum border, elevation of pro-BNP and D-Dimers and a pulmonary CT angiography with multiple thrombi in both pulmonary arteries and lobe branches. Transthoracic and transesophageal echocardiography showed thrombi in both right and left atrium, as well as entrapped thrombi in patent foramen ovale (PFO), signs of severe pulmonary hypertension and revealed a movable interatrial septum aneurysm. It was assumed to be a massive PE complicated by an impending paradoxical embolism. After discussion with the cardiothoracic surgery team, it was decided a conservative medical treatment and continuous unfractionated heparin infusion was started. During hospitalisation clinical progress and plain regression of initial echocardiography findings were observed. The patient was discharged on day 10, with oral anticoagulation therapy.

An entrapped thrombus in PFO is an extremely rare form of right thromboembolism entailing high morbid-mortality and requiring emergent treatment. Medical therapy can be a safe option but the decision of which is the best therapeutic strategy is still open for debate and an individual approach should be used, according to the resources and experience of each institution. The authors present this case highlighting the importance of early echocardiography in PE investigation, in regards to diagnosing and establishing the treatment strategy.

P189

The importance of echocardiography in severe pulmonary thromboembolism case report

T Jakimov,¹ A Djokovic,¹ N Ninkovic,² S Hinic,² J Saric,² M Zdravkovic,² B Todic,² M Cimburovic¹ and T Vukasin¹

¹University Hospital Medical Center Bezanijaska Kosa, Coronary unit care, Belgrade, Serbia ²University Hospital Medical Center Bezanijaska Kosa, Cardiology department, Belgrade, Serbia

Introduction: The diagnosis of acute pulmonary embolism has always been challenging. Echocardiography is used in the diagnosis of pulmonary embolism, differential diagnosis, assessment of the effect of therapy and detection of the high-risk patients. Echocardiography reveals signs which indirectly indicate pulmonary embolism, in rare cases (up 4%) enable the detection of thrombus mass in the right heart chambers and/or pulmonary artery.

Case report: A 58 years male patient has been admitted to the coronary care unit with the signs of dyspnoea, chest pain and general weakness for last two weeks. Two years ago, he was diagnosed with deep venous thrombosis. At the admission a 12-lead electrocardiogram (ECG) showed sinus tachycardia with ST-segment depression in the leads II, III and aVF, incomplete right bundle branch block (RBBB) and right axis

deviation. Blood pressure was 90/60 mmHg. In laboratory analyses was registered elevated D-dimer (9061 ng /ml) and troponin I (0,12µg /l). Echocardiography revealed dilated right heart chambers with elevated systolic right ventricular pressure (120mmHg) and moderate tricuspid regurgitation, with the paradoxical movements of intraventricular septum and positive McConnell's sign. In the right atrium floating, clearly circumscribed oval mass sized 6,0 x 1,0cm has been visualized, periodically protruded through the tricuspid orifice into the right ventricle. Massive thrombosis in pulmonary arteries with propagation in lobar and segmental branches has been confirmed with MSCT exam, with visualization of the thrombus in the right atrium. Suspected metastases in both lungs has been also detected but, primary localization of the suspected malignancy has not been revealed due to the rapid evolution of the disease. Deep venous thrombosis of the lower limbs has been confirmed with Doppler ultrasound examination. The patient was treated with thrombolytic therapy (alteplase according to the protocol for pulmonary thromboembolism), heparin was continued at a therapeutic dose. Due to the rapid deterioration of patient's condition, urgent surgical embolectomy had not been done and the outcome of the disease was lethal.

Conclusion: Echocardiography is quick and important auxiliary method in the diagnosis of pulmonary thromboembolism in high-risk patients even when MSCT is available. In our case, this method enabled the detection of large thrombotic mass in the right atrium and adequate assessment of prognosis and therapy.

PI90

Massive pulmonary embolism in cardiac transplant bearer treated with percutaneous thrombectomy

ME Vazquez-Alvarez,¹ E Gutierrez-Ibanes,¹ M Juarez-Fernandez,¹ T Mombiola,¹ E Zatarain-Nicolas,¹ R Sanz-Ruiz,¹ F Sarnago-Cebada,¹ J Elizaga,¹ R Yotti-Alvarez¹ and F Fernandez-Aviles¹

¹University General Hospital Gregorio Maranon, Madrid, Spain

We present the case of a 52 year old male patient who was admitted in the Coronary Unit in shock condition.

He had a clinical history of arterial hypertension, dyslipidemia, and underwent a cardiac transplant 9 months before admission, due to chronic coronary artery disease. After the transplant, he had many early complications such as primary graft dysfunction, digestive hemorrhage secondary to gastric ulcers and critical patient's myopathy. No rejection was found in the follow-up biopsies.

An echocardiogram was performed showing a dilated and dysfunctioning right ventricle with a collapsed left

ventricular cavity. With the suspicion of massive pulmonary embolism, and the possibility of needing ECMO support, he was transferred to the catheterization laboratory. Mechanical ventilation and vasoactive drugs were initiated. Access was obtained via the right femoral vein and artery. A pigtail catheter was advanced to right and left pulmonary arteries, and angiographies showed multiple filling defects in both sides, but mainly in the left artery and right superior lobar artery. The patient was heparinized, and intraarterial tenecteplase was given for local thrombolysis. Afterwards, selective fragmentation maneuvers were performed in every lobar artery. Finally, thrombi were extracted with a multipurpose 6 French catheter. There was an increase in blood pressure after the procedure, so ECMO support was not needed.

The patient stayed in hospital for 8 days. No deep venous thrombosis was found. At discharge, he remained with impaired right ventricular function. Tests to rule out thrombophilic disorders are still ongoing.

Valvular heart disease

PI91

Incidence, predictive factors and impact of delirium after transcatheter aortic valve implantation

M Abawi¹

¹University Medical Center Utrecht, Cardiology, Utrecht, Netherlands

Aims: To investigate the incidence, predictive factors and impact of postoperative delirium among patients treated by transcatheter aortic valve implantation.

Methods: A retrospective observational cohort study of 268 consecutive patients who underwent TAVI at our institute was conducted. Delirium was diagnosed according to the Diagnostic and Statistical Manual of Mental Disorder, 4rd Edition criteria. Primary outcome of this study was the presence of in-hospital POD after TAVI.

Results: The incidence of POD after TAVI was 13.4% (n=36). Of these cases, 18 were associated with post-procedural complications, including major vascular complications/bleeding (n=4), stroke (n=3), acute kidney injury (n=3), atrial fibrillation (n=4) and infectious disease (n=4). POD was most frequently diagnosed on the second day after TAVI (IQR: 1-5) and was associated with prolonged in-hospital stay regardless of complications (in uncomplicated TAVI: 6 [5-10] vs. 5 [4-5] days, p<0.001; and in complicated TAVI: 9 [8-15] vs. 6 [5-9] days, p<0.001). Predictors of POD were non- transfemoral

(transapical/transaortic) access (Odds Ratio [OR] 7.74; 95% confidence interval [CI] 3.26-18.1), current smoking (OR 3.99; 95% CI 1.25 to 12.8), carotid artery disease (OR 3.88; 95% CI 1.50 to 10.1), atrial fibrillation (OR 2.74; 95% CI 1.17 to 6.37) and age (OR 1.08; 95% CI 1.00 to 1.17). After a median follow-up of 16 [6-27] months, patients who developed POD showed higher mortality (36 % vs. 16%; $p < 0.001$). POD remained a significant independent predictor of mortality when adjusted for age, sex, Logistic EuroSCORE and occurrence of complications (Hazard Ratio: 2.33; 95% CI 1.16 to 4.68).

Conclusions: POD after TAVI has an incidence of 13% and occurs early in the postoperative course. Non-transfemoral access is strongly associated with the occurrence of POD. Patients who develop POD show prolonged in-hospital stay and impaired long term survival.

P192

Different responses of the myocardium by layer following transcatheter aortic valve replacement in severe aortic stenosis patients

H J Kim,¹ S P Lee,² C S Park,² J B Park,² Y J Kim,²
H K Kim,² B K Koo,² H S Kim² and D W Sohn²

¹Myongji Hospital, Department of Cardiology, Goyang-si, Korea, Republic of
²Seoul National University Hospital, Department of cardiology, Seoul, Korea, Republic of

Purpose Although there have been papers describing the change of left ventricular (LV) function after aortic valve surgery in aortic stenosis (AS) patients, the interpretation of these data have been difficult owing to several other factors associated with the surgery itself. In this aspect, transcatheter aortic valve replacement (TAVR) provides a good opportunity to analyze the change of LV function owing to the removal of the LV pressure overload only, and precludes factors associated with surgery itself. The aim of the present study was to evaluate the change of the LV mechanics and to analyze whether there would be any differences in the responses between the myocardial layers after TAVR using multilayer strain analysis in severe AS patients.

Methods In twenty-four consecutive patients (78.6 ± 8.7 years) with severe AS who underwent TAVR, LV peak global longitudinal and circumferential strains of the endo-, mid-, epicardium were evaluated using multilayer speckle tracking echocardiography before, one week after, and one month after TAVR.

Results Longitudinal and circumferential strains were significantly highest in the endocardium and lowest in the epicardium at baseline. At one month after TAVR,

longitudinal strain significantly improved in all three layers compared with the baseline (endocardium(%) -16.7 ± 3.9 vs. -18.7 ± 3.4 , $P = 0.01$; mid-myocardium -14.4 ± 3.3 vs. -16.3 ± 3.7 , $P < 0.01$; epicardium -12.4 ± 2.8 vs. -13.6 ± 2.7 , $P = 0.01$), whereas LV ejection fraction and circumferential strain remained unchanged. When the patients were divided according to the presence of LV hypertrophy (LVH), those with LVH ($n = 15$) showed improved longitudinal strain (endocardium(%) -15.4 ± 3.0 vs. -18.9 ± 2.9 , $P < 0.01$; mid-myocardium -13.4 ± 2.7 vs. -16.1 ± 2.4 , $P < 0.01$; epicardium -11.6 ± 2.4 vs. -13.7 ± 2.2 , $P < 0.01$), whereas it was not for patients without LVH ($n = 9$). In addition, the degree of longitudinal strain improvement was more prominent in the endocardial layer of the patients with moderate to severe LVH, which was evident even at an early time point (one week) after TAVR (-15.4 ± 3.0 % vs. -17.2 ± 3.4 %, $P = 0.03$).

Conclusions In patients with severe AS, the longitudinal strain of the LV improved significantly in all three layers following TAVR, the most prominent improvement being in the endocardium. These improvements were only observed in patients with more progressed degree of LVH. Evaluation of multilayer strain may provide new insights into the LV mechanics in the future.

P193

Low-flow, low-gradient severe aortic stenosis with or without reduced ejection fraction - long-term outcomes after transcatheter aortic valve implantation

A Scibisz,¹ Z Huczek,¹ R Wilimski,² J Kochman,¹
P Scislo,¹ R Kowalik,¹ B Rymuza,¹ P Stanecka,¹
KJ Filipiak¹ and G Opolski¹

¹Medical University of Warsaw, 1st Department of Cardiology, Warsaw, Poland
²Medical University of Warsaw, Department of Cardiac Surgery, Warsaw, Poland

Background: Transcatheter valve implantation (TAVI) is equivalent treatment modality to surgery in high risk patients with severe aortic stenosis (AS). However, the efficacy of TAVI was established mostly based on randomised or registry data of patients with high-gradient aortic stenosis.

Purpose: To determine long-term outcome of patients with low-gradient, low-flow AS with or without reduced ejection fraction (EF).

Methods: One-hundred-and-fifty-six consecutive patients ($n=156$, 47% female, mean EuroScore $17 \pm 12.1\%$) were prospectively included. Population was divided into 3 groups: 1) low-flow, low-gradient with reduced EF (mean pressure gradient [PG] < 40 mmHg, EF $< 40\%$; R-LF-LG);

2) low-flow, low-gradient with preserved EF (mean PG < 40 mmHg, EF>40%; P-LF-LG); 3) high gradient (mean PG>40 mmHg; HG). Clinical and echocardiographic follow-up was available in every patient (mean follow-up 357+/-464 days).

Results: Mean PG in the HG group (n=119) was significantly higher (56.8+/-14.4 mmHg) as compared with R-LF-LG group (n=22; 28.7+/-10.7 mmHg) and in the P-LF-LG group (n=15; 30.6+/-5.8 mmHg), (p<0.0001) respectively. At baseline R-LF-LG group was characterized by higher operative risk when compared with HG (log EuroScore 22.1+/-13.2% vs. 16+/-11.6%, p=0.027). Long-term, all-cause mortality was comparable in each group (log rank test p=0.702). In multivariate Cox-proportional-hazard regression R-LF-LG was not selected as independent predictor of mortality (hazard ratio 1.34, 95% CI 0.63-2.9, p=0.455, when forced into the model).

Conclusions: TAVI in patients with low-flow, low-gradient aortic stenosis seems to be associated with similar long-term results as compared with the remaining patients. Further studies on larger cohorts are warranted to confirm this observation.

P194

The projected aortic valve area differentiates between moderate aortic stenosis with depressed ejection fraction and severe aortic stenosis with depressed ejection fraction

R Ferreira,¹ J Ferreira,¹ S Lazaro Mendes,¹ R Martins,¹ S Monteiro¹ and M Pego¹

¹University Hospitals of Coimbra, Coimbra, Portugal

Introduction: Patients with severe aortic stenosis (AS) and severely reduced left ventricular (LV) ejection fraction (EF) represents the most controversial and challenging subset. Dobutamine stress echocardiography (DSE) has been shown to be useful to separate patients with truly severe (TS) AS from those with pseudo-severe (PS) AS.

Objective: We aimed to compare the projected aortic valve area (the projected aortic valve area (AVA) at a standardized flow rate of 250 ml/s) between patients with moderate AS and depressed EF and patients with severe AS with depressed EF that performed a DSE.

Methods: We conducted a retrospective observational study that included patients with moderate to severe AS with depressed EF (LVEF < 55%) that performed a DSE between September/2011 and November/2014. Data regarding DSE (LVOT diameter, basal and peak LVOT VTI, basal and peak Aortic VTI and basal and peak AVET) were collected. According to the results of the DSE patients were classified

between 1) severe AS with depressed EF and 2) moderate AS with depressed EF. We used a Mann Whitney U test to compare the projected AVA between patients with definite severe AS and patients with moderate AS. A receiver operating characteristics (ROC) curve was used to obtain the best cut-off value for the projected AVA. Then we transformed the projected AVA into a categorical variable with 2 groups and conducted a binary logistic regression analysis to test the strength of prediction of the projected AVA to assess the severity of the aortic valve stenosis.

Results: Between September/2011 and November/2014, 30 patients (80,0% males, mean age 72 years old) with moderate or severe AS with depressed ejection fraction (LVEF < 55%) performed a DSE, to assess the severity of disease and/or myocardium viability. 66,7% patients had good quality data to determine the projected AVA. Medians of the projected AVA were significantly different between patients with definite severe AS (median 0,86 IQR 0,69 – 1,02) and patients with moderate AS (median 1,33 IQR 1,15 – 2,00) (Mann Whitney U 83,00, p=0,005). Area under the curve (AUC) was 0,865 (p= 0,007), which yield a good discriminate power. We considerate the best cut off point to be 1,1 cm2 (sensitivity 83% and specificity 88%). In a binary logistic regression model, a projected AVA equal or below 1,1 cm2 is associated with a 35 times increase in the probability of being a definite AS (OR 35,0 95%CI 2,63 – 465,4).

Conclusion: The projected AVA can correct an important interindividual variability in the flow response to DSE and thus allow an assessment of AS severity under similar flow conditions.

P195

Introduction: patients with severe aortic stenosis (as) and severely reduced left ventricular (lv) ejection fraction represents the most controversial and challenging subset. dobutamine stress echocar

R Ferreira,¹ S Lazaro Mendes,¹ J Ferreira,¹ R Martins,¹ S Monteiro¹ and M Pego¹

¹University Hospitals of Coimbra, Coimbra, Portugal

Introduction: In aortic stenosis (AS), early studies have described changes in ejection flow dynamics across the valve that occurs with worsening severity of stenosis: a prolongation of ejection time (ET), delayed peak velocity, or acceleration time (AT) with a resultant rounded contour of the Doppler jet velocity profile. These systolic time intervals correlated with the severity of the stenotic valves.

Objective: We aimed to evaluate the impact of the ratio of aortic flow acceleration time to ejection time (AoAccT/ET),

measured at rest, in patients with moderate to severe aortic stenosis in all cause of mortality.

Methods: We conducted a retrospective observational study that included all patients with moderate to severe aortic stenosis that performed a dobutamine stress echocardiography (DSE) between September/2011 and November/2014. Data regarding DSE, invasive hemodynamics, demographic, clinical and blood tests parameters were collected in all patients. The primary endpoint was all cause mortality. We used a t-test to compare the ratio of aortic flow acceleration time to ejection time between patients that died during follow up and patients that did not die at follow up.

Results: During the follow-up time, 36 patients (29 males, mean age 72 years old) with moderate or severe aortic stenosis performed a dobutamine stress echocardiography, to assess the severity of disease and/or myocardium viability. 33 patients performed a low dose dobutamine stress protocol and only 3 patients (all with moderate disease) performed a high dose dobutamine stress protocol to assess for coronary heart disease that might explain chest pain. 14 (39%) patients had their aortic valve substituted during follow up and only 6 (17%) patients died during follow up time. 26 (72%) patients had good quality data to determine AoAccT/ET at rest during DSE. Means of AoAccT/ET at rest were significantly different between patients that died at follow up (mean 395 msg, sd 0,03) and patients that survived (mean 337 msg, sd 0,06) (t statistic 2,76, df 24, p=0,027).

Conclusion: This study showed that high values of AoAccT/ET at rest were associated with worse long-term prognosis in patients with moderate to severe aortic stenosis.

P196

Clinical importance and prognostic implications of thrombocytopenia after transcatheter aortic valve implantation- preliminary observations.

A Tycinska,¹ B Sobkowicz,¹ M Frank,² P Kralisz,³
E Waszkiewicz,¹ WJ Musial,¹ S Dobrzycki³
and T Hirnle²

¹Medical University of Bialystok, Department of Cardiology, Bialystok, Poland

²Medical University, Bialystok, Poland, Department of Cardiac Surgery, Bialystok, Poland ³Medical University, Bialystok, Poland, Department of Invasive Cardiology, Bialystok, Poland

Background and Aim: Thrombocytopenia has been observed after transcatheter aortic valve implantation (TAVI), but has not been well studied. We aimed to investigate the frequency and clinical importance of thrombocytopenia post TAVI.

Methods: In 25 patients (mean age 78.3±8.4 years, 60% females) with severe aortic valve stenosis (AS, mean

maximal gradient 88.4±27.3mmHg) Edwards-Sapient bioprosthesis were implanted (60% transfemoral and 40% transapical access). 36% of patients perioperatively received aspirin. Platelet counts were analysed before surgery, on the day of operation and on the three following consecutive postoperative days (POD).

Results: During mean 13.9±7.0 months of observation 4 patients (16%) died. Transapical access was preferred in more advanced AS (maximal gradient r=0.442, p=0.003 and mean gradient r=0.431, p=0.03, respectively) and was related with longer time of operation (r=0.465, p=0.019). During postoperative period there was significant platelets drop, the most evident on POD2 compared to baseline (193.4±52.9x103/mL vs 96.6±33.3x103/mL, p<0.001, respectively), Figure. Transfemoral access was related with greater perioperative platelets drop (r=0.583, p=0.002). Neither of the clinical (including aspirin use) nor perioperative parameters had influenced platelets decrease. There was a significant negative correlation between baseline platelets and long-term mortality (r=-0.409, p=0.04).

Conclusions: TAVI operations (particularly femoral access) are related with significant platelets drop in the postoperative period, which seems to be clinically relevant. The explanation of this phenomenon as well as prognostic implications need further evaluation.

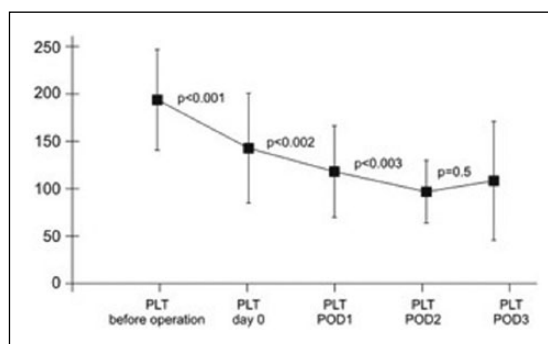


Figure.

P197

Study of clinical, echocardiographic and haemodynamic profile of patients with mitral stenosis undergoing percutaneous transvenous mitral commissurotomy

MT Rahman¹

¹NATIONAL INSTITUTE OF CARDIOVASCULAR DISEASES, DHAKA, Bangladesh

Background: Rheumatic fever and rheumatic heart disease continue to be the major health problem in all

developing countries. Rheumatic mitral stenosis is a very common problem in our population having an incidence of 54 percent among rheumatic heart disease with a female preponderance of 2:1. Percutaneous balloon mitral commissurotomy is appealing because the mechanism of valve dilation closely parallels the mechanism of surgical mitral commissurotomy. We aimed to study the clinical, echocardiographic and hemodynamic profile of patients with symptomatic moderate to severe rheumatic mitral stenosis in our population who undergone percutaneous transvenous mitral commissurotomy (PTMC)

Methods: A prospective study was done in a national institute of cardiovascular diseases and a heart institute during the period of August 2003 to December 2014. Sixteen hundred and fifty (1650) patients with rheumatic mitral stenosis undergoing PTMC were evaluated clinically, by echocardiography and by catheter before the procedure.

Results: Mean age of the study population was 28.43 ± 10.21 years, range of study population was 14-68 years. Most of the population are female (82%). 60% patients presented with pure MS, 65% presented with NYHA class 3-4 group. 84% patients presented with Wilkins Echo score ≤ 8 . Mean mitral valve area was 0.81 ± 0.14 cm² as measured by echocardiography. Mitral valve gradient was 27.46 ± 04.94 mm Hg before PTMC. Left atrial size was 37.25 ± 08.62 mm. Mean left atrial pressure as recorded by catheter before PTMC was 30.99 ± 08.37 mm Hg. Mean aortic pressure was 90 ± 05 mm Hg before the procedure.

Conclusion: Most of the patients were young, female, dysnoeic with NYHA class 3-4 and low Wilkins Echo score.

diagnosed in our center. Patients were classified in two groups: obstructive (n=32) and non-obstructive (n=8) thrombosis relative to discs' mobility affection. Baseline characteristics, management and in-hospital prognosis were analyzed.

Results: Mean age 61.2 years (non-obstructive 62.5 vs 56.0 obstructive, $p=0.26$), 65.6% were women, 62.5% had previous atrial fibrillation, 70% had non-therapeutic INR and 57% of patients suffered thrombosis-related stroke. All obstructive thrombosis affected mitral valve prosthesis whereas only 75% of non-obstructive did, $p=0.047$. Coronary embolism was presented in 15.6% of obstructive vs 0% of non-obstructive patients, $p=0.23$. First-line chosen treatment was more aggressive in the obstructive group (surgery 25% vs 9.4%; thrombolysis 25% vs 0%, $p<0.01$ for both, respectively). In-hospital mortality was higher in obstructive valve thrombosis (37.5% vs 6.2%, $p=0.046$). Among the obstructive thromboses that were treated conservatively, 100% required thrombolysis or surgery during hospitalization, with a 50% of in-hospital mortality rate. Thrombolysis or surgery was required in 51.7% of non-obstructive thrombosis patients who were initially treated conservatively, with a 6.7% of in-hospital mortality.

Conclusions: Prosthetic valve thrombosis remains a severe heart disease, specially the obstructive ones. In our series, obstructive thrombosis affects only mitral valve prosthesis. All obstructive thrombosis finally received thrombolysis or surgery and despite these therapies a high in-hospital mortality was observed. More than half of non-obstructive thrombosis which were at first conservatively managed, in a second time required surgical or thrombolytic therapy.

P198

Prosthetic valve thrombosis: still a severe disease? 10-years experience in a university hospital.

O De Diego Soler,¹ X Armario Bel,¹ C Garcia-Garcia,¹ E Ferrer Sistach,¹ F Rueda Sobella,¹ T Oliveras Vila,¹ C Labata Salvador,¹ J Serra Flores,¹ J Lopez-Ayerbe¹ and A Bayes-Genis¹

¹Germans Trias i Pujol Hospital, Cardiology, Badalona (Barcelona), Spain

Purpose: Prosthetic valve thrombosis is an infrequent cardiac disorder, which may evolve to ominous outcomes. It is uncertain whether recent advances in treatment options have changed its prognosis. We ought to analyze management, clinical therapy and in-hospital prognosis of prosthetic valve thrombosis in a University center with cardiac surgery availability.

Methods: Between January 2005 and December 2014, 40 patients with a prosthetic valve thrombosis were

Afternoon Poster Session Saturday, 17 October 2015 13:30 - 18:00

Atrial fibrillation

P199

Does SAME-TT2R2 score predict time in therapeutic range of international normalized ratio in atrial fibrillation patients taking vitamin K-antagonists after an acute decompensated heart failure?

M Gomez-Molina,¹ JM Andreu-Cayuelas,¹ CM Puche,¹ A Mateo-Martinez,¹ PJ Flores-Blanco,¹ AA Lopez-Cuenca,² JC Bonaque-Gonzalez,³

S Montalban-Larrea,¹ M Valdes⁴ and S Manzano Fernandez¹

¹University Hospital Virgen De La Arrixaca, Murcia, Spain ²de la Vega Lorenzo Guirao Hospital, Cieza, Spain ³University Hospital de Santa Lucía, Cartagena, Spain ⁴University of Murcia, School of Medicine, Department of Cardiology, Murcia, Spain

Purpose: Patients with atrial fibrillation (AF) and recent acute decompensate heart failure (ADHF) tended to have poor anticoagulation control, which puts them at a high risk for bleeding and embolic complications. Recently, SAME-TT2R2 score (sex female, age < 60 y, medical history [more than 2 comorbidities], treatment [interacting drugs], tobacco use [doubled], race [doubled]) has been proposed to predict the quality of INR control among patients with AF, but its usefulness in the subgroup of patients with concomitant AF and recent ADHF has not been studied. To assess the accuracy of SAME-TT2R2 score for predicting quality of international normalized ratio (INR) control among patients with AF and recent ADHF.

Methods: We included 108 consecutive patients with non-valvular AF discharged from our institution after an ADHF on VKA. At hospital discharge, SAME-TT2R2 score was calculated for each patient. Roosendaal's method was used to estimate time in therapeutic range (TTR) within 6 months after hospital discharge. Quality of INR was defined according to TTR: "poor" = TTR<60%, "intermediate" = TTR 60-75% and "good" = TTR>75%.

Results: Among overall study population, the average estimated TTR was 48%. 71 patients (66%) presented poor INR control and 12 (11%) presented good INR control.

The median SAME-TT2R2 score was 2 [IQR: 1-2; Range: 0-5]. A total of 76 patients (70%) had a SAME-TT2R2 score of ≥ 2 . The TTRs of these patients were not significantly different from those with a SAME-TT2R2 score of 0 to 1 (49% vs 46% respectively, $p=0.62$) and no cut-off score could be established in order to identify patients with poor or good INR control along follow-up.

Conclusion: In our cohort of patients with AF and recent ADHF, The SAME-TT2R2 score failed to predict the average TTR along follow-up or identify patients with poor or good INR control during follow-up. Further studies are needed in order to validate this score in subgroups of patients with lower TTR or improve it with additional variables, in order to become a universal tool to identify those patients with AF who would do well on VKA.

Table 1. SAME-TT2R2 score and TTR (2–3).

	SAME-TT ₂ R ₂ 0-1 (n = 32)	SAME-TT ₂ R ₂ ≥ 2 (n = 76)	p values
TTR < 60%	20 (62%)	51 (67%)	0.645
TTR 60-75%	6 (19%)	19 (25%)	0.482
TTR > 75%	6 (19%)	6 (8%)	0.101

P200

The relationship between heart rate variability and the frequency of paroxysmal atrial fibrillation

S Grigoryan¹ and Y Makaryan²

¹Institute of Cardiology, Yerevan, Armenia ²Yerevan State Medical University after M. Heratsi, Yerevan, Armenia

Background: Atrial fibrillation (AF) is the most frequent arrhythmia found in clinical practice. AF is associated not only with atrial structural changes. Many studies have shown that the activity of the autonomic nervous system has played the important role in pathogenesis and outcome of AF, particularly, its paroxysmal type.

The aim of this study to evaluate the relationship between heart rate variability (HRV) changes and the frequency of episodes of paroxysmal AF.

Methods: In this study we have included 34 patients with nonvalvular paroxysmal AF (19 male, 15 female, mean age of the patients was 60±8.) The patients have divided into 2 groups. In the first group we have included the patients (n=15) with paroxysms frequency no more than one time in a three-month period. The patients of the second group (n=19) had more than one paroxysm during the same three month period. AF paroxysms anamneses were 3-9 months for patients in all groups. In addition to taking the standard measurements of LA (average 43mm), and EF no less than 40%. The activity of the autonomic nervous system was estimated by using spectral and statistical analyses of HRV. Estimated time-domain parameters of HRV were SDNN, RMSSD, frequency-domain parameters were LF, HF and their ratio LF/HF. The 24h Holter-monitoring was used to evaluate HRV parameters.

Results: The analyses of the HRV parameters showed, that in the first group of patients who had no more than one paroxysm during the three-month period, were registered decreased values of LF - mean value 450±335ms² vs. normative range 791±563ms² ($p<0.05$); LF/HF ratio - mean value less than 3.0 vs. normative range 4.61±2.33 ($p<0.05$) and increased values of SDNN - mean value 145±25ms vs. normative range 141±38ms ($p<0.01$); RMSSD - mean value 35±10ms vs. normative range 27±12ms. In this group the paroxysms of AF registered mostly in the night time. In the second group of patients who had more than one paroxysm during the three-month period, were registered increased values of LF - mean value 850±235ms² ($p<0.05$), LF/HF ratio - mean value more than 5.0 ($p<0.05$) and decreased values of SDNN - mean value 110±20ms ($p<0.01$), RMSSD - mean value 21±8ms.

Conclusion: There is the link between the changes of activity of autonomic nervous system and the frequency of paroxysmal atrial fibrillation. That's why the HRV

parameters has prognostic value for predicting the episodes of paroxysms and can be useful for correct management of paroxysmal AF.

P201

Association between inflammation markers, recurrence of atrial fibrillation after successful cardioversion and outcome of advanced heart failure

S Grigoryan,¹ L Hazarapetyan² and A Stepatyan²

¹Institute of Cardiology, Yerevan, Armenia ²Yerevan State Medical University after M. Heratsi, Yerevan, Armenia

Atrial fibrillation (AF) is associated with atrial structural changes and can be as a higher risk factor of advanced HF. The failure in preventing the recurrence of AF has led to new searches in its pathogenesis. Perhaps inflammation is one of most popular mechanisms of AF. Classical markers of inflammation, C-reactive protein (CRP) and proinflammation agent Interleukin -6 (IL-6) were found elevated in patients with AF. However, inconsistent results have been published with regard to the role of these markers in predicting sinus rhythm maintenance after successful cardioversion in patients with advanced HF. The aim of this study is to assess the influence of persistent AF on outcome HF by modulating inflammatory pathways.

Methods: 46 patients (age 67± 6, 8) with HF (NYHA functional class III-IV) and non-rheumatic AF after successful cardioversion where enrolled in this study. After the enrollment the echocardiography examination and 24-hour ambulatory Holter monitoring ECG were registered in each patient. Blood samples were tested on the serum level of CRP and IL-6. All of patients received HF standard therapy and the follow-up time was lasted during 60 weeks. After that all patients were divided in to two groups according to primary end-point. The first group of patients had less than 3 episodes of AF recurrence and the second group with more than 3 episodes of AF recurrence.

Results: The obtained results have shown that the basis data of hs-CRP and of IL-6 levels in second group vs first group of patients were significantly increased (0.92±0.52 mg/dL and 32±21 pg/ml vs 0.52±0.11 mg/do, p < 0.01 and 21.2±7.9 pg/ml, p<0.05 accordingly).The significant decrease of LVED from 68,7 ± 4,8 mm to 55,2± 4,2 mm) and enlargement of the left atrium from 49, 9 ± 3,8 to 41,8 ± 2,6 (p< 0,05) were observed in patients of first group. In patients of second group these parameters decreased from 65,6±4,3 mm to 61,9±5,9 and from 50,6 ±4,8 to 46,7±6,2 mm accordingly.

Conclusion: There is the link between inflammation and recurrence of AF after successful cardioversion.

AF episodes frequency has an influence on outcome of advanced HF by modulating inflammatory pathways.

P202

Female gender predicts development of atrial fibrillation after a stroke or transient ischaemic attack

A Ramirez Moreno,¹ JR Siles Rubio,¹ F Ruiz-Navas,¹ E Zambrano-Medina,² M Nouredine,³ A Milan-Pinilla,² R Bravo-Marques,² A Valle-Alberca,² L Inigo-Garcia² and J Munoz-Bellido²

¹Cardiology Department. Hospiten,, Estepona, Spain ²Hospital Costa del Sol, Marbella, Spain ³Servicio de Medicina Interna. Hospiten, Estepona, Spain

Background: Atrial fibrillation (AF) is the most common cardiac arrhythmia. Common risk factors for AF include valvular heart disease, congestive cardiac failure and advancing age. AF is prevalent in ischaemic strokes and is a risk factor for recurrence. This study aims to evaluate the predictors for the development of AF in patients after they present with an ischaemic stroke or transient ischaemic attack.

Methods: This is a retrospective cohort study of 287 consecutive patients with ischaemic strokes or transient ischaemic attacks admitted to an acute stroke unit between January 2009 and June 2014. 203 patients had echocardiograms performed as part of their workup and had follow up data up till 3 years post event. Of these 203 patients, 162 of them did not have presence of AF before or during admission and were analyzed using SPSS version 16.

Results: Mean age of the study population was 62.1 years. Majority of patients are male (66.0%). 6 (3.7%) patients had newly diagnosed AF within 3 years from initial event. Fisher's exact test revealed predictors for AF to include more advanced age (>65 years), female gender, absence of diabetes, larger left atrial height (>5.2cm) and diameter (>4.4cm). History of hypertension, congestive cardiac failure, previous strokes or transient ischaemic attacks were not found to be significant. Logistic regression performed found only female gender (p=0.024) and left atrial height (p=0.031) to be independent predictors of AF onset.

Conclusion: Female gender is an independent predictor for the development of AF in patients who have presented with a stroke or transient ischaemic attack. Unsurprisingly, size of the left atrium is also associated with AF development. In female patients with enlarged left atriums who present with an ischaemic event, further investigations such as Holter monitoring could be undertaken to seek a diagnosis of AF so that appropriate anticoagulant therapy can be instituted to prevent recurrent strokes.

P203

Analysis of parameters of EuroQol 5D-5L to assess the quality of life in patients with Permanent atrial fibrillation

C James,¹ S Tisheva,¹ K Gospodinov,¹ D Gaidarova,¹
N Stancheva,¹ S Ohri,¹ D Yakova,¹ M Hristov,¹
T Chakalova¹ and S Jose²

¹Medical University Pleven, Pleven, Bulgaria ²MOSC Medical College, Kolenchery, India

Introduction: Atrial Fibrillation is the most commonly sustained arrhythmia and the most heterogeneous arrhythmia with regards to the individual spectrum of resulting symptoms. Assessment of quality of life has received increasing attention as an outcome measure of the subjective sequel of the disease. The functional effect of this chronic condition, as perceived by the patient could be estimated by introducing the quantitative approach of - Health Related Quality of Life (HRQoL). The aim of this study is to analyze the parameters of EuroQol 5D - 5L in patients with permanent atrial fibrillation.

Method: Questionnaire based cross sectional study was done among 256 patients admitted in the Department of Cardiology in the University Hospital with permanent atrial fibrillation (confirmed from history obtained from patient and from old medical records) between 1st January 2013 and 31st December 2014. EuroQol 5D- 5L questionnaire was introduced in these patients during the hospital stay. EuroQol 5D - 5L comprises of 5 dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each dimension has 5 levels: no problems, slight problems, moderate problems, severe problems and extreme problems.

Results: Mean age of the study population was 72±5 years. The distribution of the group based on sex is male - 133 (44%) and females - 143 (56%). Among the patients with permanent atrial fibrillation, on basis of EuroQol 5D - 5L, in case of mobility 16% were with moderate problems, 10% with severe problems and 6% with extreme problems. 18% of the patients had moderate problems, 8% had severe problems and 4% were with extreme problems on self care dimension. When considering the dimension pain/discomfort, 32% had moderate problems, 22% had severe problems and 12% had extreme problems. In case of anxiety/depression, 38% had moderate problems, 24% had severe problems and 12% were with extreme problems. With usual activities, 20% had moderate problems, 16% had severe problems and 6% had extreme problems. The patients with extreme problems tend to be with higher age and were majority of female sex for all the dimensions of EuroQol 5D - 5L.

Conclusion: The study revealed that the incidence of anxiety/depression and pain/discomfort are at a higher rate in patients with permanent atrial fibrillation, where as other

dimensions of EuroQol 5D - 5L, namely mobility, self care and usual activities tends to be normal. Hence proper psychological rehabilitation and care should be considered in these patients in-order to improve their quality of life.

P204

Risk factors associated with atrial fibrillation in adults diagnosed under the age of 60-a systematic review

G Iskandarani,¹ E Ehsan Khan¹ and M O Lau-Walker¹

¹King's College London, Florence Nightingale Faculty of Nursing & Midwifery, London, United Kingdom

Purpose: Research has suggested that identification of modifiable risk factors is an important factor which contributes to an early diagnosis atrial fibrillation (AF). Current research reported risk factors of AF and there is an increasing interest to establish whether younger adults with AF have different risk factors compared with older adults. The primary objective of this review was to identify risk factors associated with early-onset AF in adults diagnosed under the age of 60.

Methods: We used the National Institute of Health Care Excellent Guidelines (2012) to conduct a systematic review and search MEDLINE, EMBASE, PsycINFO and CINAHL to November 2014. Data extracted included risk factors measured and strength of the associations.

Results: We screened 2,734 papers and found eleven observational studies, five cohort and six case-control studies that met the inclusion criteria. Most of the reviewed studies consisted of 2 or more common sources of bias. Strong associations were reported for the risk factors listed in the table below. Only one study with a strong methodological quality had conflicting findings for single nucleotide polymorphism (SNP) rs2200733 and its association with AF (OR 1.62; 95% CI, 0.98 to 2.62; P=0.06).

Conclusions: The relationship between different risk factors and AF was highly prevalent among family members. Strong associations were reported between AF and severe psoriasis as well as extreme obesity in adults under the age of 60 compared to older adults.

Table 1. Table of summary of key findings.

Risk factors	Findings
Gene-association studies SNP rs10465885 SNP rs2200733	OR 1.18, (95% CI 1-1.39) OR 1.3, (95% CI 1.07 -1.58) P=0.0056
Inflammatory diseases Severe psoriasis	RR _{adj} 2.98, (95 % CI 1.8 - 4.19)
Obesity Very obese	HR _{crude} 3.78, (95% CI, 2.02- 7.07) HR _{crude} 2.99, (95% CI, 1.53 - 5.85)
Impaired lung function Low forced expiratory volume in one second (FEV1)	HR _{adj} 1.71, (95% CI 1.3-2.26) HR _{adj} 1.49, (95% CI 1.3-1.72)

P205

The usefulness of the area and flow velocities of the left atrial appendage for the prediction of atrial fibrillation relapse

P G Dinis,¹ AC Faustino,¹ L Paiva,¹ MC Cachulo¹ and L Goncalves¹

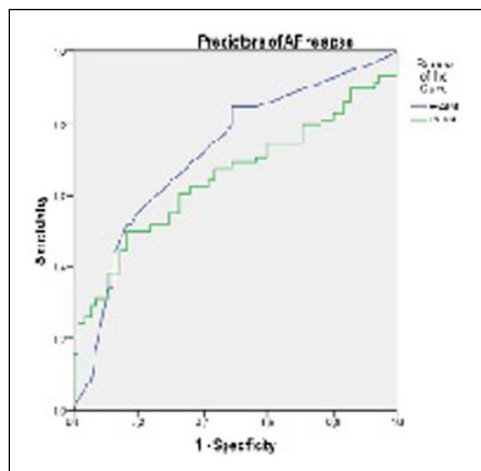
¹University Hospitals of Coimbra, Coimbra, Portugal

Introduction: Left atrial volume (LA Vol) is a recognized predictor of atrial fibrillation (AF) relapse. Other parameters such as the area, the filling (fV) and emptying velocities (eV) of the left atrial appendage (LAA) have been suggested.

Purpose: Assess the additional value of the area, fV and eV of the LAA for the prediction of AF relapse.

Methods: Cross-sectional study of 319 consecutive patients (P) with non-valvular AF (67.7% men, 68 ± 11 years, CHA2DS2VASc 3 ± 1.5), who underwent transthoracic echocardiography (TTE) and TEE previous to a successful electric cardioversion. By TTE was evaluated the LA Vol. By TEE was measured the LAA area, fV and eV. P were followed during 53 ± 26 months. A predictor model for relapse of AF (RFAPM) was created by logistic regression based on following parameters: LA Vol > 56.5ml/m², LAA area > 3.28cm², eV < 20 cm/s and fV < 20 cm/s. The RFAPM was compared with LA Vol by ROC curve analysis

Results: Relapse of AF was identified in 44.8% of P. By univariate analysis, predictors of AF relapse were: LA Vol (with 57.4 ± 22.9 ml/m² vs. 48.9 ± without 15.3ml/m², p=0.015); LAA area (with 3.6 ± 1.4cm² vs. without 1.3cm², p=0.032); eV < 20 cm/s (OR 2.54, 95% CI 1.32-4.89, p=0.004); fV < 20 cm/s (OR 2.26 95% CI 1.05-4.86, p=0.034). By multivariate analysis, LA Vol was an



Predictors of AF relapse.

independent predictor (OR 1.003, 95% CI 1001-1005, p = 0.008), with AUC 0.607, 95% CI 0.519-0.690, p = 0.032. By ROC curve analysis the RFAPM showed a higher accuracy for prediction of AF relapse (AUC 0.715 95% CI 0.623-0.756, p=0.001), with a significant difference from the ROC curve of LA Vol (AUC difference 0.077, p=0.05)

Conclusion: Area, fV and eV of the LAA, are predictors of AF relapse and provide additional value to LA Vol. These parameters may be useful to stratify the risk of AF relapse.

P206

Individualized protocol for cardioversion in patients with atrial fibrillation

N Gotcheva,¹ E Trendafilova,¹ E Dimitrova,¹ V Krasteva,² A Alexandrov,¹ E Kostova¹ and H Yordanova¹

¹National Heart Hospital, Sofia, Bulgaria ²Bulgarian Academy of Sciences, Institute of Biophysics and Biomedical Engineering, Sofia, Bulgaria

This study aims to compare the efficacy and safety of a protocol individualized to body surface area (BSA) to escalating and non-escalating energy protocols for elective cardioversion (CVS) in patients with persistent atrial fibrillation (AF). Multipulse biphasic shocks and self-adhesive pads in anterolateral position are applied, with ECG and vital signs monitoring for 2h after CVS. High sensitive troponin is measured before and 8 to 12h after CVS.

Three protocols are used:

- 1) Individualized protocol (I) (93 patients)
 - BSA ≥ 2.0m²: 120J–200J–200J–200J (29 patients)
 - BSA > 2.0m²: 200J–200J–200J–200J (64 patients)
- 2) Escalating energy protocol (E): 120J–200J–200J–360J (monophasic pulse) (112 patients)
- 3) Non-escalating energy protocol (NE): 200J–200J–200J–360J (monophasic pulse) (169 patients).

During each shock voltage, current and impedance (TTI) are recorded. Before each shock pre-shock impedance (Z) is measured as the attenuation of low-intensity high-frequency (30kHz) current.

The three patient groups do not differ significantly in terms of sex, age, duration of the current episode of arrhythmia, presence of structural heart disease, left ventricular ejection fraction, left atrial anteroposterior diameter and antiarrhythmic drug therapy. Body mass index and BSA are significantly higher in group (I). The success rates of CVS are: 90.3%(I), 95.5%(E), 88.8%(NE), p=NS; mean number of shocks is: 1.48(I), 1.68(E), 1.54(NE), p=NS.

First-shock success is achieved in: 72%(I)-79.3%(120J), 68.8%(200J) vs. 54.5%(E), 72.9%(NE), $p=0.003$. A 360J monophasic shock is used in 6 patients (E): successful in 3/6, and 19 patients (NE): successful in none (0/19), $p=NS$. Z before the first shock is comparable in the 3 groups: $99\Omega(I)$, $96\Omega(E)$, $102\Omega(NE)$, $p=NS$. TTI is significantly lower in shocks with higher energy irrespective of the protocol and the number of the shock: $94.7\Omega(120J)$ vs. $89.4\Omega(200J)$, $p=0.007$.

Safety analysis is performed in patients who have not received monophasic shocks: the rate of non-sustained AF after successful CVS is comparable in the 3 groups, bradycardia <50bpm is significantly less frequent with (I) protocol: 14%(I) vs. 38.7%(E), 21.9%(NE), $p<0.0001$. An increase in hsTnI levels is observed in 2%(E), 2.8%(NE) and in none of the patients in (I), $p=NS$.

Multivariate regression analysis shows that BSA (OR 6.08, 95% CI (2.44-15.14), $p<0.0001$) and protocol (I) (OR 3.24, (1.65-6.37), $p<0.0001$) are independent predictors of first-shock success. In conclusion, the use of a protocol individualized to BSA results in a high first-shock success rate with the best safety profile.

P207

Impact of new-onset atrial fibrillation in ST-segment elevation myocardial infarction

P Magalhaes,¹ S Leao,¹ F Cordeiro,¹ P Mateus,¹ S Carvalho¹ and JI Moreira¹

¹Hospital of Vila Real, Dept. of Cardiology, Vila Real, Portugal

Introduction/goal: New-onset atrial fibrillation (NOAF) is a relatively common complication of acute myocardial infarction, associated with more adverse events and higher mortality. The aims of this study were to evaluate the incidence and impact of NOAF in a population of ST-segment elevation myocardial infarction (STEMI) patients (pts).

Methods: We retrospectively analysed the registries of pts with STEMI included in the National Registry of Acute Coronary Syndromes, between October of 2010 and October 2014. NOAF was defined as paroxysmal or persistent atrial fibrillation unknown prior to admission. Demographic data, cardiovascular risk factors and previous history, admission data, coronary angiography results, treatment and complications during hospitalization were analysed and then multivariate analysis was performed regarding the endpoints in-hospital mortality (IHM), stroke and heart failure (HF).

Results: A total of 4566 STEMI pts were considered, 306 (6.7%) with NOAF. These pts were significantly older, more frequently hypertensive and diabetic and had a higher prevalence of previous HF, valvular heart disease, stroke, peripheral artery disease, renal failure, chronic obstructive lung disease and dementia. They presented more frequently with HF at admission (27.8% of NOAF pts had a Killip class >1 vs 13.8% of pts without NOAF; $p<0.001$). There were no differences between the two groups regarding total ischemic time (TIT), culprit lesion, number of diseased vessels and percentage of reperfused pts. Stroke (2.0% vs 0.8%; $p=0.043$), need for blood transfusion (5.2% vs 1.9%; $p<0.001$) and IHM (15.7% vs 5.3%; $p<0.001$) were higher among NOAF pts. After adjusting for all significant variables NOAF was independently related to higher IHM (OR 2.93, CI95% 1.57-5.49; $p=0.001$), more HF (OR 3.09, CI95% 2.18-4.38; $p<0.001$), and more stroke (OR 5.38, CI95% 2.10-13.78; $p<0.001$).

Discussion/Conclusions: In this analysis NOAF was associated with higher rates of adverse events and IHM in STEMI pts. Focus on the impact of NOAF in these pts is warranted.

P208

Galectin-3 as a predictor of new-onset atrial fibrillation after acute coronary syndrome in patients with type 2 diabetes mellitus

Y Shaposhnikova,¹ I Ilchenko¹ and L Bobronnikova¹

¹Kharkiv National Medical University, Kharkiv, Ukraine

Objective: We sought to evaluate changes in the Galectin-3 (Gal-3) level in patients with type 2 diabetes mellitus (DM-2) after acute coronary syndrome (ACS) and to determine the utility of Gal-3 as a predictor of new-onset atrial fibrillation (AF).

Materials and methods: A total of 73 patients (age $52,8 \pm 4,2$ years; 35 of them women) after ACS with varying degrees of compensation of DM-2 were included. 16 patients with the level of glycosylated hemoglobin (HbA1c) < 7% constituted group 1; 34 patients with HbA1c level 7-9% - group 2; and 23 patients with HbA1c > 9% - group 3. 37% of the patients had 1-2 degrees hypertension, 42% - manifestations of heart failure I and II NYHA class. Serum Gal-3 concentration was measured by enzyme immunoassay analyzer using reagents Human Gal-3 Platinum ELISA, Austria. Gal-3 level was

dynamically measured at the baseline, at 3 and 6 months after ACS, also was studied the relationship between the concentration of Gal-3 and AF development.

Results: The concentration of Gal-3 was greatest in patients of group 3 and significantly exceed the value of the 1st group (at the baseline, respectively, in 1, 2 and 3 groups: $28,72 \pm 0,68$ ng / ml; $32,54 \pm 0,62$ ng / mL; $36,72 \pm 1,06$ ng / ml ($p < 0,05$). Repeated measurements at 3 and 6 months remained elevated levels of Gal-3 in the patients with insufficient glycemic control; significant difference of Gal-3 levels was observed between the 1st and 3rd groups. The concentration of Gal-3 at 3 months after ACS, respectively amounted: $24,18 \pm 0,32$ ng / ml; $27,28 \pm 0,38$ ng / ml; $32,48 \pm 0,41$ ng / ml ($p < 0,05$); after 6 months, respectively: $22,32 \pm 0,38$ ng / ml; $26,32 \pm 0,25$ ng / ml; $30,64 \pm 0,52$ ng / ml ($p < 0,05$). The incidence of new-onset AF during 6 months of observation significantly different between groups and amounted in patients 1, 2 and 3 groups of 8%, 23% and 57% respectively.

Conclusions: Persistent increase Gal-3 in patients with type 2 diabetes mellitus, after acute coronary syndrome may be associated with increasing of glycosylation processes developing in poor glycemic control state. Hyperglycemia promotes accumulation of advanced glycation end products in extracellular matrix with structural alterations result in altered tissue properties that contribute to the reduced susceptibility to catabolism and to starting the process of aging and fibrosis tissues. Elevated Galectin-3 levels may be considered as an independent predictor of new-onset AF in patients with DM-2 after ACS.

Basic science - translational research

P209

Growth differentiation factor 15 and n-terminal pro-b-type natriuretic peptide in the development of cardiorenal syndrome in patients with acute coronary syndrome

IR Vyshnevskaya,¹ MP Kopytsya,¹ OV Petyunina,¹ OM Abolmasov,¹ NV Tytarenko,¹ NV Bila¹ and AJ Yukhnovskiy¹

¹Government institution "L.T. Malaya Therapy National institute of the National academy of medical sci, Kharkiv, Ukraine

The development of cardiorenal syndrome proved worse prognosis in patients with acute coronary syndrome. The

search for new biomarkers for the timely diagnosis of cardiorenal syndrome in combination with acute coronary syndrome continues.

Purpose: to determine the significance of Growth Differentiation factor 15 (GDF 15) and N-terminal pro-B-type natriuretic peptide (NT-pro BNP) in the prediction of the development of cardiorenal syndrome in patients with acute coronary syndrome.

Methods: we examined 70 patients with different forms of ACS: 54 men and 16 women, mean age was $61, 8 \pm 1, 3$ years. Among them, 38 patients with Q-wave myocardial infarction (Q-wave MI), 14 - with non-Q-wave myocardial infarction (non-Q-wave MI), 18 - unstable angina (UA). All patients had to undergo baseline investigations, including the level of serum creatinine, the glomerular filtration rate (GFR) was estimated using MDRD formula. In addition during the first day of hospitalization the GDF 15 and NT-pro BNP were determined. The endpoint was all-cause mortality. During a 6-month follow-up 11% patients died.

Results: during the statistical analysis the mean value of GDF 15 was 4607 ± 1322 pg/ml, the mean value for NT-pro BNP was 803 ± 310 pg/ml. After comparing the levels of NT-pro BNP and GDF 15 rank of correlation coefficient has been identified ($r=0,5$; $p < 0,05$), which corresponds to the communication of medium strength. Also, there was correlation between GDF 15 and NT-proBNP in the group of patients who died. In addition, GFR has been calculated, the average was 58 ml/min/1.73m². Correlation analysis of the studied parameters showed significant negative correlation between the level of GFR and NT-pro BNP ($r=-0,44$; $p < 0,05$), the same rank of correlation was between GFR and GDF 15. In the group of patients who died there was a strong relationship between GFR and NT-pro BNP ($r=-0,6$ $p < 0,05$) and GDF 15 ($r=-0,7$ $p < 0,05$).

Conclusion: this study established a correlation between the level of GDF 15, NT-pro BNP and GFR, which makes it possible to use those markers in the diagnosis of cardiorenal syndrome.

P210

Detailed study of amyloid protein components in mdx mice, an experimental model of Duchenne muscular dystrophy

A Goodkova,¹ EN Semernin,¹ AN Krutikov,¹ MM Shavlovskiy,² D Korzhevskii,² BL Milman,²

EV, Kaminskaya,³ EV Mikhailova,³ EV Shlyakhto¹
and VM Mikhailov³

¹V. A. Almazov Federal Heart, Blood & Endocrinology Center, I. P. Pavlov Federal Medical University, Saint Petersburg, Russian Federation ²FSBSI Institute of Experimental Medicine, genetic department, Saint-Petersburg, Russian Federation ³Institute of Cytology Russian Academy of Sciences, St. Petersburg, Russian Federation

Introduction: The loss of cardiomyocytes and skeletal myocytes in mdx mice, an experimental mouse model of Duchenne muscular dystrophy, depends on oxidative stress progression. At the same time, the characteristics of extracellular matrix, which can result in organ-disorders development, are substantially not studied.

The aim of this study was to determine protein aggregates structure in myocardium, kidney and liver extracellular matrix and identify the protein type of amyloid components in mdx mouse model of Duchenne muscular dystrophy.

Methods: Histological specimen of myocardium, liver and kidney of 9 mdx mice at the indicated ages from 0,2 to 1,5 years old and control C57BL/6 mice were examined. Amyloid deposits were detected by Congo red staining and electron microscopy. Stained amyloid was derived by microdissection and examined using mass spectrometry (MALDI -TOF). Spectral analyses was carried out online with the help of MASCOT programm.

Results: In mdx mice (1-1,5 years old) amyloid was identified in kidney and heart (with the prevalence of kidney amyloid deposition). The liver involvement was found in single 1,5 years old mdx mouse and was characterized by small amounts of amyloid deposition. Amyloid deposition in myocardium, kidney and liver of control C57BL/6 mice were not found. Mass spectrometry most probably identified such proteins as Vitronectin, Apolipoprotein A-II Apolipoprotein E among amyloid samples.

Conclusion: Our findings establish that oxidative stress increase and dystrophy progression in young age mdx mice were accompanied by systemic ApoAII amyloidosis development with myocardium, kidney and, eventually, liver involvement

P211

Impaired antioxidant high-density lipoprotein function predicts poor outcome in critically ill patients

L Schrutka,¹ K Distelmaier,¹ B Meyer,² R Wurm,¹ G Heinz,¹ R Pacher,¹ IM Lang¹ and M Huelsmann¹

¹Medical University of Vienna, Cardiology, Vienna, Austria ²Kaiser-Franz-Josef-Hospital, Internal Medicine IV, Vienna, Austria

Purpose: Oxidative stress affects clinical outcome in critically ill patients. Although high-density lipoprotein (HDL) particles are generally considered protective, deleterious properties of HDL have been observed in patients under conditions of infection, inflammation or tissue injury. Here, we analyzed the impact of impaired antioxidant HDL capacity on 30-day mortality in an unselected cohort of critically ill patients.

Methods: We prospectively included 142 consecutive patients admitted to a university-affiliated intensive care unit (ICU) into our study. HDL antioxidant capacity was determined using a 2',7'-dichlorodihydrofluorescein diacetate-based cell free fluorescent assay in serum samples collected at ICU admission.

Results: At the time of ICU admission, 96.5% of enrolled ICU patients presented with pro-oxidant HDL. Antioxidant properties of HDL were completely independent of serum HDL-cholesterol levels ($r=-0.002$, $p=0.984$). After adjustment for the Simplified Acute Physiology Score II, cox regression analysis revealed a significant and independent association between reduced antioxidant capacity of HDL and 30-days mortality with an adjusted hazard ratio per 1-SD of 1.43 (95%CI 1.11-1.84; $p=0.005$). Extracorporeal circulation, including renal replacement therapy and extracorporeal membrane oxygenation, was a strong and independent predictor for impaired antioxidant HDL function with an odds ratio of 2.78 (95%CI 1.20-7.07, $p=0.006$).

Conclusions: Impaired antioxidant HDL function represents a strong and independent predictor of 30-day mortality in critically ill patients. The maintenance of HDL function might be a promising therapeutic target in ICU patients.

P212

Coronary heart disease and genetic polymorphisms. clinical, angiographic, procedure technique and long-term follow-up evaluation post percutaneous coronary intervention. major events and restenosis

I P Borges,¹ ECS Peixoto,² R Andrade,³ RTS Peixoto³ and RTS Peixoto⁴

¹Military Undersecretary from Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Fluminense Federal University, Rio de Janeiro, Brazil ³Military

Police from Rio de Janeiro State Government, Rio de Janeiro, Brazil ⁴Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil

There are clinic and genetic polymorphism differences in coronary artery disease (CHD). Percutaneous coronary intervention (PCI), clinic, angiographic, procedure technique may influence the evolution, major events (death, AMI, revascularization) and clinical restenosis. This study aims to evaluate if genetic polymorphism have some influence in long-term follow-up after PCI.

A total of 182 patients, the coronary disease group (CDG) with CHD of a closed health system were submitted to PCI from 2001 and 2007 and to genetic follow-up evaluation until 12/31/2008. The control group (CG), with 36 patients, were angiographically normal but they were submitted to genetic evaluation. The polymorphisms evaluated were the ACE I/D and A166C (AT1R). In this period 221 procedures were performed in 182 patients. Restenosis was considered as symptoms and/or as a ischemic tests with angiographic restenosis. Qui square, Fisher exact and Student t test were used. Cox multivariate regression analysis were not used because only three clinical characteristics and A166C had $P < 0.10$.

The CG and CDG patients were: female 20 (55.6%) and 49 (26.9%), ($P = 0.0007$); age 55.9 ± 11.1 and 60.8 ± 10.5 ($P = 0.0100$); tabaco smokers 5 (13.9%) and 67 (36.8%), ($P = 0.0132$); diabetes 4 (11.1%) and 48 (26.4%), ($P = 0.0802$); hypertension 29 (80.6%) and 146 (80.2%), ($P = 0.9631$); dyslipidemia 14 (38.9%) and 112 (61.5%), ($P = 0.0119$); family history 12 (33.3%) and 60 (33.0%), ($P = 0.9659$); obesity 9 (25.0%) and 60 (33.0%), ($P = 0.3476$); ACE polymorphism DD 16 (44.5%), DI 17 (47.2%), II 3 (8.3%) and DD 81 (44.5%), DI 70 (38.5%), II 31 (17.0%), ($P = 0.3612$); A166C polymorphism AA 36 (100.0%), AC 0 (0.0%), CC 0 (0.0%) and AA 135 (74.2%), 42 (23.1%), 5 (2.7%), ($P = 0.0026$). In CDG with 221 procedures, there were no difference: between ACE and A166C polymorphism at one, two or three vessel disease; between majors events, deaths, AMI and revascularization; and between restenosis and the mean vessel diameter, lesion extension and bare metal or drug eluting stents (DES), although were implanted in 27 (12.2%) patients, being 15 (55.5%) patients with in stent restenosis and the others with small vessel diameter and long lesions.

In CDG there were more males, older people, more smokers, dislipidemia and they were genetically A166C polymorphism different from CG, the latter did not have CC or AC. There were no differences between the variables studied and illness extension, major events and restenosis in the CDG, even in relation to bare stens and DES, maybe because DES were used to the less favorable lesions and in stent restenosis.

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Serum of critically ill patients induces p53 dependent apoptosis in mononuclear cells

P J Hohensinner,¹ KA Krychtiuk,¹ G Maurer,¹ K Huber,² G Heinz,¹ J Wojta¹ and WS Speidl¹

¹Medical University of Vienna, Cardiology, Vienna, Austria

²Wilhelminen Hospital, Vienna, Austria

Purpose: The immune system of critically ill patients admitted to an intensive cardiac care unit (ICU) is under massive stress including a high apoptotic rate that could lead to immune senescence. However, the molecular pathways leading to this massive apoptotic event are currently not well understood. The aim of our study was to determine a possible involvement of the p53 signaling pathway.

Methods: Patients admitted to the cardiac ICU because of cardiac decompensation or shock, succesfull resuscitation or sepsis were included. For each stimulation serum from 3 controls and 3 critical ill patients was pooled, respectively.

Results: PBMC from both ICU patients and controls showed a bimodal distribution of p53 allowing a classification of a p53low and p53high population. ICU patients showed increased numbers of PBMC being p53high compared to controls (65.6% p53high cells in ICU patients versus 42.5% p53high cells in controls, $p = 0.05$). The p53high cells showed increased levels of gamma-H2AX, a marker for DNA damage (1672.1 mean fluorescence intensity (MFI) for p53low cells versus 5385.8 MFI for p53high cells, $p = 0.02$). Interestingly, stimulating healthy PBMC with 10% serum from ICU patients led to a 20% increase of p53high cells compared to healthy control serum ($p = 0.05$). This was accompanied by increased apoptotic rates in healthy PBMC cultivated in ICU serum as determined by Annexin V / PI staining (7.6% healthy control serum versus 10.9% ICU serum, $p = 0.002$). p53 downstream targets include pro- and anti-apoptotic proteins. To determine, if a specific pathway is favored in ICU serum treated PBMC we determined MFI values for the two pro-apoptotic proteins BAX and Fas and for the two repair proteins OGG1 and GADD45. We observed an induction of BAX and Fas both overall (2.0 fold for BAX and 1.3 fold for Fas) and specifically in the p53high subset of PBMC (2.0 fold for BAX and 1.5 fold for Fas). In contrast OGG1 was barely affected overall (1.1 fold) and reduced in p53high cells (0.9 fold). Finally, GADD45 was not affected overall and reduced specifically in the p53high compartment (0.7 fold).

Conclusion: PBMC of critical ill patients carry a high DNA damage burden leading to p53 activation and consequently to cell death. p53 downstream target activation is specific for proapoptotic targets neglecting possible repair pathways. Modulating p53 target gene induction might be a therapeutic target in order to protect the immune system of critical ill patients.

Biomarkers

P214

Role of renal impairment markers in the modification of the grace ACS risk score 2.0 in patients with st-segment elevation myocardial infarction

V Kashtalap¹ and MV Zykov¹

¹Research Institute for Complex Issues of Cardio. Dis. - Siberian Branch RAMS Institution Scientific, Kemerovo, Russian Federation

Aim: To evaluate the effectiveness of the GRACE Score (2.0)'modification, predicting the risk of long-term mortality, by adding a number of renal impairment markers in STEMI patients.

Material and methods: 943 patients admitted with STEMI were included. The mean age of the patients was 63.36 years, the average Grace's score was 147.77. Levels of serum interleukin-18 (IL-18 pg/mL), NGAL (ng/mL, s-NGAL), cystatin C (CysC mg/L) were measured by ELISA in 130, 82 and 128 randomly selected patients on day 12 of the in-hospital period.

Results: The prognosis was evaluated in 834 patients (11.55% were lost to follow-up). The 3-year mortality was 15.2% (n = 127). The prognosis was evaluated in all the patients with biomarkers; the 3-year mortality rate in the group of IL-18 was 10% (n = 13), in the group of s-NGAL - 8.5% (n = 7) and in the CysC group - 10.2% (n = 13). The median s-NGAL levels in patients with favorable and unfavorable prognosis were 1.61 (1.22-2.52) and 2.62 (2.02-2.96) ng/mL, respectively, p = 0.017; the median IL-18 levels were 149.0 (103.6-271.0) and 148.3 (122.2-316.5) pg/mL, p = 0.71, whereas CysC levels - 1.51 (1.02-1.90) and 1.58 (1.07-1.90) mg/L, respectively, p = 0.72. The value of the area under the ROC-curve for the GRACE Score 2.0, assessing the 3-year mortality rate in 834 patients, was 0.73 (0.68-0.77). Modifying the GRACE Score 2.0 by adding s-NGAL findings, C-statistics increased to 0.81

(0.69-0.93), chi-square value in the Cox regression model was 8.03, p = 0,018. The 3-year mortality rates for patients at low, medium and high risk by the GRACE Score were 5.2% (n = 13), 10.6% (n = 34) and 30.3% (n = 80), respectively. After adding sNGAL threshold levels of 2.0 ng/mL results shown in Table 1.

Conclusion: The GRACE Score 2.0, modified by adding s-NGAL levels, demonstrated the highest predictive value in STEMI patients.

Table 1. The 3-year mortality rates.

The GRACE Score risk group	s-NGAL levels	the 3-year mortality rates
low	≤2.0 ng/mL, n=10	0
	>2.0 ng/mL, n=8	1 (12.5%)
medium	≤2.0 ng/mL, n=18	0 (0%)
	>2.0 ng/mL, n=15	3 (20.0%)
high	≤2.0 ng/mL, n=13	1 (7.69%)
	>2.0 ng/mL, n=9	2 (22.22%)

P215

Association between brain natriuretic peptide levels in women and men with myocardial infarction

E Tavluva¹ and A Alekseenko²

¹RAMS Institution "Scientific-Research Institute for complex studying of cardiovascular diseases" Sib, Kemerovo, Russian Federation ²Kemerovo Cardiology Centre, cardiology, Kemerovo, Russian Federation

Purpose: The objective of this study was to assess the association between levels of N-terminal prohormone of B-type natriuretic peptide (NT-proBNP) in women and men with ST segment elevation myocardial infarction (STEMI) in relation to one-year outcome.

Material and methods: The study was conducted in accordance with the Good Clinical Practice standards and the Declaration of Helsinki. 223 patients with STEMI including 167 males (74.88%) and 56 females (25.11%) were enrolled in the study. NT-proBNP serum concentrations were measured at days 10-14 by means of ELISA using BIOMEDICA GRUPPE test system. STEMI diagnoses were correct. The rates of recurrent myocardial infarction, unstable angina, arrhythmias, decompensated congestive heart failure, cerebrovascular accidents and death were assessed after 12 months of follow-up. All the

patients were divided into two groups depending on the age: <65 years and \geq 65 years.

Results: The rate of combined endpoint was assessed in 12 months in 51 women and 142 men. It was found that vascular events were significantly more frequent in women [24 (47.05%) cases as compared to 47 (33.09%) in men, $p=0.001$]. After the patients were divided into the age groups, it was found that the annual number of vascular events in men and in women aged 65 years and older was similar [14 (45.16%, $n=31$) and 24 (45.28%, $n=53$), respectively, $p=0.755$]. At the same time, vascular events were more frequent in women under 65 years than in men of the same age [10 (50%, $n=20$) and 23 (25.84%, $n=89$), respectively, $p=0.005$]. NT-proBNP levels (median 96.34, range 44.09-128.50 fmol/mL) were significantly higher in men with poor outcome than in men with favorable outcome (median 63.80, range 24.20-79.24 fmol/mL), $p=0.0108$. After the patients were divided into the age groups, it was found that the highest NT-proBNP levels were observed in men above 65 years of age with poor outcome (median 119.98, range 98.27-140.90 fmol/mL) than in men under 65 years with poor outcome (median 77.77, range 28-106 fmol/mL). No similar differences were found in women.

Conclusion: Older men (\geq 65) with unfavorable outcome have the highest plasma NT-proBNP levels 12 months after STEMI.

P216

Impact age and sex in patients with ST segment elevation myocardial infarction on brain natriuretic peptide levels

E Tavlueva¹ and O Barbarash¹

¹RAMS Institution "Scientific-Research Institute for complex studying of cardiovascular diseases" Sib, Kemerovo, Russian Federation

Purpose: The objective of this study was to assess the levels of N-terminal prohormone of B-type natriuretic peptide (NT-proBNP) in patients with ST segment elevation myocardial infarction (STEMI) in relation to gender and age.

Methods: The study was conducted in accordance with the Good Clinical Practice standards and the Declaration of Helsinki. 223 patients with acute STEMI including 167

men (74.88%) and 56 women (25.11%) were enrolled in this study. The mean age of female subjects was 61.80 (57; 68) years and the mean age of male subjects was 57.15 (51; 63) years ($p=0.0003$). All the female subjects were menopausal, including 25 patients (44.64%) in induced menopause. STEMI diagnoses were correct. NT-proBNP serum concentrations were measured at days 10-14 by means of ELISA using BIOMEDICA GRUPPE test system. The reference range (normal) was 4.8 fmol/ mL.

Results: All the patients were divided into two groups depending on the age: <65 years and \geq 65 years. Comparative analysis of NT-proBNP concentrations in patients with STEMI in relation to gender and age demonstrated that its levels were elevated in older (\geq 65) subjects, both in women (median 68.96, range 46.30-87.46 fmol/mL) and men (median 95.97, range 59.24-128.25 fmol/mL). NT-proBNP concentrations were 38% higher in older women (median 68.96, range 46.30-87.46 fmol/mL) than in younger ones (median 39.95, range 19.96-66.11 fmol/mL), $p=0.0477$. It was found that the highest NT-proBNP levels were observed in men above 65 years of age (median 95.97, range 57.24-128.25 fmol/mL) than in men under 65 years (median 36.47, range 20.72-80.15 fmol/mL), $p=0.0004$. This difference in men was 57.31%. The present study revealed no significant differences in the studied biomarker concentrations in women and men.

Conclusion: NT-proBNP elevation is associated with older age (\geq 65) both in women and men with STEMI.

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Levels of high sensitive troponin T in stable patients before diagnostic angiography

J Danek,¹ T Hnatek,¹ M Maly,¹ J Skvaril,¹ M Cernohous,¹ P Sedlon,¹ M Hajsl¹ and M Zavoral¹

¹Central Military Hospital Prague, Departement of Cardiology, Internal Medicine Clinic, Prague, Czech Republic

Introduction: Cardiac troponins are routinely used as specific markers of myocardial damage (mostly ischaemic etiology). We can get higher number of positive findings also in patients without an acute coronary syndrome (ACS), due to growing sensitivity of high sensitive troponin T (hs TnT).

Aim: To determine the elevation of hs TnT in stable patients (without ACS) before coronarography and find

correlation between levels of hsTnT and severity of atherosclerosis.

Method: We have studied population of consecutive 251 patients indicated to diagnostic angiography. Common indication criteria: exertional angina pectoris, dyspnea, new onset of heart failure, syncope or ventricular arrhythmia. The level of hs TnT was set before angiography (normal range 0-0,013 ug/l). Monitored factors were angiographic result – as important coronary artery disease was the set of coronary artery diameter stenosis 70% or more, age, gender, heart rate, levels of creatinine. There was 182 patients with normal renal function and 69 patients with renal insufficiency.

Results: The mean patient age was $69,6 \pm 10,3$ years (median 70 years). Females formed 33% of the group. The serum hs TnT level in the whole group of patients was $0,031 \pm 0,091$ ug/l (0,014). There was positive finding of hs TnT in 133 patients, 118 patients were negative. There were higher levels of hs TnT in the group with renal insufficiency in the comparison with the subgroup with normal renal functions : $0,057 \pm 0,150$ ug/l (0,023), resp. $0,022 \pm 0,053$ ug/l (0,012), $p < 0,05$ (Mann-Whitney test). The whole study group included 121 patients with normal or non-significant atherosclerotic changes on coronary arteries and 130 patients with significant coronary artery disease one or more vessels. There was higher level of hs-troponin T in the subgroup with coronary artery disease: $0,043 \pm 0,125$ ug/l, median 0,018, resp. $0,019 \pm 0,018$ ug/l, median 0,013 , $p = 0,008$ (Mann-Whitney test).

Conclusion: Small elevation of hs TnT is commonly seen in patients with stable CAD. There is a significant correlation between levels of hs TnT and presence of CAD. We did not find any significant correlation between the levels of hs TnT and severity of atherosclerotic process. It's necessary to be careful in interpretation of the cardiospecific markers elevation, especially in patients with renal insufficiency. It can be recommended to investigate the basal level of hsTnT by patients with stable CAD for further comparison in context of clinical symptoms.

P218

Factors affecting the troponin I elevation after pacemaker implantation.

T Hnatek,¹ M Taborsky,² M Maly,¹ L Kamenik,¹ S Littnerova,³ P Sedlon,¹ J Luxova,¹ M Fiserova,¹ J Danek¹ and M Zavoral¹

¹Charles University, Department of Medicine, Cardiology, Central Military Hospital, Prague, Czech Republic ²Palacky University, Faculty of Medicine and

Dentistry, 1st Dept of Internal Medicine-Cardiology, Olomouc, Czech Republic ³Institute of Biostatistics and Analyses of Masaryk University, Brno, Czech Republic

Introduction: Cardiac troponins are routinely used as markers of myocardial damage. There many other clinical scenarios associated with the myocardial injury and serum troponin levels elevation. We have focused on a role of mechanical myocardial injury after pacemaker implantation with active lead fixation.

Aim: 1/ To determine the elevation of troponin I after the implantation of pacemaker (single or dual chamber) with active lead in the comparison with initial troponin I values.

2/ What is the normal value of troponin I in the patients before pacemaker implantation and before coronary angiography?

3/ Is the time of fluoroscopy in the correlation with troponin I elevation after pacemaker implantation?

Method: We defined a group of 219 patients which were indicated for the pacemaker implantation. Cardiospecific markers (troponin I, CKMB and myoglobin) were stated before the implantation and repeated 6 and 18 hours later. We have monitored fluoroscopic time, the number of attempts of pacemaker implantation (myocardium deployments), single chamber versus dual chamber pacemaker implantation and clinical data.

Results: The mean patients age was $78,2 \pm 8,0$ years old (median 80 years). Females formed 45% of the group. We implanted totally 128 double chamber and 91 single chamber pacemakers. The average time of fluoroscopy was $38,6 \pm 22,0$ seconds (median 33,5 s). The troponin I serum values increased from the initial $0,03 \pm 0,07$ (median 0,01) ug/l to $0,18 \pm 0,17$ (median 0,13) ug/l, $p < 0,001$ (Wilcoxon test) 6 hours later and decrease to $0,09 \pm 0,18$ (median 0,04) ug/l 18 hours later, $p < 0,001$ (Wilcoxon test). The correlation between serum levels of troponin I after the implantation of pacemaker and fluoroscopic time was set, (Spearman correlation coefficient = 0,40 , $p < 0,001$ a 0,37 , $p < 0,001$) after 6 and 18 hours respectively. We set also correlation between troponin I elevation and number of attempts electrode implantation (deployments to myocardium) in 6 hours ($p < 0,001$, Mann-Whitney test).

Conclusion: The fundamental benefit of our study is to pass minor troponin I elevation in patients undergoing pacemaker implantation using electrodes with active fixation, which culminates in a few hours after the performance. Described phenomenon shows loss of diagnostic role of troponin I early after pacemaker implantation at patients with chest pain coincidence.

P219

miR-1, miR-21 and galectin-3 in symptomatic heart failure patients with left ventricle dilatation

M Tomaniak,¹ G Sygitowicz,² KJ Filipiak,¹ O Blaszczyk,³
L Koltowski,¹ A Gasecka,¹ J Kochanowski¹ and
D Sitkiewicz²

¹Medical University of Warsaw, 1st Department of Cardiology, Warsaw, Poland ²Medical University of Warsaw, Department of Medical Laboratory Diagnostics, Warsaw, Poland ³Medical University of Warsaw, Department of Pharmacogenomics, Warsaw, Poland

Purpose: Recently the potential role of microRNA (miR) 21 and galectin-3 (gal-3) has been recognized in the progression of heart failure (HF) and adverse cardiac remodelling. The synergistic effect of miR-21 and miR-1 was reported and functionally validated in the context of regulation of cardiomyocytes' apoptosis, fibrosis and cardiac hypertrophy. Apoptosis and fibrosis are the main processes responsible for maladaptive left ventricle (LV) remodelling and dilation. The aim of this study was to evaluate the expression of miR-1, miR-21 and concentration of gal-3 in ischaemic HF patients with different intensity of LV dilation.

Methods: 30 HF patients (NYHA II-IV) aged 66.3±10.7 yrs with significantly (≥ 60 mm) dilated LV and 29 patients aged 75.2±10.2 yrs with LV end-diastolic diameter (LVEDD) below 60 mm who were hospitalized due to decompensation of post-myocardial infarction HF underwent the research. The expressions of miR-1 and miR-21 were examined by qRT-PCR. The assessment of NT-proBNP and gal-3 serum levels as well as standard echocardiography has been performed in all patients.

Results: There were significant differences between patients with LVEDD ≥ 60 mm vs patients with LVEDD <60 mm in terms of left ventricle ejection fraction (26.2±11.1% vs. 41.3±11.5%, $p<0.0001$) left atrium and right ventricle diameters (5.40±0.61 vs. 4.47±0.58, $p<0.0001$ and 3.58±0.44 vs. 3.02±0.55, $p<0.001$, respectively).

The expression of miR-21 was significantly lower in patient with extremely dilated LV ($p=0.034$). Noteworthy, a significant negative correlation between interventricular septum thickness (IVS) and miR-1 expression and positive correlation between IVS and gal-3 were revealed in this population as well ($R_s=-0.400$, $p<0.05$ and $R_s=0.418$, $p<0.05$; respectively). Among HF patients with LVEDD <60 mm a positive correlation between gal-3 and NT-proBNP concentrations were observed ($R_s=0.595$, $p<0.05$). miR-1 expression and serum concentration of gal-3 were comparable in both groups (LVEDD ≥ 60 mm vs LVEDD <60 mm) [0.284 (0.148-0.64) change fold vs. 0.588 (0.293-1.09) change fold and 18.1 (13.6-20.4) pg/ml vs. 18.1 (11.2-24.9) pg/ml, respectively].

Conclusions: miR-21 downregulation was associated with maladaptive cardiac remodeling and left ventricle dilation in patients with symptomatic HF. miR-1 downregulation and gal-3 overexpression might play role in progression of cardiac hypertrophy.

P220

Diagnostic performance of high-sensitive troponin T in octogenarian patients with renal insufficiency

K Minami,¹ M Kurobe,¹ T Tozawa,¹ S Muto,¹
S Furudono,¹ H Suenaga,¹ T Nunohiro,¹ S Takeshita,¹
H Nakashima¹ and K Maemura²

¹Nagasaki Harbor Medical Center City Hospital, Department of Cardiology, Nagasaki, Japan ²Nagasaki University Hospital, CARDIOVASCULAR MEDICINE, Nagasaki, Japan

Aims: Elevations of cardiac troponins are not specific to acute coronary syndrome (ACS). Increased cardiac troponin levels have been described in patients with high age and renal insufficiency.

Therefore, the aim of this study was to investigate the accuracy of high-sensitive cardiac troponin T (hs-cTnT) determination in octogenarian patients with renal insufficiency for diagnosis of ACS.

Methods: In total, 187 consecutive octogenarian patients with CKD stage 3 to 5 (estimated glomerular filtration rate < 60 mL/minute/1.73m² calculated with the MDRD-4 equation) who presented with symptoms suggestive of acute coronary syndrome from January 2012 to December 2014 were included in this study.

Hs-cTnT assays performed on blood samples obtained simultaneously in the emergency department.

Patients were divided into ACS group (group A), cardiac disease without ACS group (group B), and non-cardiac disease group (group C).

We analyzed hs-cTnT value and the rate of elevated hs-cTnT ($\geq 0.014\mu\text{g/mL}$) between 3 groups.

Results: Of 187 patients, 42 (22%) were categorized into the group A, 79 (42%) were categorized into the group B, and 66 (36%) were categorized into the group C.

Group A showed significantly higher hs-cTnT levels compared with group B and group C (0.125 vs. 0.044 vs. 0.037 ng/ml, $p < 0.001$).

Both group A and group B showed higher proportion of elevated hs-cTnT as compared with group C (95% vs. 91% vs. 79%, $p = 0.02$).

Receiver operating characteristics curve analysis showed a sensitivity and specificity of 38% and 92%, respectively,

with hs-cTnT level of 0.091 µg/L (AUC=0.71, $p < 0.001$) when diagnosing ACS.

Elevated hs-cTnT was present in 164 (88%) patients and had a sensitivity of 95%, specificity of only 14% and a positive and negative predictive value of 24% and 91% in diagnosing ACS.

Conclusion: In conclusion, the diagnostic accuracy for presence of acute coronary syndrome of a baseline measurement of hs-cTnT in octogenarian patients with renal insufficiency was poor. We have the need to reconsider about a cut-off level of hs-cTnT in octogenarian patients with renal insufficiency.

P221

Evaluation of biomarkers for prognosis in patients with acute coronary syndrome

IR Vyshnevskaya,¹ MP Kopytsya,¹ NV Bila,¹ OV Petyunina,¹ OL Oparin,¹ LL Peteneva¹ and OJ Yukhnovskiy¹

¹Government institution "L.T. Malaya Therapy National institute of the National academy of medical sci, Kharkiv, Ukraine

The search for new markers that significantly predict adverse outcomes in patients with acute coronary syndrome (ACS) is still going. Markers such as growth differentiation factor 15 (GDF 15), N terminal-pro B-type natriuretic peptide (NT-pro BNP), Heart-type fatty acid binding protein (H-FABP) are being actively studied.

Purpose: to determine the significance of new biomarkers in prognosis of 6-months death after ACS.

Methods: 70 patients with different forms of ACS were included in the study, they were admitted to the hospital from 2012 to 2013, signed the informed consent: 77% men and 23% women, mean age was 61, $8 \pm 1, 3$ years. Among them, 54% patients with Q-wave myocardial infarction (Q-wave MI), 20% - with non-Q-wave myocardial infarction (non-Q-wave MI), 26% - unstable angina (UA). All patients underwent a baseline investigation which includes: standard electrocardiography, echocardiography, angiography, determination of marker of myocardial necrosis – cardiac troponin T. GRACE score has been used for risk stratification. In addition, the levels of GDF 15, NT-pro BNP and H-FABP were determined during the first day of hospitalization. The endpoint was all-cause mortality. During 6-months follow-up 11% patients died.

Results: the effect of 60 variables of clinical, instrumental and laboratory status were assessed on surviving patients. For identification of the main risk factors for adverse outcome, we have used logistic regression (LR) method: GRACE score for 6-months death (area under curve (AUC) 0.95; $p < 0.00001$; 95% confidence interval (CI): 0.870 – 0.988),

NT-pro BNP (AUC 0.89; $p < 0.0001$; 95% CI: 0.759 - 0.960), GDF 15 (AUC 0.8; $p < 0.0017$; 95% CI: 0.704 – 0.899), H-FABP (AUC 0.7; $p < 0.0009$; 95% CI: 0.630 - 0.766). There was a significant difference in NT-proBNP ($p < 0.00001$), H-FABP ($p < 0.0023$) and GDF 15 ($p < 0.0001$) serum levels between ACS patients who died and those who survived after 6 months. NT-proBNP cut-point level of 1,490 ng/mL, GDF 15 cut-point level of 2561 pg/ml and H-FABP cut-point level of 1,23 ng/ml are significant independent predictors of mortality.

Conclusions: The increased levels of NT-proBNP, GDF 15 and H-FABP together with GRACE score are the strongest and the most important predictors of 6-month mortality in ACS patients. They could be used in clinical practice to improve risk stratification of patients with ACS.

Bleeding, Treatment of

P222

Anticoagulation strategies in patients with ST-segment elevation myocardial infarction. Bivalirudin or unfractionated heparin plus glycoprotein IIb/IIIa inhibitors?

M T Lopez Lluva,¹ A Jurado Roman,¹ I Sanchez Perez,¹ F Lozano Ruiz Poveda,¹ N Pinilla Echeverri,¹ M Marina Breysse,¹ A Moreno Arciniegas¹ and J Piqueras Flores¹

¹Hospital General Universitario de Ciudad Real, Ciudad Real, Spain

Background: The short-term anticoagulation combined with strong antiplatelet therapy is considered the standard for ideal treatment in patients with acute myocardial infarction with ST elevation (STEMI). Recent studies have shown that in patients undergoing primary percutaneous coronary intervention (pPCI) the use of a direct thrombin inhibitor, bivalirudin (BIV), it is better than the routine use of unfractionated heparin and glycoprotein IIb/IIIa inhibitors (HGLY). The aim of this study was to evaluate the safety and effectiveness of BIV against HGLY.

Methods: We prospectively included 189 consecutive patients with STEMI undergoing pPCI in our institution from September 2012 to December 2013. BIV or GLY was administered at the discretion of the attending physician, followed by stenting. Patients were followed up for 1 year for acute stent thrombosis, reinfarction, major vascular complications, stroke or cardiovascular death.

Results: 69.7% of patients received HGLY compared to 22.3 % who received BIV. The mortality rate was significantly higher in the group of HGLY (3.6 %) compared to group

BIV (1.8 %) ($p=0.008$). Although patients who received HGLY showed more adverse events, no statistically significant differences were found: acute stent thrombosis (BIV 0 % vs. HGLY 1.2 %, $p=0.54$), reinfarction (BIV 0 % vs. HGLY 3.2%, $p=0.3$), major vascular complications (BIV 0.6 % vs. HGLY 7.8%, $p=0.09$) and stroke (BIV 0 % vs. HGLY 2 %, $p=0.56$).

Conclusions: According to our data we can confirm that both strategies are safe. The use of bivalirudin during primary percutaneous coronary intervention compared to unfractionated heparin plus glycoprotein IIb-IIIa inhibitors was significantly associated with lower mortality, probably related with a tendency to a lower major vascular complications rate higher in this group of patients.

P223

Impact of major bleeding on mortality and its causes in patients with acute coronary syndrome

A Garay Melero,¹ A Ariza Sole,¹ JC Sanchez Salado,¹ V Lorente Tordera,¹ G Muntane Carol,¹ V Leon Diaz,¹ R Sanchez Prieto,¹ I Buera Surribas¹ and A Cequier Fillat¹

¹University Hospital of Bellvitge, Coronary Care Unit, Barcelona, Spain

Prupose: Patients with acute coronary syndrome (ACS) who have a major bleeding during hospitalization have a higher long-term mortality. However It not have been clarified the causes of mortality. The aim of the present study was to analyze the influence of major bleeding in overall mortality, in-hospital mortality and long-term mortality, and analyze specifically the causes of mortality.

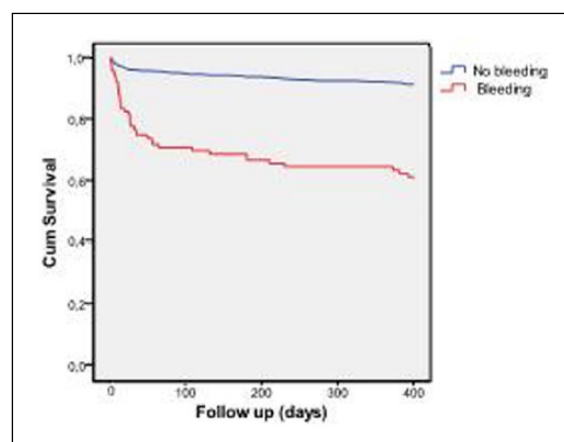
Methods: We included consecutive patients admitted for ACS in the Coronary Care Unit. Baseline clinical features, angiographic and echocardiographic data, hospital course and long-term mortality were recorded. Major bleeding was considered according to the CRUSADE criteria.

Results: During the study period, 2265 patients was admitted. The 5% of patients had a major bleeding during hospitalization. The group of patients with bleeding was significantly associated with older age ($p=0.025$), hypertension ($p=0.001$), diabetes mellitus ($p<0.001$), worse ejection fraction ($p<0.001$), and worse renal function ($p<0.001$). At the time of admission patients arrived with higher Killip class ($p <0.001$). No significant differences were found in the level of hemoglobin.

Median follow-up was 1338 days. Patients with major bleeding had higher overall mortality (14.4% Vs 41%, $p<0.001$). They had higher in-hospital mortality (3.3% Vs 24.5%, $p<0.001$) and higher long term mortality (22.5% Vs

11.2%, $p=0.002$). In the follow up no significant differences between the causes of death were found, including mortality from bleeding.

Conclusions Patients with ACS who have a major bleeding during hospitalization have more comorbidities. They have higher in-hospital mortality and higher long-term mortality. This group of patients does not show an increased risk of death from bleeding.



Long-Term Survival.

Clinical Pharmacology and pharmacotherapy

P224

The impact of spiro lactone therapy on recurrence and atrial structural remodeling in patients with paroxysmal atrial fibrillation

S Grigoryan¹ and L Hazarapetyan²

¹Institute of Cardiology, Yerevan, Armenia ²Yerevan State Medical University after M. Heratsi, Yerevan, Armenia

AF is the most common sustained arrhythmia in clinical practice. Presently available therapy for AF is not reasonable enough: 'rate control' medication could not correct AF and physiological heart rate adaptation, 'rhythm control' medication has the risk of pro-arrhythmia and other side effects, ablation is an expensive procedure. Therefore in the past few years have been crop up the notion of 'upstream' therapy, targeting some other pathways (inflammation, renin-angiotensin-aldosterone systems) involved in the development and supporting of AF. Recently studies have shown that the renin-angiotensin-aldosterone system plays a major role for the atrial structural and electrical remodeling that is why elevated the aldosterone levels have been suggested to increase

the risk for the development of AF. The aim of the study is to access the influence of Spironolactone on recurrence and left atrial size changes in patients with paroxysmal AF.

Methods: 42 patients with nonvalvular paroxysmal AF (mean age 51.6 ± 9.3) were enrolled in this study. After the enrollment the echocardiography examination and 24-hour ambulatory Holter monitoring ECG were registered in each patient. AF paroxysms anamneses were 3-9 months for patients in all groups. In addition to taking the standard measurements of LA size (average 42mm), and EF no less than 40%. All patients were divided in to two groups. The first group was treated with Verospirone (V) 25-50mg daily, and the second group has administrated placebo (P). The follow-up time was lasted during 32 weeks. Prophylactic therapy with Amiodarone (200-300 mg daily dosage) for prevention early recurrence of AF was administered to all 42 patients (both placebo and treatment groups) who were cardioverted into normal sinus rhythm and the prophylactic administration of Amiodarone was maintained during the entire follow-up time.

Results: The follow-up during 32 weeks has shown that recurrence of AF (primary end-point) in first group reduced to 12.6% as compared with 29% in second group (with P). The obtained results have shown that size of LA is significantly decreased as compared with second group and basis data ($39,2 \pm 1,6$ mm vs. $40,7 \pm 1,4$ mm and $42,7 \pm 1,2$ mm $p < 0,05$ accordingly).

Conclusion: In this study is the link between Verospirone therapy, AF recurrence and atrial structural remodeling, thereby Spironolactone therapy in patients with paroxysmal AF provides additional clinical benefits to the current conventional pharmacological agents such as Amiodarone.

P225

Detection of clopidogrel resistance using ADP induced aggregometry with specific inhibitor PGE1

M Hutyra,¹ L Slavik,² J Ulehlova,² V Krcova,²
J Galuszka,¹ J Precek,¹ O Moravec,¹ A Hlusi,²
T Skala¹ and M Taborsky¹

¹Palacky University, Faculty of Medicine and Dentistry, 1st Dept of Internal Medicine-Cardiology, Olomouc, Czech Republic ²Palacky University, Faculty of Medicine and Dentistry, Department of hematology, Olomouc, Czech Republic

Purpose: Antiaggregation therapy is still the most frequently used approach to prevent thrombotic events in cardiovascular diseases. It has a good clinical effect but increasing evidence shows high residual platelet aggregation activity in a number of patients. Laboratory methods only allow us to detect clopidogrel “non-responders” or “low responders”. Recent methods are based on monitoring residual platelet aggregation activity (aggregation methods) or detecting the

number of free epitopes for binding a specific monoclonal antibody such as vasodilator-stimulated phosphoprotein phosphorylation (VASP).

Methods: The aims of our study were comparison light transmission aggregometry (LTA) and multiple electrode platelet aggregometry (MEA) with induction by ADP in concentrations of 20 micromol/L with or without prostaglandin E1 (PGE1) for monitoring clopidogrel resistance.

Results: In the group of 84 patients with cardiovascular disease (CAD) studied, an impaired individual response to clopidogrel therapy was found 11.9% and 10.7% of the patients using MEA and LTA, respectively, induced by ADP with PGE1. The LTA and MEA methods with induction by ADP with PGE1 and without PGE1 were statistically compared using Spearman’s nonparametric correlation analysis. Both methods with using PGE1, showed a positive significant correlation ($p = 0.003$) in contrast with the results without PGE1 with a no significant correlation ($p = 0.732$).

Conclusions: The sensitivity for detecting clopidogrel resistance correlates well with other data in the literature suggesting that there are 5%-30% clopidogrel low-responders depending on the type of platelet function assay used and the criteria for defining a low-responder [16-18]. These results favor implementation of the ADP test with PGE1 by MEA specifically for identification of low-responders to clopidogrel.

P226

Adjunctive use of GP IIb-IIIa receptor inhibitors in ST-elevation myocardial infarction patients after cardiopulmonary resuscitation

V Kanic,¹ M Vollrath,² M Penko,¹ Z Kanic,³ A Lobnik,¹
A Markota³ and A Sinkovic³

¹University Medical Centre Maribor, Cardiology, Maribor, Slovenia

²Herzzentrum Leipzig, Leipzig, Germany ³University Medical Centre Maribor, Maribor, Slovenia

Purpose: We tried to establish the possible role of the adjunctive use of GPI in ST-elevation myocardial infarction (STEMI) patients after cardiopulmonary resuscitation (CPR) on in-hospital and long-term mortality.

Methods: The present study was an analysis of 145 patients with STEMI after CPR, who were treated with percutaneous coronary intervention (PCI). The group with GPI adjunctive use (100) and the group without adjunctive GPI use (45) were compared and in-hospital and long-term all-cause mortality were observed. Median follow-up time was 82 days (25th, 75th percentile: 3, 902). Kaplan-Meier estimation was used for unadjusted survival. Distributions

of continuous variables in the 2 groups were compared with the 2-sample t test or the Mann-Whitney test according to whether data followed the normal distribution. Distributions of categorical variables were compared with the chi-square test. All p values were two-sided and values less than 0.05 were judged statistically significant.

Results: Adjunctive use of GPI was not associated with lower in-hospital or long-term all-cause mortality. In the GPI group 39 (39.0%) patients died in the hospital and 21 (46.7%) patients died in non-GPI group. Mortality during the observation period was also similar [47 (47.0%) patients with GPI vs. 25 (55.6%) patients without GPI]. TIMI grade flow after PCI was significantly better in the group with adjunctive GPI use [3.0 (2.0, 3.0) vs. 3.0 (1.0, 3.0); $p=0.003$].

Conclusion: Co-administration of GPI in STEMI patients after CPR was associated with better TIMI flow after PCI. However this did not reflect in a better survival. Whether a subgroup of these patients could potentially benefit from adjunctive use of GPI (e.g. patients with mild induced therapeutic hypothermia, patients undergoing aspiration thrombectomy, patients treated with bivalirudine) is still to be determined.

P227

Cardiac effects of glucagon-like peptide 1 with chitosan-based scaffold after inducing myocardial infarction in canines

S Zeraatian,¹ A Salehiomran,¹ R Mehdiavaz Aghdam,¹ SH Ahmadi Tafti,¹ SR Ghiasi,² N Kiaee,¹ S Rabbani,¹ A Ghiasedin,³ H Tabesh⁴ and SM Ahmadi Tafti¹

¹Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran (Islamic Republic of) ²Islamic Azad University (Ghamsar branch), Tehran, Iran (Islamic Republic of) ³Tarbiat Modares University, School of Chemical Engineering, Tehran, Iran (Islamic Republic of) ⁴Shahid Beheshti University of Medical Sciences, School of Medicine, Tehran, Iran (Islamic Republic of)

Purpose: Glucagon-like peptide 1 (GLP-1) is one of the new choices in the management of diabetes mellitus because of its glucoregulatory effects. GLP-1 receptors are expressed not only in islet cells, kidney, lung, brain, and gastrointestinal tract, but also in the heart. The cardiac effects of GLP-1 play a major role in the choice to use this treatment, considering the expression of GLP-1 receptors in heart. Degradation by dipeptidyl peptidase-IV (DPP-IV) makes GLP-1's half-life very short. In this study, the cardiac effects of GLP-1 with chitosan-based scaffold as well as the tissue changes after induction of myocardial infarction in canines were evaluated.

Methods: Twelve canines of a similar breed and weight were included in this study. They were categorized into

three groups: a case group treated with GLP-1 based on a chitosan scaffold, a group given chitosan with normal saline, and a control group given normal saline alone. Every four weeks after induction of infarction, the troponin-I serum level, regional wall motion abnormality (RWMA), angiogenesis, and microscopic and macroscopic tissue changes were analyzed.

Results: Angiogenesis and infarcted area thickness (which is inversely related to the subsequent risk of pseudoaneurysm development) were significantly higher in the case group compared with the other two groups (p value < 0.05). Our case group recorded lower scores of RWMA compared with other canines (p value = 0.02).

Conclusion: This investigation revealed that the new compound (GLP-1+chitosan) not only lengthens the releasing duration of GLP-1 but also has cardioprotective effects after myocardial infarction.

P228

Real-world insights on the initiation practices and treatment duration of oral antiplatelets in patients with acute coronary syndrome in Belgium

MJ Claeys,¹ C Beauloye,² S Pourbaix,³ U Hillaert,⁴ H Vandenberghe⁴ and P Sinnaeve⁵

¹University of Antwerp Hospital (Edegem), Department of Cardiology, Antwerp, Belgium ²Cliniques Saint-Luc UCL, Institut de Recherche Expérimentale et Clinique, Pôle de Recherche Cardiovasculaire, Brussels, Belgium ³Centre Hospitalier Régional de la Citadelle, Service de Cardiologie, Liege, Belgium ⁴AstraZeneca Belgium, Brussels, Belgium ⁵University Hospitals (UZ) Leuven, Department of Cardiovascular Medicine, Leuven, Belgium

Background: Optimizing patient adherence is key to increase the real life effectiveness of chronic drug therapy in cardiovascular diseases. Recent (2011) guidelines on acute coronary syndromes (ACS) stress the importance of one-year treatment duration with dual antiplatelet therapy (DAPT) after an ACS. However, in real-world practice, many patients as well as physicians discontinue DAPT prematurely, as suggested by Belgian pharmacy surveys. The aim of the REWINDER study was to measure in real life the treatment persistence of oral antiplatelet (OAP) therapy during one-year follow-up in patients admitted with ACS to a hospital in Belgium.

Methods: A representative sample of 18 large hospitals (7 university – 11 general) in Belgium was selected and data was collected retrospectively from 671 consecutive patients who were discharged to home after an ACS in the period July 1st 2012 – June 1st 2013. Through chart review both at hospital and GP level (if needed), data

was gathered on diagnosis, treatment, comorbidities, follow-up, oral antiplatelet treatment over one year, reasons for discontinuation as well as the decision maker of the latter.

Results: Out of the 671 patients, 111 were excluded from the analysis due to a lack of information on OAP stopping date. The proportion of patients still on DAPT after 3, 6, 9 and 12 months were 95%, 93%, 90% and 79% respectively. In patients who prematurely stopped treatment (n=108; before 12 months), the mean treatment duration was 229 days (median 274 days). Premature discontinuation of DAPT before 1 year occurred more frequently with clopidogrel (31%) than with ticagrelor (18%) or prasugrel (14%), in part reflecting the presence of more comorbidities in ACS patients initiated on clopidogrel. The most frequent reasons for stopping treatment prematurely included “physician’s recommendation” (39% of cases) followed by surgery (17%) or high bleeding risk (13%). The main decision maker to prematurely stop DAPT was the cardiologist (62% of stopping decisions), whereas both the patient and the general practitioner rarely took this decision (4% and 1%, respectively).

Conclusion: Treatment persistence with OAPs in Belgium is higher than anticipated when compared to other sources, such as pharmacy data. Premature DAPT discontinuation was observed more frequently in the last 3 months of the year following the initial event, often initiated by the cardiologist and more prevalent in patients treated with clopidogrel.

Device therapy

P229

Device interrogation parameters that should raise suspicion for right ventricular lead perforation: case series

M Golian¹ and A Khadem¹

¹St. Boniface General Hospital, Department of Cardiology, Winnipeg, Canada

Background: It is reported that up to 1 in 10 patients receiving an intra-cardiac defibrillator cardioverter (ICD) experiences a complication. One of the most serious complications is perforation of the right ventricular (RV) free wall, usually presenting with sudden onset of chest pain. RV perforation comprises less than 1% of reported complications. Unfortunately chest pain is not always present in setting of perforation to guide assessment.

To date there have been no description of device interrogation parameters that should raise the suspicion for RV lead perforation in asymptomatic patients.

Methods: Single center retrospective review of all patients receiving an ICD between Jan 2008 to Jan 2015 was performed using PaceArt system. Patients with asymptomatic RV high voltage lead perforation were identified. Data on baseline characteristics of these patients and their device parameters at time of implant and time of lead revision was collected.

Results: During the 6 year review, 1411 ICDs were implanted. 58 (4.1%) complications including lead dislodgment, pocket infection, pocket hematoma, pneumothorax, perforation, were identified. 4 patients had asymptomatic RV lead perforation. This comprised 0.3% of patients receiving an ICD. Of the patients with RV lead perforation 3 had active fixation lead and 1 had passive lead. All patients had normal RV size and function. Average age was 60 years old, interrogation parameters pre and post RV lead perforation are shown in Table 1.

Conclusion: Combination of decrease impedance, increased RV lead threshold or no capture and relatively preserved R wave amplitude should raise the suspicion of RV lead perforation. Prior to lead revision, cardiac CT should be performed in patients with above findings to rule out lead perforation.

Table 1. Interrogation parameters.

Average Impedence (ohm)	Pre perforation	802
	post perforation	478
Average Threshold (V)	Pre perforation (Pulse width 0.4 msec)	1.01
	Post perforation (Pulse width 1 msec)	4.33
Average R wave size (mV)	Pre perforation	9.38
	Post perforation	6.6

Device interrogation parameters pre and post perforation of high voltage lead.

P230

Large thrombus formation after left atrial appendage closure using Amplatzer cardiac plug device

Al Azevedo,¹ L Santos,¹ J Ribeiro,¹ A Dias¹ and V Gama Ribeiro¹

¹Hospital Center Vila Nova Gaia, Porto, Portugal

Purpose: Left atrial appendage (LAA) percutaneous exclusion is an alternative strategy for reducing the risk of thromboembolism in high-risk patients with atrial fibrillation and contraindication for long-term oral anticoagulant therapy. The Amplatzer Cardiac Plug device is designed for transfemoral, transvenous and antegrade

implantation via the transeptal route into the LAA, with recognized feasibility and safety.

The authors report a case of late thrombus formation in a LAA Amplatzer closure device.

Methods & Results: An 81-year-old woman with permanent atrial fibrillation (CHA2DS2-VASc score: 5) was referred for left atrial appendage (LAA) closure. Her previous medical history included chronic anaemia secondary to gastrointestinal bleeding, with multiple blood transfusions in the past, representing a contraindication to oral anticoagulation (HAS-BLED score: 3).

A percutaneous LAA closure with a 22mm-Amplatzer Cardiac Plug device was performed, with correct positioning of the device and without immediate complications. The patient was treated with dual antiplatelet therapy (aspirin 100mg daily plus clopidogrel 75mg daily) for one month and single antiplatelet therapy (clopidogrel 75mg daily) for another 6 months. At 1 year follow-up, a transesophageal echocardiography revealed a large and mobile thrombus attached to the atrial surface of the closure device. The patient was subsequently started on oral anticoagulation.

Conclusion: Amplatzer Cardiac Plug device may be thrombogenic, despite dual antiplatelet therapy, as recommended. Future investigation is necessary to define protocols of antithrombotic therapy and its optimal duration. In addition, more evidence is needed to determine the appropriate timing of follow-up and imaging monitoring techniques.

P231

Electrocardiographic predictors for long term cardiac pacing dependency after trans-catheter aortic valve implantation

R Alcalai,¹ GP Perlman,¹ S Mizrachi¹ and H Danenberg¹

¹Hadassah-Hebrew University Medical Center, Jerusalem, Israel

Background: Conduction disorders requiring permanent pacemaker (PPM) implantation are a known complication after Trans-catheter aortic valve implantation (TAVI). Reliable predicting factors for a long term indication for cardiac pacing are still controversial.

Objectives: To characterize the conduction disorders related to TAVI, and to identify predictors for long term pacing dependency.

Methods: Consecutive patients who underwent TAVI were included in this prospective observational study. Patients with previous PPM were excluded. The conduction system was investigated by reviewing 12 lead ECG's during hospitalization, at 1 month and at 6 to 12 months after

TAVI. Pacemaker interrogation data was analyzed for patients implanted with PPM. Patients with a long term indication for pacing were identified and logistic regression multivariate analysis was performed in order to find predicting factors for the long term pacing dependency.

Results: Of 110 patients included in the analysis, 38 (41.8%) underwent PPM implantation. Of those 26 (68%) had a long term indication for pacing while 12 (32%) did not have long term pacing dependency. Baseline RBBB, PR interval, QRS width and the type of TAVI approach were significantly different between groups. RBBB and high degree AV block were more common reasons for PPM implantation in the Indicated PPM group while LBBB was the most common reason in the non -indicated PPM group (P=0.021). Logistic regression analysis revealed that baseline RBBB (P = 0.01, OR = 18.0) and PR interval (P = 0.019, OR = 1.14 for each 10 ms increment) are independent predictors for long term pacing dependency, as well as post TAVI PR interval and change in PR (P<0.001 for both). PR interval of greater than 210 ms had the best negative and positive predictive value in predicting long term PPM dependency.

Conclusions: It seems that there is overuse of permanent pacemakers during and after TAVI. Up to one third of patients who undergo permanent pacemaker (PPM) implantation had no long term PPM dependency. We found that an increased post procedural PR value or increment in PR interval from baseline, in addition to preexisting RBBB and longer PR interval are good predictors for long term PPM dependency while LBBB or QRS width are misleading variables. Our study shows that the decision for implanting PPM after TAVI should be mostly based on the PR prolongation rather than on the QRS width. These data can help clinicians in post TAVI care in the ICCU in order to avoid unnecessary pacemaker implantations.

P232

Successful rescue of a young patient with idiopathic ventricular fibrillation: a case report

T Kanaya,¹ T Ueno,¹ H Ozawa,¹ M Taira,¹ T Toda,¹ T Kuratani¹ and Y Sawa¹

¹Osaka university, Cardiology department, Osaka, Japan

Background: Dozens of school aged patients suffer from sudden onset of life threatening arrhythmias every year. It is very important to save the patients to perform appropriate bystander cardiopulmonary resuscitation (CPR) leading to advanced cardiac life support at medical institutions. In fact, there are few patients who can be successfully saved even if their resuscitation is appropriate. We describe a patient who suffered sudden

onset of ventricular fibrillation (VF). Standard CPR and circulatory support with PCPS were not effective, but he was successfully rescued by advanced strategy with ventricular assist device.

Case presentation: Fourteen-year-old boy, who has no past history of congenital heart disease, was attacked by sudden VF during marathon in the physical education and bystander CPR was immediately performed. Automated external defibrillator was not effective and he was transferred to our hospital. Percutaneous cardiopulmonary support was established using femoral vessels, however, his arrhythmia was so refractory to any anti-arrhythmic agents and defibrillation that pulmonary congestion was progressive. The circulatory support system was converted to biventricular assist devices (BiVAD) with centrifugal pumps and ECMO through median sternotomy (central ECMO system). He had been treated under the circulatory support as bridge to candidacy. After 67 days of the BiVAD support, he was rested on HTx recipients and Jarvik 2000 was implanted. Now he has been followed as an outpatient waiting for HTx.

Conclusion: A school aged patient who suffered sudden onset of VF was successfully rescued by central ECMO system and is now waiting for heart transplantation, going to school with implantable VAD. It is very important to consider advanced strategies for severe cases refractory to standard resuscitations, such as device supports and heart transplantation.

P233

Predictors of intra-hospital major complications associated with the use of intra-aortic balloon pump

M Passos Silva,¹ E Matos Vilela,¹ J Mancio Silva,¹ Al Azevedo,¹ R Lima,² A Dias,¹ L Santos,¹ D Caeiro¹ and V Gama Ribeiro¹

¹Hospital Center of Vila Nova de Gaia/Espinho, Cardiology, Vila Nova de Gaia, Portugal ²Centro Hospitalar do Alto Minho, Cardiology, Viana do Castelo, Portugal

Introduction: Intra-aortic balloon pump (IABP) is the most widely used left ventricular assisting device because of its easy placement and relatively low cost. Its systematic use in patients with cardiogenic shock has been questioned, as its use may be associated with serious complications.

The objective of this study is to find predictors of intra-hospital major complications associated with the use of intra-aortic balloon in a cohort of patients admitted consecutively over 10 years in an intensive cardiac care unit.

Methods: Retrospective analysis of medical records of consecutive patients in whom IABP was used in the period

between January 2005 and September 2014. Serious complications were considered: vascular complications which motivate any type of intervention, major bleeding requiring transfusion of 2 or more blood units and dysfunction of the IABP, requiring replacement.

A multivariate logistic regression analysis was used to study demographic and clinical effects, and of the device in the event of serious complications associated with the use of IABP.

Results: 508 IABP have been placed. The average age of patients was 66.3 ± 11.9 years, 72.4% male. Severe complications occurred in 3.9% of patients: vascular injury 2.7%, major bleeding 1% and 0.2% rupture of the balloon. The female gender (OR 8.4 95% CI 2.0 to 35.4, $p = 0.004$) and smoking (OR 10.8 95% CI 2.3 to 52.1, $p = 0.003$) were the only predictors of complications after the adjustment of age to > 80 years of age, peripheral arterial disease history, diabetes mellitus, obesity, cardiogenic shock, IABP time > 3 days and origin of the patient. There were no significant differences in mortality among individuals with and without complications (31.6% vs 18.9%, $p = 0.170$).

Conclusion: The number of serious complications associated with IABP is relatively low. Vascular injury was the most frequent complication. Females and smokers have a significantly higher risk of intra-hospital major complications with IABP use.

P234

Intraaortic balloon pump remains a safe and effective therapy for patients in cardiogenic shock from different causes.

J Nucho Berenguer,¹ R Martin-Asenjo,¹ JJ Parra Fuertes,¹ C Iborra Cuevas,¹ L Dominguez Perez,¹ A Roldan Sevilla,¹ I Montilla Padilla,¹ E Renes Carreno² and F Arribas Ynsaurriaga¹

¹University Hospital 12 de Octubre, Cardiology, Madrid, Spain ²University Hospital 12 de Octubre, ICU, Madrid, Spain

Purpose: Following recent studies, indication of intraaortic balloon pump (IABP) in patients with cardiogenic shock secondary to acute myocardial infarction (AMI) has lost steam. This has prompted questions about the indication of this device in patients with cardiogenic shock outside this context. Our aim is to describe the results and complications of IABP use in patients admitted to our Cardiology Critical Care Unit (CCCU).

Methods: This is a retrospective, observational study using data obtained from our medical records from patients admitted to our CCCU that received an IABP between 2010 and 2014.

Results: Within the study period, 207 IABPs were implanted at our CCCU in 150 men (71.4%) and 57 women (27.1%) with a median age of 63 years.

56.2% of patients were hypertensive; 25.8% had diabetes; 43.8% had dyslipidemia; and 38.2% were current or former smokers.

12.4% of patients had prior history of coronary artery disease (18.2% non-revascularized, 72.7% with percutaneous coronary intervention (PCI), and 9.1% revascularized by coronary artery bypass grafting).

The reasons for implantation were cardiogenic shock after cardiopulmonary bypass (40.9%); AMI complicated by cardiogenic shock (26.6%); mechanical complications of AMI (3.1%); support during PCI (8.6%); bridge to heart transplantation (6.7%); cardiogenic shock other than AMI (8.6%); hemodynamic support after cardiac arrest (2.3%); and shock after off-pump surgery (1.6%).

4.7% of the devices were removed due to severe complications such as rupture of the balloon (0.4%), ischemic complications of lower limbs or mesenteric vessels (6.3%); or bruising at the puncture site (2.4%). 9.5% of patients had thrombocytopenia. Registering of IABP-associated anaemia and infection was irregular so it is not included in this description.

66.9% of patients improved and could be discharged. 20 patients (9.6%) were finally transplanted. The overall mortality was 25.5%, with 33.3% mortality among patients with shock after AMI; 27.7% among postsurgical patients; and 1.42% among patients in pre-transplant situation.

Conclusions: The accumulated experience in specialized centres suggests that IABP implantation remains a safe and effective measure in the management of patients with cardiogenic shock. Our experience is particularly positive in the case of patients on the waiting list for heart transplantation, with high rates of survival and an acceptable risk of complications.

P235

Possible contribution of mechanical forces generated by ventricular assist devices to modulations of the endothelial glycocalyx

PP Wadowski,¹ C Schoergenhofer,¹ B Jilma,¹ D Zimpfer,² A Felli,³ P Opfermann³ and B Steinlechner³

¹Medical University of Vienna, Department of Clinical Pharmacology, Vienna, Austria ²Medical University of Vienna, Department of Cardiac Surgery, Vienna, Austria ³Medical University of Vienna, Division of Cardiothoracic and Vascular Anaesthesia and Intensive Care, Vienna, Austria

Purpose: Cardiovascular diseases are associated with endothelial dysfunction and microvascular failure. At the molecular level, a shedding of the glycocalyx barrier is

anticipated to occur due to altered blood flow patterns and shear stress exposure, which is also induced by ventricular assist devices (VADs).

Methods: Sublingual capillaroscopy using a Sidestream Darkfield videomicroscope was performed in 39 patients with VAD support (diagnosis: predominantly ischemic and dilated cardiomyopathy) and analyses compared with 39 healthy subjects. The perfused boundary region (PBR) was calculated as an indicator of glycocalyx barrier properties. Furthermore, coagulation assays (INR, thrombin time, aPTT, Normotest) were performed and the biomarkers C-reactive protein, D-dimer, and fibrinogen measured.

Results: Mean time after VAD implantation was 20.1 ± 14.1 months; patients were treated with continuous flow VAD-devices (centrifugal flow devices: n=27; axial flow devices: n=12). In comparison to healthy subjects, patients with VAD support showed an increased PBR (p=0.003) signifying a loss of the endothelial surface layer. There was no difference in PBR between patient subgroups regarding disease etiology and device types, furthermore no correlation between PBR and inflammatory parameters could be observed.

Conclusions: These analyses suggest an impact of ventricular assist devices on the endothelial surface layer due to blood flow modulations. Decreased glycocalyx barrier properties might contribute to enhanced microvascular permeability and gastrointestinal bleeding events observed in patients with continuous flow VAD-devices.

P236

Global management of classics and new oral anticoagulants in patients undergoing replacement or implant or cardiac pacing devices.

J J Ferrer Hita,¹ A Rodriguez Gonzalez,¹ RA Juarez Prera,¹ P Jorge Perez,¹ M J Garcia Gonzalez,¹ E Gonzalez Cabeza,¹ C Mendez Vargas,¹ I Laynez Cerdana,¹ F Bosa Ojeda¹ and A Lara-Padron¹

¹University Hospital of the Canaries, Cardiology Department, Santa Cruz de Tenerife, Spain

Purpose: our objective was to analyze our experience in the global management of new oral anticoagulants (NOACs) and vitamin K antagonist (VKA) in a oral anticoagulant therapy (OAT) dose reduction program in patients with cardiac pacing device (CPD) indication.

Methods: prospective analysis of 188 consecutive patients with previous OAT referred for CPD replacement or implant. We analyzed baseline characteristics, patient's treatment and OAT type and indication. We analyzed the thrombotic and hemorrhagic risk of patients. Reduction and dose adjustment of the OAT for an INR at the

intervention of 1.5-2.5 was performed by hematology or the arrhythmia unit. We collected the incidence of thrombotic and bleeding complications during the procedure and 45 days later.

Results: the variables associated with a higher incidence of complications were chronic renal failure ($p=0.038$), highest bleeding and high thrombotic risk ($p=0.005$

and $p = 0.048$ respectively), the use of fractionated heparin ($p=0.002$), the use of introducers ≥ 9 french ($p=0.003$) and implants versus replacements ($p=0.039$).

Conclusions: maintaining of OAT with dose reduction in patients with CPD indication is a safe method with a low complication rate.

Table 1. Variables analyzed.

Gender (% male)	134 (71%)		
Mean age (years)	73,6 \pm 10,6		
Procedure type and CPD type:	Implants: 101 (54%)	Replacements: 87 (46%)	
	- Pacemaker: 91	- Pacemaker: 82	
	- ICD-CRT: 10	- ICT-CRT: 5	
OAT reduction	Hematology 154 (82%)	Cardiology 32 (17%)	No reduction 1 (1%)
Basal thrombotic risk	High: 30%	Moderate: 53%	Low: 17%
Basal haemorrhagic risk	High: 15%	Low: 85%	
Mean INR at procedure day	1,67 \pm 0,42		
OAT type	VKA: 176 (94%)	NOACs: 12 (6%)	
Acute haemorrhagic complications	Mild-Moderate Haematoma: 20 (11%)	Severe haematoma: 2 (1%)	
Acute thrombotic complications	2 (1%)		
Later persistent complications	Haematoma and pocket infection: 3 (2%)		

CPD: cardiac pacing device; ICD-CRT: implantable cardiac defibrillator-cardiac resynchronization therapy; OAT: oral anticoagulant therapy. VKA: vitamin K antagonist; NOACs: new oral anticoagulants.

Diabetic heart disease

P237

The positive effect of aerobic exercise in diabetic patients with heart failure

A Sianni,¹ I Matsoukis,¹ A Ganotopoulou,² P Krezias,³ P Paraskevas,¹ E Ntofi,¹ I Kourabie,¹ N Tsvilis,¹ L Skorda⁴ and I Liouris¹

¹Konstantopoulou General Hospital, Pathology, Athens, Greece ²Private Pathologist, Piraeus, Greece ³Private Cardiologist, Athens, Greece ⁴General Hospital Erithros, Athens, Greece

Introduction: The aerobic exercise has positive effect in patients with diabetes mellitus. We tried to investigate the effect of aerobic exercise in diabetic patients with heart failure and low ejection fraction.

Methods: The study included 328 participants, with mean age 64 ± 11 years. All participants suffered from diabetes mellitus type II at least for 10 years and heart failure with low ejection fraction. Patients were divided into 2 groups: Group A included 232 patients that had

aerobic exercise for 20 minutes daily, and group B that had no exercise. The study duration was 2 years. HbA1c and glucose levels were examined at 3, 6, 12 and 24 months, while heart echo was performed at 6, 12 and 24 months. The incidence of hospitalization and the progress of diabetes mellitus and heart disease were also recorded during this period.

Results: The patients' distribution according to the HbA1c levels was: Group A: 6.58.5 to 4.2. In group B: 6.58.5 to 6.4.

Group A: 186 participants had improved or stable heart failure, without differentiation of the ejection fraction during the study period, but only 12 patients from group B. 22 participants from group A and 46 from group B had admitted in a hospital for common diseases namely stroke, deregulation of diabetes mellitus, dyspnoea and infectious diseases. 12 deaths from group A and 14 deaths from group B were recorded.

Conclusion: The aerobic exercise has positive effect in heart failure and diabetes mellitus in diabetic patients. The positive effect consists on better regulation of diabetes mellitus, lower mortality rates and lower incidence of hospitalization.

P238

Impact of admission plasma glucose level and diabetes status on myocardial perfusion in st-segment elevation myocardial infarction patients.

D Zanna,¹ M Pepe,¹ V Paradies,¹ F Masi,¹ A Cafaro,¹ F Resta,¹ P Terlizze,¹ M Pinto,¹ D Quagliara¹ and S Favale¹

¹University of Bari, Department of Cardiology, Bari, Italy

Hyperglycemia at hospital admission was found to be independently associated with large infarct size, left ventricular dysfunction and short-term mortality in patients with STEMI.

Corrected TIMI frame count (cTFC) is a quantitative parameter used to assess microvascular dysfunction also in TIMI flow grade 3 vessels. Aim of our observational study was to evaluate and quantify the impact of admission Plasma Glucose Level (PGL) on myocardial reperfusion.

We enrolled 70 consecutive patients presenting with STEMI (27% diabetics) and undergone primary PCI (pPCI) with a final TIMI flow grade 3; the exclusion criteria were cardiogenic shock at presentation, coronary artery ectasia and bypass graft lesions. Post-procedural cTFC of the culprit coronary artery was calculated by two interventional cardiologists in a double blinded fashion. Conventional two-dimensional (2D) echocardiography was performed at admission (baseline) and 5 days later (pre-discharge). Delta left ventricle ejection fraction (LVEF) was defined as the difference between pre-discharge LVEF and baseline LVEF. Myocardial infarct size was defined as TnI peak. We divided our population in two groups based on admission PGL > or < 140mg/dl and then on the basis of history of diabetes.

In the whole cohort admission PGL was significantly and positively associated with post pPCI cTFC of the culprit coronary artery (0.242; p:0.047). A significant and positive association between PGL and post pPCI cTFC was also found in 50 of these patients without known history of diabetes mellitus (r: 0.290; p: 0.043). In contrast with normoglycemic patients, hyperglycemic patients had a significantly higher TnI peak and a smaller Delta LVEF (p:0.05; p:0.03). Conversely we found no difference in terms of infarct size and LVEF recovery between non diabetics and diabetics. (p: 0.39; p:0.49)

Our findings support the hypothesis that admission PGL affects coronary flow and myocardial perfusion, as quantified by cTFC, even after successful pPCI. What is noteworthy in our analysis is that this relationship is evident also in non diabetic patients. Admission PGL > 140 mg/dl is a sufficient cutoff to discriminate patients at higher risk for adverse outcomes.

P239

Results of percutaneous coronary intervention with sequent please paclitaxel eluting balloon catheter in diabetic patients at a very long-term follow-up.

I Sanchez Perez,¹ A Jurado Roman,¹ F Lozano Ruiz-Poveda,¹ MT Lopez Lluva,¹ A Moreno Arciniegas,¹ M Marina Breyse,¹ J Piqueras Flores¹ and N Pinilla Echeverri¹

¹Hospital General de Ciudad Real, Interventional Cardiology, Ciudad Real, Spain

Introduction: Drug eluting balloons currently constitute one of the therapeutic tools used in percutaneous coronary intervention (PCI) of both stent restenosis and “De Novo” coronary lesions, mainly in bifurcations and small vessels. Diabetic patients represent an unfavorable subgroup because of their higher restenosis and adverse events rates. Nowadays, the results at a very long-term follow up are unclear in this subset of patients.

Purpose: The main objective of this study was to evaluate the efficacy and safety of second-generation Sequent Please paclitaxel eluting balloon (PEB) at 6 years in diabetics.

Methods: We prospectively included 104 consecutive diabetic patients (69±11 years, 63.5% male) with 104 lesions (de novo or restenosis) treated with PEB between March 2009 and March 2014. We evaluated the presence of major cardiac events (MACE) after a prolonged clinical follow-up (median 44 months): death, nonfatal myocardial infarction, target lesion revascularization (TLR) and thrombosis.

Results: 45.2% of patients had stable coronary artery disease and 54.8% acute coronary syndromes (43.3% Non-STEMI and 11.5% STEMI). 21.2% of lesions were bifurcations. Of the 104 lesions, 37.5% were “De Novo” lesions and 62.5% restenosis [38.5% restenosis of bare metal stent (BMS) and 24% of drug-eluting stents (DES)]. 87.5% of the lesions were treated with PEB, 8.7% with PEB and BMS and 3.8% with PEB and DES. There were no significant differences regarding baseline characteristics of these three groups neither in the MACE rate after a long-term follow-up (p=0.8). During follow-up, 9 patients died (3 cardiovascular and 6 non-cardiovascular deaths), and a TLR rate of 3.8% and a non-fatal myocardial infarction rate of 1.9% were observed. No cases of thrombosis were observed, immediately after the procedure nor during follow-up. 21.2% of patients had an angiographic follow-up. We observed a low need for additional stent after PEB in bifurcated small vessel disease (p=0.028).

Conclusions: In diabetic patients, percutaneous coronary intervention of de novo coronary lesions and in-stent restenosis (both of BMS and DES) with Sequent Please PEB provide very favorable results at a very long-term follow up.

P240

Acute coronary syndrome in patients with diabetes mellitus - characteristics of this population and mortality predictors at one year follow-up

JP Moura Guedes,¹ J Amado,¹ D Carvalho,¹ D Bento,¹ J Chin,¹ N Marques,¹ W Santos,¹ J Mimoso,¹ V Brandao¹ and I De Jesus¹

¹Faro Hospital, Cardiology, Faro, Portugal

Introduction and Objectives: The Acute Coronary Syndrome (ACS) is a major cause of morbidity and mortality in patients with diabetes mellitus (DM). The purpose of this study was to characterize the population admitted for ACS in cardiology department with DM and determines the predictors of mortality after 1 year follow-up.

Methods: A retrospective, descriptive and correlational study was conducted encompassing all patients admitted for ACS in a Cardiology Service from 1st October 2010 to 30th June 2013. Baseline characteristics, admission data and treatment strategies of the patients were evaluated. Follow-up in the medium term 12 months was carried out by telephone contact made by a cardiologist. Univariate and multivariate analysis of hospitalizations and mortality for cardiovascular causes at 1 year after an ACS were performed. Statistical analysis was performed using SPSS 20.0.

Results: In our center were admitted 2302 patients with ACS, of these 633 (27.5%) with DM. Compared with patients without DM, these were older (69.2 ± 11.8 vs 64.7 ± 13.8 years, $p < 0.01$), had higher prevalence of females ($p < 0.01$) and lower incidence of ACS with ST-segment elevation (STEMI) ($p < 0.01$). The comorbidities were more frequent in DM patients such as high blood pressure ($p < 0.01$), dyslipidemia ($p < 0.01$), chronic kidney disease ($p < 0.01$) and peripheral vascular disease ($p < 0.01$). DM patients had more often history of coronary artery disease ($p < 0.01$) and stroke ($P = 0.02$).

The DM patients were admitted less frequently by pre-hospital medical emergency ($p < 0.01$), had a higher prevalence of Killip-Kimball class (KK) III/IV ($p < 0.01$) and a lower left ventricle ejection fraction (LVEF) ($55 \pm 14\%$ vs $58 \pm 12\%$, $p < 0.01$). In therapeutic intervention DM patients were less underwent to coronary angiography ($p < 0.01$) and coronary angioplasty ($p < 0.01$).

In 1 year follow-up DM patients had higher rates of hospital admissions ($p = 0.01$) and higher in-hospital mortality (5.7%), 30-day mortality (6.2%) and 1 year mortality (13.1%). Age, peripheral vascular disease, STEMI, lower LVEF and KK class III/IV were identified as independent predictors of mortality at 1 year in patients with ACS and DM.

Conclusion: After an ACS, DM patients compared with those without DM were more older and had more comorbidities.

They had higher in-hospital mortality and 1 year follow-up mortality than patients without DM. They also had more hospitalization rate at 1 year follow-up.

Age, peripheral vascular disease, STEMI, lower LVEF and KK class III/IV were identified as independent predictors of mortality at 1 year in patients with ACS and DM.

P241

The role of diabetes mellitus in non-ischaeic dilated cardiomyopathy: does it make any difference when compared to non-diabetic patients?

N Rojo Prieto,¹ MG Ascencio Lemus,¹ L Garcia Bueno,¹ M Pinedo Gago,¹ I Iglesias Garriz¹ and F Fernandez-Vazquez¹

¹Hospital of Leon, Cardiology Department, Leon, Spain

Purpose: Diabetes mellitus is a well-known risk factor for developing ischaemic cardiac disease. Nevertheless, the role of diabetes in other cardiovascular entities is a controversial and complex issue. The aim of this research is to assess the prognostic and clinical differences between diabetic and non-diabetic patients diagnosed with non-ischaeic dilated cardiomyopathy.

Methods: Patients who were admitted to our institution during the last two years due to heart failure were retrospectively included. They had been diagnosed with dilated cardiomyopathy. Valvular and coronary disease had been excluded after performance of an echocardiography, coronary angiography and/or magnetic resonance. They were divided into two groups according to the presence of diabetes. Clinical, echocardiographic and prognostic parameters were analyzed. 38 out of the 41 patients (92.7%) were contacted by telephone for the follow up.

Results: . A total of 41 patients were included; among them, 15 (36.6%) suffered from diabetes mellitus [40% were on insulin treatment, 26.7% presented long-term complications of diabetes, the overall mean glycosylated hemoglobin level was 7.59 mg/dl], 68.3% were male, 61% had hypertension, 53.7% had dyslipidemia, 39% had usual alcohol intake, and 65.9% were smokers. The mean patient age was 64.7 ± 11.7 years in diabetic patients (D) and 65.7 ± 11.8 years in non-diabetic patients (ND). No significant differences were found in relation to epidemiological characteristics between both groups. Mean left ventricular ejection fraction was 27.73% in D and 27.77% in ND ($p = 0.58$) Left ventricular end diastolic

diameter was 65.8 ± 9.1 mm in D and 62.2 ± 8.2 mm in ND ($p=0.8$) Mean QRS width measurement was 117.7 ± 24.1 ms in D and 128.1 ± 29.8 ms in ND ($p=0.28$) Mean hospitalization time was 11.7 days in D and 11.4 days in ND ($p=0.45$). Readmission occurred in 10.5% of the patients and 12.8% had died at the follow-up point. 15.2% stayed at NYHA functional class III and the rest of our sample had no significant limitation of physical activity (class I/II). None of them had a functional class IV. No significant differences were found between both groups with regard to readmission, mortality and functional class

Conclusion: In our study there were not statistically significant differences between diabetic and non-diabetic patients diagnosed with dilated cardiomyopathy regarding the principal epidemiologic, clinical and prognostic parameters. Further research with larger prospective studies is needed to confirm these results.

P242

The effects of hypoxia and work intensity on cardiovascular and immune responses in patients with type I diabetes mellitus

AH Zebrowska,¹ A Kochanska-Dziurawicz² and B Gluchowska¹

¹Department of Physiological and Medical Sciences, Katowice, Poland
²Medical University of Silesia, Department of Isotope Diagnostics and Radiopharmaceuticals, Sosnowic, Poland

Introduction: Previous evidence confirming the beneficial effects of hypoxia on the cardiovascular system and exercise tolerance. There are limited data regarding the effect of the intensity and duration of exercise and hypoxia intervention on angiogenic factors and immune response in patients with diabetes. The aim of the study was to assess the effect of intermittent and constant exercise in normobaric hypoxia on hypoxia induced factor 1 α (HIF-1 α), vascular endothelial growth factor and immune responses, additionally, on glycaemia.

Methods: Fourteen subjects (age: 24.0 ± 1.5 years) participated in the following trials: normoxic (No) and hypoxic rest (Hy: FIO₂=15%) and normoxic and hypoxic intermittent and constant exercise tests (ExI vs ExC). Cardiorespiratory variables, haematological indices, glycaemia, and serum concentrations of cytokines were measured at rest and after each exercise test.

Results: Hy caused significant decreases in oxyhemoglobin saturation at rest and in response to exercise compared to No. Two-way ANOVA revealed a significant effect of Hy and exercise on glucose (BG) concentrations ($F=9.1$; $p<0.05$), lymphocyte count ($F=23.0$; $p<0.001$), HIF-1

α ($F=9.3$; $p<0.02$) and VEGF ($F=4.5$; $p<0.05$). HyExI significantly decrease BG ($P<0.01$) compared to HyExC.

Conclusion: Hypoxia combined with intermittent exercise might be a valuable method for reducing glycaemia and increasing efficiency of immune system. The beneficial effects of diabetic related cardiovascular complications observed in the study depend on type of physical exercise and above all, the duration of the hypoxic intervention.

Hypertension

P243

Blood pressure control and risk profile of an urban population

R Rodrigues,¹ L Rassi,¹ S Goncalves,¹ I Cuco,¹ AL Lourenco,¹ Q Rato¹ and L Soares¹

¹Hospital Sao Bernardo, CHS, Setubal, Portugal

Introduction: Despite all the preventive measures, arterial hypertension (AH) remains a public health problem.

Objective: To evaluate the blood pressure (BP) control and risk profile in a screening study of a current urban population.

Methods: We prospectively evaluated an occasional sample of 683 individuals (ind) in a screening carried out at an urban community.

Two groups were created according the presence or absence of AH (defined by previously known diagnosis and/or systolic BP ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg). The groups were characterized and compared according to its risk profile, demographic and clinical aspects.

Results: Of the total population, 64% were female and the mean age was 57 ± 15 years old. 348 ind (51%) had AH, 86% with previously known diagnosis.

In the group of AH, the ind were older, more often male, and had a higher prevalence of diabetes mellitus, dyslipidaemia, history of myocardial infarction and a greater alcohol consumption (see table).

Of the 300 ind with previously known diagnosis of AH, 201 (67%) were medicated at least with one antihypertensive drug (38% in monotherapy), but only 80 (40%) had controlled BP.

The subgroup of uncontrolled BP had a higher percentage of males (47% vs 34%, $p=0.036$) and smoking habits (36% vs 19%, $p<0.001$).

Conclusions: At this sample the prevalence of AH was similar to that reported in international studies. Although

more than half of the ind with previously known AH are medicated, less than half of them had controlled BP.

The hypertensive ind had more cardiovascular risk factors (CVRF). This screening alerted the general population to the CVRF and the hypertensive ind to the need of BP control.

Table 1.

	Group with Arterial hypertension (n=348)	Group without Arterial hypertension (n=335)	p value
Mean age (years)	65±11	49±14	<0.001
Male gender (%)	44	28	<0.001
Diabetes mellitus (%)	18	5	<0.001
Dyslipidaemia (%)	63	45	<0.001
Previous myocardial infarction (%)	4	0.4	0.003
Alcohol consumption (g)	24±17	14±7	0.002

P244

Effect of Sad Text on Blood Pressure

S Oguz,¹ B Bayrak Ozarslan,¹ A Genc¹ and G Camci¹

¹Marmara University, Faculty of Health Sciences, Istanbul, Turkey

Background: The most common in developed countries are hypertension. Stress and sorrow also have impact on hypertension besides risk factors like salt intake and sedentary lifestyle.

Objectives: The objective of this study was to determine as a experimentally whether reading sad text increases blood pressure (BP) of individuals or not.

Methods: 45 volunteer adults who had referred to public health center were included in this study between December-February 2015. Data of BP measurements and questionnaire were recorded. At first, subjects were taken into a quiet room and had a rest for five minutes in sitting position. Before reading sad text and BP was measured on the right arm. Then a sad text of 900 words was read by the volunteer and as soon as it was finished, BP was measured again. Data were analyzed with percentage, frequency, variance analysis, student's t-tests.

Results: Average age of individuals was 43.4±13.8, 55.6% of them were female and 35.6% had hypertension. Average systolic blood pressure (SBP) of first measurement was 123.11±5.58 mmHg, average diastolic blood pressure (DBP) was 75.44±5.07 mmHg. There was no difference when SBP values were compared before

and after sad text reading for the subjects (p=.052). Increase of SBP was detected in individuals with age over 40 (p=.006), obesity (p=0.003), hypertension (p=.001) and family history of hypertension (p=.002). DBP elevated in individuals with hypertension (p=.005), family history of hypertension (p=.026) and obesity (p=.002).

Conclusion: Sad test increases SBP of people at the age of 40 or over. It increases both SBP and DBP of individuals with obesity, hypertension and family history for hypertension.

P245

Cardiovascular complications in patients with pheochromocytoma

V Chioncel,¹ C Andrei,¹ L Axente¹ and C Sinescu¹

¹Bagdasar-Arseni Emergency Hospital, Bucharest, Romania

Background: Pheochromocytoma is a rare cause of hypertension, accurate diagnosis and management of this disease requires an interdisciplinary approach.

Objectives: Evaluation of the demographic, clinical and laboratory features of patients with secondary hypertension and pheochromocytoma.

Methodology: Were followed 42 patients diagnosed with secondary hypertension and pheochromocytoma, who were admitted consecutively to the Center of Urological Surgery and Renal Transplantation Fundeni, in the period 2008-2014. Evaluation of patients included clinical examination, electrocardiogram, Holter BP, echocardiography and repeated dosage of seric/urinary metanephrines.

Results: The demographic data showed a dominance of females (1.62/1 female/male) and the average AGE of patients was 43.4 years. In patients with permanent hypertension were observed high levels of plasma/urinary normetanephrine; in those with paroxysmal high blood pressure we found high concentrations of both metanephrine and the normetanephrine (in similar proportions). We reported higher levels of metanephrines (average by 68% over basal values) during pheochromocytoma crisis. The presence of ventricular hypertrophy (ECG or ultrasound criteria) was correlated with increased levels of normetanephrine; on the other hand plasma metanephrine values was similar in patients with hypertrophy and in patients without ventricular hypertrophy. Also, the presence of left ventricular hypertrophy was associated with a higher rate of cardiovascular complications (pulmonary edema, myocardial infarction, arrhythmias, stroke).

Conclusions: Hypertension was the central element in pheochromocytoma, part of the initial index of clinical suspicion. Regardless of the form (paroxysmal or permanent), hypertension was directly involved in the appearance of left ventricular hypertrophy and cardiac and cerebrovascular complications.

P246

miR-1, miR-21 and galectin-3 in hypertensive patients with symptomatic ischaemic heart failure and left ventricle hypertrophy

M Tomaniak,¹ G Szygutowicz,² KJ Filipiak,¹ O Blaszczyk,³ L Koltowski,¹ D Puchta,¹ K Malesa,¹ J Kochanowski¹ and D Sitkiewicz²

¹Medical University of Warsaw, 1st Department of Cardiology, Warsaw, Poland ²Medical University of Warsaw, Department of Medical Laboratory Diagnostics, Warsaw, Poland ³Medical University of Warsaw, Department of Pharmacogenomics, Warsaw, Poland

Purpose: Recent studies suggest the impact of miR-1 on cardiac hypertrophy and cardiomyocytes' number. miR-21 and galectin-3 (gal-3) has been associated with fibrosis, inflammation and maladaptive cardiac remodelling. To date, the synergistic role of these molecules in left ventricle hypertrophy (LVH) has not been explained. Left ventricular mass index (LVMI) is known as an important prognostic marker in systolic heart failure (HF). The aim of this study was to evaluate the expression of miR-1, miR-21 and concentration of gal-3 in patients with symptomatic ischaemic HF with a history of hypertension and LVH revealed in echocardiography.

Methods: Of 59 hypertensive patients hospitalized due to ischaemic HF exacerbation (ejection fraction 33.9±13.9%) 41 subjects with LVH [LVMI>115(males)/95(females)g/m²] were enrolled in this study. The expressions of miR-1 and miR-21 were quantified using qRT-PCR. Serum concentrations of gal-3 and NT-proBNP were measured and standard echocardiographic examinations were performed in all patients.

Results: In HF patients with severe LVH (n=27; aged 69.3±12.7yrs; EF=27.6±10.6%) with LVMI>149 (males)/122 (females) g/m² there was a significant negative correlation between interventricular septum diameter (IVSD) vs. miR-1 (Rs= -0.533, p<0.05) and between posterior wall diastolic thickness vs. miR-1 (Rs= -0.404, p<0.05). We found a positive association between IVSD vs. gal-3 (Rs= 0.383, p<0.05), NT-proBNP vs. gal-3 (Rs=0.369, p<0.05) as well as miR-1 vs. miR-21 concentrations (Rs= 0.520, p<0.05) in this group. No differences were found for age, gender, NYHA class, HF etiology as well as miR-1, miR-21 expressions and gal-3 serum concentrations between

patients with severe vs. mild-to-moderate LVH (n=14; aged 70.9±10.5yrs; EF=43.9±17.0%). Noteworthy, among patients with IVSD>12 mm (n=14) serum concentrations of gal-3 were significantly higher than in patients with IVSD ≤ 12 mm (n=27): 18 (15.4-25.6) pg/ml vs. 16.9 (10.8-21.4) pg/ml respectively (p=0.028) and its concentration was correlated with left ventricle (LV) end-diastolic diameter (LVEDD) and NT-proBNP serum levels (Rs= 0.600, Rs= 0.660, respectively, p<0.05). In this group, a significant downregulation of miR-21 with the increase of LVEDD (Rs=-0.612, p<0.05) and a significant downregulation of miR-1 with the increase of NT-proBNP concentration (Rs=0.746, p<0.05) was observed.

Conclusions The results of this study revealed that in symptomatic post-myocardial infarction HF patients with LVH gal-3 concentrations and circulating miR-1 expressions were correlated with anatomic changes in LV.

P247

Association study between some renin angiotensin polymorphisms and essential hypertension in a sample of Algerian population: case control study

A Amrani,¹ MB Baba Hamed¹ and F Mesli -Taleb Bendiab²

¹biotechnology department, university of oran, oran, Algeria
²biology department, university of oran, oran, Algeria

Essential hypertension is an important risk factor for the development of cardiovascular disease. We aim in this study to analysis the relationship between AGT M235T gene variant and ACE I/D gene variant with essential hypertension in a sample of the Algerian population of the Oran city.

Methods: A case-control study has been performed in 145 subjects including; 75 hypertensives and 70 controls from Algerian population of Oran city. Polymerase chain reaction (PCR) combined with restrictive fragment length polymorphism (RFLP) was used to detect the M235T variant of angiotensinogen (AGT) gene and a nested PCR to determine ACE I/D gene variant.

Results: The genotypic and allelic distribution of the M235T variant of the AGT gene did not differ in hypertensives and normotensives group (X² =7.815, P<0.05; X² =4.671, respectively) thus there was no association between the T allele and hypertension (OR=1.64; 95%CI [1.007-2.69]). The genotypic and allelic frequencies of the ACE I/D variant did differ significantly between hypertensives and controls (X² =13.982, P<0.05; X² =12.66, P<0.05, respectively) where a significant association between the D allele of the ACE I/D gene and

essential hypertension has been observed (OR=0.456; 95%CI [0.275-0.755]). We reported a high prevalence of the D and T allele in hypertensives female.

Conclusion: This study shows that the M235T variant of the AGT gene is not associated with essential hypertension while a significant association has been reported with the D allele in this sample of Algerian population of the Oran city.

P248

Oxidative stress induced mitochondrial dysfunctions in kidney and heart of uninephrectomized deoxy-corticosterone acetate-salt-induced hypertensive rats

KHALID Al-Numair,¹ C Veeramani,¹ G Chandramohan,¹ A Mohammed Alsaif¹ and KV Pugalendi²

¹King Saud University, Community Health Sciences, Riyadh, Saudi Arabia
²Annamalai University, Department of Biochemistry, Annamalaiagar, Chidambaram, Tamilnadu, India

In the present study we investigated changes in mitochondrial production of reactive oxygen species (ROS) and mitochondrial antioxidant defense systems in kidney and heart of deoxy-corticosterone acetate (DOCA)-salt induced hypertensive rats. Hypertension was induced by subcutaneous injection of DOCA-salt solution, twice a week, and the rats received a 1% sodium chloride solution as drinking water for 6 weeks. We found that the result of systolic and diastolic blood pressure significantly increased in DOCA-salts induced rats as compared to sham-operated control rats. In DOCA-salt induced rats, showed a significant elevation of mitochondrial thiobarbituric acid reactive substances (TBARS) levels as compared to sham-operated control rats. The level of enzymic (superoxide dismutase (SOD), glutathione peroxidase (GPx)) and non-enzymic (reduced glutathione (GSH)) antioxidants were decreased significantly in DOCA-salt treated rats compared to sham-operated control rats. The activities of mitochondrial enzymes such as isocitrate dehydrogenase (ICDH), alpha-ketoglutarate dehydrogenase (α -KGDH), succinate dehydrogenase (SDH), and malate dehydrogenase (MDH) were decreased significantly in DOCA-salt treated rats. In addition, the activities of mitochondrial respiratory chain enzymes such as NADH dehydrogenase and Cytochrome c-oxidase were decreased significantly in DOCA-salt treated rats as compared to sham-operated control rats. Thus results indicate that the increased mitochondrial production of ROS and mitochondrial antioxidant defense systems can damage the mitochondrial normal functions in kidney and heart of DOCA-salt induced hypertensive rats.

P249

Antihyperlipidemic effect of Melothria maderaspatana leaf extracts on DOCA-salt induced hypertensive rats

S Khalid Al-Numair,¹ C Veeramani,¹ G Chandramohan,¹ A Mohammed Alsaif¹ and KV Pugalendi²

¹King Saud University, Community Health Sciences, Riyadh, Saudi Arabia
²Annamalai University, Department of Biochemistry, Annamalaiagar, Chidambaram, Tamilnadu, India

To investigate the antihyperlipidemic effect of crude ethanolic extract of Melothria maderaspatana (M. maderaspatana) leaf (CEEM) on deoxycorticosterone acetate (DOCA)-salt hypertensive rats. A midscapular incision was made on each rat and the left kidney was excised after ligation of the renal artery. The surgical wound was closed using an absorbable suture. After one week recovery period, hypertension was induced by subcutaneous injection of DOCA-salt solution, twice a week, and the rats received a 1% sodium chloride solution as drinking water throughout the experimental period. CEEM or nifedipine was administered orally once a day for 6 weeks. In DOCA-salt hypertensive rats, the level of plasma and tissues of total cholesterol (TC), triglycerides (TG), free fatty acids (FFA) and phospholipids (PL) significantly increased and administration of CEEM significantly reduced these parameters towards normality. Further, the levels of low density lipoprotein-cholesterol (LDL-C) and very low density lipoprotein-cholesterol (VLDL-C) significantly increased while high density lipoprotein-cholesterol (HDL-C) decreased in hypertensive rats and administration of CEEM brought these parameters to normality which proved their antihyperlipidemic action. Histopathology of liver, kidney and heart on DOCA-salt induced rats treated with CEEM showed reduced the damages towards normal histology. These findings provided evidence that CEEM was found to be protecting the liver, kidney and heart against DOCA-salt administration and the protective effect could attribute to its antihyperlipidemic activities.

P250

New experiences with music therapy in hypertensive patients with acute myocardial infarction after previous coronary artery bypass surgery

P Mitrovic,¹ B Stefanovic,¹ A Paladin,² M Radovanovic,¹ N Radovanovic,¹ D Rajic,¹ G Matic,¹ A Novakovic,¹ N Mijic¹ and Z Vasiljevic¹

¹University Institute for Cardiovascular Diseases, CCS, School of Medicine, University of Belgrade, Belgrade, Serbia ²Serbian National Broadcasting Agency, Belgrade, Serbia

Patients who have clinical evidence of hypertension (HT) after coronary artery bypass surgery (CABS) have a poor prognosis in expression of acute myocardial infarction (AMI), as one of the MACE. Unrelieved anxiety can produce an increase in sympathetic nervous system activity leading to an increase in cardiac workload. The purpose of this study was to evaluate the effectiveness of music therapy on prognosis of patients with HT and AMI, after CABS.

Methods: 298 patients (males 78.4%, mean age 59.2 ± 2.2 yrs) with AMI after previous CABS have been selected from the patients consecutively submitted from January 2013 to January 2015. HT was registered in 158 (53.0%) pts with AMI after previous CABS. All patients with HT were randomized and divided in 2 groups: Study group of 79 patients treated with music therapy and Control group of 79 patients with no music therapy. Each patient in study group underwent two sessions of medical therapy (12 minutes) in a day. Both groups were similar in baselines, post-AMI characteristics and post-AMI medical therapy. The plasma cytokine and catecholamine were measured in both groups.

Results: In the Study group, heart rate was significantly decreased by music therapy ($p=0.3896$). In the Control group, there were no significant changes in heart rate. Among cytokines ($p=0.4260$), plasma interleukin-6 (IL-6) ($p=0.3979$) in the Study group was significantly lower than those in the Control group, as well as plasma adrenaline ($p=0.4662$) and noradrenaline ($p=0.4418$) levels.

Conclusion: This study provides support for the use of musical therapy in patients with HT and AMI after previous CABS. The positive effects of music therapy, in these patients, are probably because of enhanced of parasympathetic activities and reduction of plasma cytokine and catecholamine levels.

P251

Influence of hypertension in a stroke unit: results from a single center

R Costa Rodrigues,¹ A Correia,¹ A Spinola,¹ M Neto,¹ MG Serrao,¹ S Gomes,¹ T Faria,¹ R Freitas,¹ M Brazao¹ and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Purpose: Hypertension (HTN) is a well known risk factor for the development of cardiovascular diseases. We intended to evaluate if HTN infl lar perfusion damage in essential arterial hypertension. ences the inhospital prognosis of patients admitted for stroke.

Methods: Retrospective analysis of prospective collected data of 91 consecutive patients admitted in a stroke unit, for a period of 9 monts, with the diagnosis of ischemic stroke, hemorrhagic stroke or transient ischemic attack. We divided them in 2 groups: patients with previous history of HTN (group H: $n=57,63.6\%,40.4\%$ men) and patients without previous history of HTN (group NH: $n=34,37.4\%,61.8\%$ men). We compared demographic and clinical characteristics, therapeutic, and prognosis evaluated through neurological and functional evaluation scales at admission and hospital discharge (Glasgow Coma Scale, National Institute of Health Stroke Scale (NIHSS), Rankin modified scale and Barthel scale) and mortality.

Results: There were no statistically significant differences between the groups in terms of prognosis wen evaluated by total mortality or through Glasgow Coma Scale, NIHSS, modified Rankin Scale or Bartel scale. The prevalence of HTN was high, with 63.6% of the patients presenting a previous history. No differences in the type pf stroke between the groups. Group H presented less men (H:40.4% Vs NH:61.8%; $p<0.05$), higher age (H:69.1 iq=11.5 Vs NH:59.0% iq=14.2; $p<0.01$) and more dyslipidemia (H:36.8% Vs NH:11.8%; $p<0.01$). Group H presented more patients previously medicated with beta-blocker (H:33.3% Vs NH:5.9%; $p<0.05$), ACEi/ARBs (H:80.7% Vs NH:5.9%; $p<0.01$), diuretic (H:43.9% Vs NH:5.9%; $p<0.01$) and CCB (H:38.6% Vs NH:2.9%; $p<0.01$). Group H presented more frequently cardiothoracic index $>50\%$ (H:25.0% Vs NH:5.9%; $p<0.05$).

Conclusions: HTN is highly prevalent in stroke population. In our specific population, the existance of a previous history of HTN was not associated with worse inhospital prognosis.

P252

The value of contrast-enhanced ultrasound assessment of renal microvascular perfusion damage in essential arterial hypertension.

L Albusoiu,¹ M Budau,² A Campeanu¹ and IT Nanea¹

¹University of Medicine and Pharmacy Carol Davila, Bucharest, Romania

²Clinical Hospital Dr Theodor Burghel, Bucharest, Romania

Purpose: to identify the value of contrast-enhanced ultrasound (CEUS) assessment for renal microvascular perfusion damage in patients with essential arterial hypertension (AHT) and associated comorbidities (diabetes and CKD).

Method: 85 patients with AHT grade I-III from which 29 with diabetes and 12 with CKD, age= 60 ± 12 , Males= 45.8%

and 10 healthy adults were investigated by CEUS with sulfur hexafluoride. After i.v. administration of 1.2ml of contrast agent the images were recorded for 3 minutes. Renal micro-vascular perfusion was evaluated in early cortical phase (N=10-14sec), late cortical phase (N=15/20-40sec) and medullar phase (N=45-120sec). Time-intensity curves (TIC) were analyzed by Contrast Dynamics software using: arriving time (AT), time to peak (TP), peak intensity (PI), area under the curve (AUC) and mean transit time (MTT).

Results: The enhancement times were progressively prolonged in the study group according to the grade of the hypertension and more in diabetes and CKD. TIC analyze were similar: AT in AHT group was 18sec, in diabetes 21sec and in CKD 25sec vs. healthy 10sec. TP, PI, AUC are also well correlated with the grade of the hypertension and associated comorbidities. No adverse effect was noted during the study. No changes in biological status were noted in the study group after CEUS.

Conclusions: CEUS is a reliable, non-invasive, simple and safe method to evaluate in real-time the renal microvascular perfusion damage in all grades of hypertension and associated comorbidities. TIC parameters (TP, PI and AUC) accurately assess the renal microvascular impairment in different stages.

Interventional Cardiology

P253

Actually bleeding has been reduced after percutaneous closure of the left atrial appendage?

M Sanchez-Martinez,¹ A Barradas-Pires,² V Agudelo Montanez,² J Garcia De Lara,¹ F Marin,¹ M Quintana Giner,¹ E Pinar Bermudez,¹ G De La Morena Valenzuela¹ and M Valdes Chavarri¹

¹University Hospital Virgen de la Arrixaca, Department of Cardiology, Murcia, Spain ²Hospital de la Santa Creu i Sant Pau, Department of Cardiology, Barcelona, Spain

Background and Objectives: Currently, percutaneous closure of the left atrial appendage (LAA) has been suggested as a useful alternative for patients with non-valvular atrial fibrillation and contraindications to oral anticoagulation (OAC). The aim of this study was to observe the percentage of hemorrhagic events over a 2-year follow-up in these patients.

Methods: We retrospectively analyzed all cases of percutaneous closure of LAA performed at our centre between February 2009 and March 2015. The major and minor bleeding were defined according to the criteria BARC.

Results: A total of 53 consecutive patients underwent percutaneous closure of LAA using the Amplatzer device. 41 (77.4%) were male and mean age was 73,5±9.4 years. Most patients were a high cardioembolic risk (CHADS2 2.8±1 and CHA2DS2vasc 4±1.3), associated with a high hemorrhagic risk (HASBLED 3.2±1.1 and ATRIA 4.5 ±2.4). The main contraindication for OAC were history of bleeding in 41 patients (77.4%), poor control of INR 17.1%, presence of blood dyscrasias in 1 patient (1.9%) and other causes in the 3%. The success rate of the procedure free of complications was 86.8%. Mean follow-up was 25.9±20 months. Mortality during follow-up was 13.2%, mostly (11.3%) non-cardiac relates. All remained without oral anticoagulation from hospital discharge: 10.5% (4 patients) received no antiplatelet therapy for 3 months and subsequently single antiplatelet indefinitely. There were 7 major bleeding (13.2%) with a median follow-up to the event of 15.5 days [4.7 to 75]: 5 gastrointestinal bleeding (71.4%), 1 retroperitoneal bleeding (14.3%) and 1 hemorrhagic stroke (14.3%); and 6 minor bleeding (11.3%). A significant graded increase was not appreciated in the incidence of major bleeding BARC with increasing HASBLED or ATRIA risk categories (linear trend test, p>0.05). These scores also had poor discriminate ability for identifying patients who suffered major bleeding events during follow-up (C statistic 0.62 and 0.53 respectively).

Conclusions: Despite all patients who underwent percutaneous closure of LAA remained without anticoagulation from discharge, the rate of bleeding complications during follow-up remained high, suggesting the need to seek alternative antithrombotic treatment and maximise vigilance for these complications during this period.

P254

Rescue ptca after thrombolisation

MANOJ Chopda¹

¹Magnum Heart Institute, Intervention Cardiology, Nasik, India

Feasibility and safety of PCI after successful thrombolization in acute MI patients

Background: Primary Percutaneous Coronary Intervention (PPCI) is the reperfusion therapy of choice among patients with STEMI owing to a low risk of reinfarction and improved survival rates. Thrombolysis is important as “the appropriate and timely use of reperfusion therapy is likely to be more important than the choice of therapy”. Primary Percutaneous Coronary Intervention after thrombolysis to achieve TIMI 3/2 flow in the affected epicardial vessel is a prerequisite for optimal myocardial reperfusion. Primary

PCI is recognized as the best strategy for treatment of patients for whom it is applicable.

Method: 150 patients were screened and 140 underwent diagnostic angiography within 24 hours after thrombolysis. Full dose of thrombolizing agent were used for acute STEMI patients if PCI was delayed to ≥ 30 minutes. Patients were recommended to undergo diagnostic angiography within 3 to 24 hours after thrombolysis. Patient with residual stenosis $\geq 70\%$ in the infarct related artery underwent PCI. Epicardial arterial flow was assessed using TIMI flow grade.

Table 1. result.

N	TIMI flow (Before PCI)	N	TIMI flow (After PCI)
4	TIMI 0	2	TIMI 0
10	TIMI 1	4	TIMI 1
25	TIMI 2	4	TIMI 2
61	TIMI 3	90	TIMI 3

Conclusion: These results support the routine implementation of an early invasive strategy after successful thrombolization in this population, with a trend towards a further reduction of reinfarction and death/reinfarction in higher risk STEMI patients. Use of thrombolizing agent is still an important option for reperfusion in many STEMI patients.

P255

Primary angioplasty - prognostic impact of vascular access crossover

R Rodrigues,¹ L Rassi,¹ C Sa,¹ T Duarte,¹ A Marinheiro,¹ F Seixo,¹ R Santos¹ and L Soares¹

¹Hospital Sao Bernardo, CHS, Setubal, Portugal

Introduction: The advantages of radial access for angioplasty are known. However, in a significant number of patients the crossover from radial to femoral access is needed. The characteristics of these patients and the prognostic impact of the crossover are not well known.

Aim: To evaluate the in-hospital prognostic impact of the crossover from radial to femoral access in primary angioplasty.

Methods: We evaluated 209 consecutive patients with a diagnosis of acute myocardial infarction (MI) submitted to primary angioplasty. Patients in whom the femoral access was the first choice were excluded. The population was divided into 2 groups: radial access (group R) and

crossover from radial to femoral access (group C). Patient's characteristics, procedure information and in-hospital adverse events were compared in both groups.

Results: The final sample included 81 patients (mean age 63 ± 15 years, 77% male). The groups R and C had respectively 69 and 12 patients (85 and 16%).

Patients at group C had a higher prevalence of smoking (83 vs 50%, $p=0.03$) and subacute MI (50 vs 15%, $p=0.01$). The mean procedure time, fluoroscopy exposure time and contrast volume used were significantly higher in group C (respectively 61 ± 31 vs 43 ± 21 minutes, $p=0.014$; 16 ± 10 vs 10 ± 7 minutes, $p=0.01$ and 203 ± 113 vs 146 ± 59 ml, $p=0.018$). The incidence of heart failure, renal dysfunction and clinically relevant bleeding were not statistically different in both groups. Mean troponin peak value and left ventricular ejection fraction were also not statistically different. There were no deaths, reinfarctions or arrhythmias in group C.

Conclusion: Despite the significant delay of the procedure time, the crossover from radial to femoral access do not conditioned an in-hospital negative prognostic impact.

P256

Predictors of "Reverse Remodeling" in patients with percutaneous closure of atrial septal defects

P G Dinis,¹ AC Faustino,¹ L Paiva,¹ M Costa,¹ MC Cachulo¹ and L Goncalves¹

¹University Hospitals of Coimbra, Coimbra, Portugal

Introduction: "Reverse remodeling" (RR) of the right heart has been suggested after percutaneous closure of atrial septal defects (ASD). RR predictors are not clear.

Purpose: Evaluate predictors of RR after percutaneous closure of ASD.

Methods: Retrospective study of 85 consecutive patients (P) submitted to percutaneous closure of ASD: 75% women, 48 ± 14 years, 44.7% with hypertension and 12.9% diabetics. Prior to the ASD closure, the morphological features (MFeat) of the ASD and the right atrium (RA) were evaluated by TEE. A TTE was performed on the day following procedure and one year later, and were measured the parameters of RR: by size – area of the right atrium (aRA), area of the right ventricle (RV) in systole (aRVS) and in diastole (aRVD); and by RV function - RV fractional area change (FAC) and TAPSE. RR was defined as a change superior to 10% in each one of the following parameters: reduction of aRA, aRVS and aRVD; and an increasing in FAC and TAPSE. The predictors of RR were identified.

Results: RR of the RA was influenced by: history of migraine, MFeat of the ASD (floppy rims) and MFeat of the RA (presence of Eustachian valve). Absence of right cavities overload was the only independent predictor of RR. Regarding RV function, there was an improvement of TAPSE in P with smaller ASD, whereas age was an independent predictor of FAC improvement (Table 1).

Conclusion: An early closure of the ASD may have a positive impact in RR, and age should not be an exclusion criteria.

Table 1. Predictors of reverse remodeling.

Univariate analysis				
	Features	OR	95% CI	p
aRA	ASD floppy rims	3.565	1.266-8.492	0.013
	Eustachian valve	4.955	1.482-16.572	0.006
	History of migraine	9.371	1.117-78.641	0.015
		RR=1	RR=0	p
TAPSE	ASD size	18.50 ± 6.52	22.35 ± 7.07	0.030
FAC	Age	54 ± 13	46 ± 14	0.025
Multivariate analysis				
	Features	OR	95% CI	p
aRA	Right overload	0.858	0.026-0.946	0.043
FAC	Age	1.071	1.005-1.142	0.035

(CPR) was started immediately in 62% of patients, and mean time for return of spontaneous circulation was 22.9±18.7 minutes. Ventricular Fibrillation was the initial rhythm identified (80%), followed by PEA (15.5%) and Asystole (4.5%). Post arrest ECG revealed ST-Elevation in 53% (n=24). Patients were grouped into those with and without ST elevation (24 vs. 21). All patients had been ventilated prior to angiography, and 46.6% (n=21) were in cardiogenic shock.

Coronary angiography revealed at least one significant coronary artery lesion ($\geq 50\%$) in 91% of patients (n=41), of which 63% (n=26) were due to an acute occlusion. In the STEMI group, 83.3% (n=20) of patients had a significant acute occlusion. In the non-STEMI group, 33.3% (n=7) of patients had a significant lesion, all but one due to an acute occlusion. 11.5% (n=3) of patients with an acute occlusion had no ST changes on their ECG.

A total of 41 patients underwent successful PCI. 21 patients (47%) survived to hospital discharge and were also alive at 30-days. STEMI vs. non-STEMI survival (9 vs.12, $p = 0.24$). The positive and negative predictive values of ST-Elevation on the ECG to determine significant coronary lesions were 83.3% and 71.4% respectively.

Conclusion: Early angiography is feasible and significant coronary artery disease is present in the majority of survivors of OHCA. Occlusive coronary disease is commonly found despite no evidence of ST- Elevation on the ECG.

P257

Cardiac catheterisation findings and outcomes in survivors of out-of-hospital cardiac arrests

M Mohamed,¹ S George,¹ P F Ludman,¹ J N Townend,¹ P A Calvert,¹ S N Doshi¹ and S Q Khan¹

¹Queen Elizabeth Hospital Birmingham, Cardiology, Birmingham, United Kingdom

Purpose: Out-of hospital cardiac arrest (OHCA) is associated with high degrees of morbidity and mortality. We aimed to evaluate the prevalence of coronary disease in survivors of OHCA in our local population, and to assess whether early angiography had an impact on survival.

Methods: Patients with OHCA over a 3-year period were included (January 2012-December 2014). A review of patient records was performed including details of coronary angiogram and PCI findings. Univariate analysis was performed.

Results: There were 45 patients included (71% Males, Mean Age 65.1 ± 12.7 Years). Cardiopulmonary resuscitation

P258

Emergency balloon aortic valvuloplasty: a single centre experience.

L A Ferri,¹ G Tiberti,¹ I Pera,¹ E Cantu,¹ A Farina,² S Savonitto,³ A Gamba⁴ and L Piatti¹

¹A. Manzoni Hospital, Cardiovascular Department, Interventional Cardiology, Lecco, Italy ²A. Manzoni Hospital, Cardiovascular Department, Coronary Care Unit, Lecco, Italy ³A. Manzoni Hospital, Cardiovascular Department, Clinical Cardiology, Lecco, Italy ⁴Alessandro Manzoni Hospital, Department of Cardiovascular, Lecco, Italy

Alongside with the development of transcatheter aortic valve implantation (TAVI) techniques for the treatment of patients affected by severe aortic valve stenosis, balloon valvuloplasty (BAV) has regained interest. We report two cases of patients presenting with cardiogenic shock/ life threatening arrhythmias due to severe aortic valve stenosis, treated with an emergency BAV and subsequent TAVI or surgical aortic valve replacement.

CASE 1: a 65-years old woman was transferred to our center for refractory cardiogenic shock associated with wide-QRS complex incessant tachycardia. Mechanical ventilation and

insertion of an intra-aortic balloon pump were promptly instituted. An echocardiogram revealed an heavily calcific aortic stenosis with a maximal transvalvular velocity of 3.8 m/sec and a severe dysfunction of the left ventricle (LVEF: 25%). The patient had recurrent ventricular tachycardia and profound cardiogenic shock. After ruling out significant coronary artery disease, an emergency BAV with a 20*40mm CRISTAL balloon was performed, obtaining the immediate reduction of aortic peak-to-peak transvalvular pressure gradient (from 82 to 40 mm Hg) and the stabilization of the rhythm. On the day after the patient underwent urgent surgical aortic valve replacement with a bioprosthesis (TRIFECTA 21). Postsurgical course was uncomplicated.

CASE 2: a 78-years old woman came to our observation for NSTEMI complicated by acute pulmonary edema requiring mechanical ventilation. She was affected by three-vessel coronary artery disease, severe aortic valvular stenosis, severely depressed left ventricular ejection fraction (LVEF= 35%). She was treated initially with coronary angioplasty of the left anterior descending artery with drug eluting stents. Two days later refractory cardiogenic shock and severe electrical instability developed despite patency of recently implanted stents; an emergency BAV with a 23*45mm CRISTAL balloon was then performed, obtaining immediate significant reduction of aortic peak-to-peak transvalvular pressure gradient (from 53 to 21 mm Hg) and clinical stabilization. She underwent a planned TAVI procedure four days later (COREVALVE 29). A dramatic clinical improvement and an increase of LVEF up to 50% were achieved and the patient was discharged ten days later. In our experience the use of emergency BAV to correct haemodynamic instability and refractory life-threatening valvulopathy-related arrhythmias has been a life-saving short bridge to surgical or transcatheter aortic valve replacement.

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Percutaneous closure of the left atrial appendage: six-year clinical outcome

M Sanchez Martinez,¹ F Marin,¹ J Garcia De Lara,¹
M Quintana Giner,¹ A Mateo Martinez,²
E Pinar Bermudez,¹ G De La Morena Valenzuela¹
and M Valdes-Chavarri¹

¹University Hospital Virgen de la Arrixaca, Department of Cardiology, Murcia, Spain ²Hospital General Universitario Los Arcos del Mar Menor, Department of Cardiology, Murcia, Spain, Murcia, Spain

Background and objectives: Percutaneous left atrial appendage closure (LAAC) has been suggested an alternative in patients with non-valvular atrial fibrillation and contraindications to oral anticoagulation (OAC). The

aim is to describe our experience with this technique, analyzing the results of efficacy and safety and evaluated the clinical course of patients.

Methods: We retrospectively analyzed all cases of percutaneous LAAC that were performed at our center between February 2009 and March 2015. The results of the procedure were analyzed and clinical and echocardiographic follow-up was performed. Bleeding was defined according to the criteria BARC.

Results: A total of 53 consecutive patients underwent LAAC using the Amplatzer device. 77.4% (n:41) were male and mean age was 73.5±9.4 years. Most patients were at cardioembolic high risk (CHADS2 2.8±1 and CHA2DS2VASc 4.0±1.3) associated with high risk of bleeding (HASBLED 3.2±1.1 and ATRIA 4,5±2,4). The main contraindications for OAC were: history of bleeding in 77.4% (n:41), mostly gastrointestinal (41.5%) and neurological (31.7%); poor control of INR 17.1% (n: 9) and other causes in 5.6% (n:3). The duration of procedure was 55.8±30.4 minutes. The echocardiogram showed that left atrial appendage was completely closed or a minimal periprosthetic leak in all cases in which the implant was achieved (98.1%). The success rate of the procedure free of major complications was 90.6%. There was 1 case of perioperative death (1.9%), 5 major complications (9.4%), 1 embolization device, 1 cardiogenic shock periprocedural, 2 cases of cardiac tamponade and 1 moderate-severe pericardial effusion; and 6 minor complications (11.3%), mostly slight pericardial effusion. Mean follow-up was 25.9±20.0 months. Mortality during follow-up was 13.2%, mostly (11.3%) non-cardiac related. 12 patients were readmitted, most of them (58.3%) for bleeding complications. 7 major bleeding (13.2%) were recorded, being the most frequent digestive location (71.4%) and 2 patients suffered ischemic stroke (3.8%).

Conclusions: LAAC is associated with a high success rate and an acceptable rate of complications considering the risk profile of these patients, so that it appears as a useful alternative in reducing cardioembolic events when there is a contraindication for OAC.

Non invasive imaging - Echocardiography, CMR, CT and Nuclear Techniques

P260

Right ventricular function assessment in single lad lesion patients using strain and strain rate imaging

R Gaber¹ and NESREN Kotb¹

¹tanta university hospital, Tanta, Egypt

Background: Strain and strain rate imaging is currently the most popular echocardiographic technique that reveals subclinical myocardial damage, no available data on this imaging method with regard to assessing right ventricular involvement in single LAD lesion.

Aim: To evaluate right ventricular regional functions using strain and strain rate imaging tissue Doppler method in patients with single LAD lesion.

Methods: The patient group was composed of 60 patients who had experienced first anterior myocardial infarction and had undergone successful percutaneous coronary intervention for LAD lesion. Twenty patients were selected for the control group. The right ventricular myocardial samplings were performed in three regions: the basal, mid, and apical segments of the lateral wall. The individual myocardial velocity, strain, and strain rate values of each basal, mid, and apical segment were obtained.

Results: The right ventricular E/E', E/A ratio of the patient group were significantly decreased than in the control group. Isovolumic acceleration time values of the right ventricle in the patient group were significantly lower than those of the control group. In addition, changes in the right ventricular mean strain and strain rate values were significantly lower in patient group than controls.

Conclusion: Right ventricular involvement in LAD lesion patient is significant even after PCI and recanalization of LAD. TDI, strain and strain rate are new, useful imaging techniques for detection of subclinical RV dysfunction in patients with LAD lesion.

Abbreviations:

RV = Right ventricle, TDI = Tissue Doppler imaging, LAD= left anterior descending.

P261

LV noncompaction and LV trabeculation: are these conditions the links in a chain?

O Dzhioeva,¹ V Meshalkina,¹ I Zakharova,¹ O Sertakova,¹ G Rodoman,¹ G Gendlin² and A Melekhov²

¹City hospital 24, cardiology, Moscow, Russian Federation ²Pirogov Russian National Research Medical University, Moscow, Russian Federation

The term “non-compact isolated left ventricular myocardium” (LVNC) is known since 1984. In the last five years have been conducted multiple studies on this issue, the only drawback is that small sample of patients. In 2014, Chinese scientists (Yuan L.) demonstrated evidence of similar genetic abnormalities at HCMP and LVNC, suggesting that a common determinant of data states. In 2012-2015, the studies were carried out to study the excessive trabecular LV. It has been shown that in

most cases, patients with LV trabeculation there is an increase in preload LV ventricular trabecular that non-pathological state and is not associated with LVNC (Gati S.). In our clinic, we studied 2 male patients, 46 and 16 years who had a diagnosis of LVNC verified. Of sonographic criteria in both cases there was the presence of compact and non-compact layers of the myocardium, expressed trabecular from basal to apical segments, localization in the anterolateral and inferolateral segments, penetration of color Doppler flow between trabeculae, decreased ejection fraction, zone violation of local contractility. In the first patient had a daughter echocardiography, the second-father. Both relatives was revealed trabecular LV, mainly in the apical segments, but other criteria LVNC has been received. Both relative had no symptoms of heart failure, thromboembolism and arrhythmias.

Thus, we have 2 patients and their relatives demonstrated a link between trabecular and LVNC. Talk about lack of communication between these states, we believe prematurely and believe it necessary to further research the factors that provoke the formation of LVNC.

Table 1. comparison of parameters of relatives.

parameter	son	father
age	16	45
height (cm)	188	196
weight (kg)	76	105
professional	schoolboy	coach (basketball)
symptoms	complex cardiac arrhythmias	no
EF % (Simpson)	47	69
Trabeculation	mid and apical inferior and inferio-lateral	apical lateral and anterior
local contactive abnormality	mid and inferior segments, septum	no
Diagnosis	LVNC	Athlet s heart

P262

Is aortic valve resistance different in patients with severe aortic stenosis and left ventricular fraction below 40% with low or high gradient?

R Ferreira,¹ S Lazaro Mendes,¹ J Ferreira,¹ R Martins,¹ S Monteiro¹ and M Pego¹

¹University Hospitals of Coimbra, Coimbra, Portugal

Introduction: In the last few years, aortic valve resistance, the quotient of gradient and cardiac output, has been restored

as a method for assessing the severity of aortic stenosis. There are two main reasons for the renewed interest in measuring aortic valve resistance: valve resistance represents a functional index of hemodynamic impairment rather than an anatomic index and aortic valve resistance appears to remain more constant as flow varies than calculated aortic valve area. However, the diagnostic value of valve resistance remains controversial.

Objective: We aimed to compare rest and peak aortic valve resistance between patients with severe aortic stenosis, low gradient and left ventricular ejection fraction (LVEF) < 40% and patients with severe aortic stenosis, high gradient and LVEF < 40%.

Methods: We retrospectively analyzed all patients with severe aortic stenosis (aortic valve area - AVA < 1,0 cm²) with LVEF < 40% that performed a dobutamine stress echocardiography (DSE) between September/2011 and November/2014. Data regarding DSE, invasive hemodynamic, demographic, clinical and blood tests parameters were collected. We used a Mann Whitney U test to compare rest and peak aortic valve resistance between patients with low rest transvalvular gradient (rest mean gradient < 40 mmHg) and patients with high rest transvalvular gradient (rest mean gradient ≥ 40 mmHg).

Results: 14 patients (10 (71,4%) males, mean age 72 years old) with severe aortic stenosis (AVA < 1,0) and LVEF<40% performed a DSE, to assess myocardium viability. 11 patients (78,6%) had a rest low transvalvular gradient (< 40 mmHg) and only 3 (21,4%) patients had a rest high transvalvular gradient (≥ 40 mmHg). Medians of rest aortic valve resistance were significantly different between patients with low gradient (median 193, IQR 169 – 257) and patients with high gradient (median 477, IQR 380) (Mann Whitney U 18,00, p= 0,036). Medians of peak aortic valve resistance were also different between patients with low gradient (median 511, IQR 444 – 622) and patients with high gradient (median 1023, IQR 853) (Mann Whitney U 18,00, p= 0,036).

Conclusion: In our cohort of patients with severe aortic stenosis and LVEF below 40%, rest and peak aortic valve resistance was different between those with low gradient and those with high gradient. As aortic valve resistance can easily be calculated by Doppler echocardiography, it could be important that cardiologists become familiar with this functional index of hemodynamic impairment.

P263

Transesophageal Echocardiography Probe Insertion Time Differences in the Unsedated Patients with Heart Disease Based on Modified Mallampati Classification

J Khongkaew,¹ D Sahasthas,¹ T Potat¹ and P Thammawirat¹

¹*Khon Kaen University, Queen Sirikit Heart Center of the Northeast, Department of Medicine, Khon Kaen, Thailand*

Purpose: To demonstrate differences in successful time of Transesophageal echocardiography (TEE) probe insertion in the unsedated patients with heart disease based on Modified Mallampati Classification (MMC)

Methods: By recording the successful TEE probe insertion time of the 85 unsedated target patients with heart disease, all Thai patients being at least 20-year-old and being performed the TEE by the participant's cardiologists were included.

Results: Out of 86 consecutive patients, only one case was excluded due to mouth opening problem. Within the eligible patient group, majority were male (46, 54 %) with the mean age of 51.2±12.48 and BMI of 23.95 ± 4.72. The mostly presented MMC was class 3 (33, 38.80%). The differences in successful TEE probe insertion time among MMC groups were statistically significant difference (P=0.003). The insertion times (second) in each MMC class were 5.3 ± 1.7, 7.7 ± 2.5, 9.0 ± 3.7 and 10.5± 6.5, respectively.

Conclusions: The successful TEE probe insertion time among MMC groups are statistically significant difference. Compare to other higher MMC classes, the unsedated patient with MMC class 1 has the shortest insertion time while the other three classes have respectively prolong insertion times.

P264

Refractory angina: the efficacy of cardiac shock wave therapy

G Alunni,¹ M Giorgi,¹ E Pelloni,¹ C Calcagnile,¹ L Biava,¹ M Marchetti,¹ A Deberardinis¹ and S Marra¹

¹*Hospital 'Città della Salute e della Scienza di Torino', cardiology, Turin, Italy*

Background: The prognosis and the quality of life in refractory angina (RA) in patients without revascularization options is reduced and conventional medical therapy is frequently inadequate for symptom relief. Experimental data suggest that the use of Extracorporeal shockwave myocardial revascularization (ESMR) may contribute to angiogenesis and improve symptoms. Aim of our study is to determine the efficacy of cardiac shock wave therapy in the management of patients with refractory angina compared to standard therapy.

Methods: We performed a prospective cohort study to examine the efficacy of ESMR in patients with RA despite optimal medical therapy, not suitable for further PCI or CABG. Angina class scores (CCS class score), nitroglycerin consumption and hospitalization rate were compared at baseline and 6 months after ESMR therapy.

Results: We enrolled 72 patients. The treatment was well tolerated; no patient complained for any discomfort, neither any adverse effects were recorded and none of the patients needed to discontinue the therapy secondary to side effects. There were 43 patients in the treatment group and 29 patients in the control group. The mean age of the patients was 70 ± 9.5 years, and clinical features (diabetes, coronary artery bypass graft, percutaneous coronary intervention, baseline CCS class score) were similar in both groups. Clinical follow up demonstrated a significant improvement CCS class score at six months (1.33 ± 0.57 versus 1.92 ± 0.69 ; $p < 0.0002$); a significant improvement NYHA class score (1.23 ± 0.42 versus 1.73 ± 0.59 $p < 0.0001$). Also nitroglycerin consumption (20% versus 44.8%; $P < 0.03$) and hospitalization rate was significantly reduced (13.9% versus 37.9%; $P < 0.03$). The cumulative hospitalization rate at the end of the 1 year follow up was only 13.9%. The SPECT study performed 6 months after the ESMR treatment demonstrated a significant improvement of myocardial perfusion: mean summed stress score (SSS) was reduced from 21.2 ± 10.3 to 14.05 ± 10.05 , with a 33% relative reduction ($p = 0.003$), and mean summed rest score SRS score was reduced from 13.4 ± 9.28 to 9.5 ± 9.48 with a 29% relative reduction ($p = 0.06$). The reductions of SSS and SRS were consistent in all the treated patients.

Conclusions: Our study shows efficacy and safety of ESMR therapy in patients with refractory angina.

P266

Non-invasive strategies for stratification of myocardial ischemia in chest pain unit

M B Rivas,¹ MI Garcia,¹ ET Mesquita,¹ A Volschan,¹ MV Martins,¹ AV Meireles,¹ I Starling,¹ AA Ferreira,¹ M Mariano¹ and T Pacheco¹

¹Hospital Pro Cardiaco, Rio de Janeiro, Brazil

Background: The appropriate assessment of the probability of acute coronary syndromes (ACS) can reduce unnecessary hospitalizations and wrongful discharges. Strategies for non-invasive detection of myocardial ischemia have variations that can influence the cost and the length of hospitalization.

Purpose: To compare the distribution of non-invasive functional stratification methods among patients with distinct ACS probabilities

Methods: This prospective study included 1679 patients consecutively admitted to the chest pain unit with clinical suspicion of ACS. The probability of ACS was

divided into 3 categories: low (Track 3), moderate/high (Track 2) according to clinical and electrocardiographic criteria obtained on admission or off-track (OT) in patients whose medical care was provided by private doctors who were not part of the hospital staff and who did not follow institutional protocols. Patients underwent serial assessment of EKG and troponin I on admission and 6 hours later. The diagnosis of ACS was achieved by ischemia detection in stress tests or presence of significant obstruction in coronary angiography. The stratification methods evaluated were: treadmill test (TT), single-photon emission computerized tomography (SPECT) and stress echocardiography (ECOs). Statistical analysis was performed using student t-test and chi square.

Results: Mean age of patients was 62.3 ± 16.5 with male predominance (58.7%). Track 2 was the most frequent (48.5%) with a diagnosis of ACS in 29.5% of patients. Lower incidence of ACS was detected on Track 3 (2.6%) that analyzed 348 patients. The OT group had 30.4% of patients with 11.2% occurrence of ACS. The most common stratification method performed in the 3 groups was SPECT: in 24.2% of track 2, in 8% of Track 3 and in 6.5% of OT. Considering all the 3 groups, SPECT was also more used than TT (18.4% vs 7.5% vs 0.58%; $p < 0.0001$) and ECOs (10.7% vs 5.8% vs 2.5%; $p < 0.0001$). Functional stratification was not performed in 4.9% of Track 2, in 76.4% of Track 3 and in 79.6% of OT patients.

Conclusion: There are variations in the distribution of stratification methods, with a clear predominance of SPECT, especially in patients with a higher probability of ACS. The largest share of patients who did not undergo functional stratification either had individualized care provided by private doctors or had a low probability of ACS.

Risk Stratification

P267

Risk prediction in patients with acute coronary syndrome: the GRACE and TIMI versus the new revised GRACE version and EPICOR

JL Martins,¹ RAQUEL Ferreira,¹ TIAGO Adrega,¹ JESUS Viana¹ and JOSÉ Santos¹

¹Centro Hospitalar do Baixo Vouga, Cardiology, Aveiro, Portugal

Background: Presently, there are three risk scores (RS) widely accepted for prognosis assessment in acute coronary

syndromes(ACS): TIMI, GRACE(original and revised) and EPICOR score.

Aim: To compare the prognostic value of ACS RS.

Methods and results: We studied 508 consecutive patients admitted to our coronary care unit with ACS(age 67±13; 28% female, 31% ST elevation myocardial infarction(MI)). For each patient, TIMI, GRACE and EPICOR scores were calculated. Their prognostic value was evaluated by the endpoint(EP) of in-hospital(IH), 6 months(M), 12M and 29±15M death and the combined endpoint(CE) of death or MI at 29±15M. Calibration and discrimination of the risk models were evaluated by the Hosmer-Lemeshow(HL) test and with receiver operating characteristic curves. We compared the predictive accuracy of the RS by the DeLong non-parametric test and calculated best cut-off for each RS.

The mean value was used in the predicted mortality given as a range. Except for IH death prediction, IH deaths patients were excluded from the comparison.

IH,6M,12M and 29±15M death were 1.8%; 2.8%; 4.4% and 8.5% respectively. Death or MI at 29±15M was 11.4%.

GRACE revised version (RV) discriminated 137 patients as low risk (<1% IH death) versus(vs) 97 of the original version(OV). No IH deaths occurred in both groups.

EPICOR discriminated 320 as low risk patients (<3% mortality at 12M) vs 125 for GRACE RV. 3 deaths occurred in the EPICOR low risk patients vs 1 death in the GRACE RV.

The predictive accuracy of GRACE RV IH death was better than the OV(area under the curve(AUC) 0.92 vs 0.91 respectively) without significant difference(p=0.5). The best predictive accuracy for death (6, 12 and 29±15M) (AUC 0.88 CI 0.84-0.90; AUC 0.84 CI 0.8-0.87; AUC 0.83 CI 0.80-0.87 respectively) and CE (AUC 0.83 CI 0.79-0.86) was found by EPICOR.

There was no significant difference between EPICOR and GRACE OV (p=0.45) and RV(p=0.26) for 6M death, EPICOR and GRACE RV for 12M death (p=0.33) and EPICOR and GRACE RV for 12M and 36M death at mean follow up of 29±15M(p=0.47; p=0.16 respectively). These results were consistent when considered ST elevation MI and non ST elevation ACS patients.

The discriminatory accuracy of the TIMI was not as good as EPICOR and GRACE. There were significant differences (p<0.001) for all EP of death between TIMI vs EPICOR and TIMI vs GRACE.

Conclusion: EPICOR and GRACE scores are the most useful for prediction morbidity and mortality in patients with ACS.

P268

The HEART score: A powerful tool predicting morbidity and mortality in acute coronary syndrome patients?

JL Martins,¹ RAQUEL Ferreira,¹ TIAGO Adrega,¹ JESUS Viana¹ and JOSÉ Santos¹

¹Centro Hospitalar do Baixo Vouga, Cardiology, Aveiro, Portugal

Background: The HEART Risk Score(HS) was developed to assess the risk of ACS in patients presenting with chest pain in the emergency but its applicability in predicting morbidity and mortality ACS patients is unknown.

Aim: To assess the ability of the HS in predicting morbidity and mortality in ACS.

Methods: We studied 508 consecutive patients admitted to our coronary care unit with ACS (age 67±13; 28% female, 31% ST elevation myocardial infarction(MI)). For each patient the HS was calculated. Their prognostic value was evaluated by the endpoint of in-hospital(IH) death; 6 months(M), 12M and 29±15M death and the combined endpoint of death or MI at 29±15M.

Receiver operating characteristics (ROC) curves were used to test HS as a predictor of the study endpoints.

Results: IH, 6M,12M and 29±15M death were 1.8%, 2.8%, 4.4% and 8.5% respectively. Death or MI at 29±15M was 11.4%.

The area under the curve (AUC) for IH, 6M, 12M and 29±15M death were, respectively AUC 0.58 CI 0.40-0.75; AUC 0.52 CI 0.40-0.64; AUC 0.52 CI 0.42-0.61; AUC 0.56 CI 0.47-0.64 and for the CE was AUC 0.58 CI 0.50-0.66.

Conclusion: The HEART Risk Score showed a weak discriminatory accuracy to predict death and recurrent MI, demonstrated by the C-statistic, and should not be applied in the ACS patients.

P269

Bleeding risk predictors in an elderly acs population treated with pci and bioactive-TiNo stent implantation

D Formigli,¹ RM Bianchi,² S Capobianco,¹ S Prizio,² A Intorcchia,¹ F Moscato,¹ V Franco,¹ M Cappelli Bigazzi,² P Calabro² and M Scherillo¹

¹Gaetano Rummo Hospital, Benevento, Italy ² AO dei Colli-Monaldi Hospital, Naples, Italy

Purpose: Acute coronary syndromes (ACS) treatment is based on antithrombotic agents administration and percutaneous coronary intervention (PCI). European

Guidelines suggest both ischaemic and bleeding risk stratification of ACS population at admission, in order to implement an early invasive strategy. However this task is often skipped, especially in the elderly population, the one that would have the best benefit from it.

Methods: To evaluate in-hospital hemorrhagic events incidence and predictors in an elderly ACS patients population, admitted to our acute cardiac care units and treated with PCI we retrospectively identified 109 elderly patients (≥ 75 years old, median age 81 ± 4.3) between January 2010 and October 2014 that underwent successful PCI with bioactive TiNO stent implantation. Of these, 62% were male ($n=68$) and 38% were female ($n=41$); median weight, height and BMI were respectively 70.9 ± 9.5 Kg, 165 ± 7 cm and 26.18 ± 3.5 Kg/m². Clinical presentation was UA/NSTEMI in 75% of cases and STEMI in 25%; 87% had hypertension, 55% had dyslipidemia, 38% had diabetes; 29% had history of myocardial infarction, 24% showed chronic renal failure, 21% had atrial fibrillation; 20% had history of PCI, 17% took oral anticoagulation therapy and 13% showed stroke in the past. Bleeding events were considered moderate when meeting the BARC classification criteria for type 2 and major when meeting the BARC classification criteria for type 3a, 3b or 5.

Results: 82 patients (75%) showed a GRACE score over 140, 25 patients (23%) showed a CRUSADE score over 50. Moderate or major bleeding events incidence was 23.9% (10 patients BARC 2 - 9.2%; 10 patients BARC 3a - 9.2%; 5 patients BARC 3b - 4.6%; 1 patient BARC 5 - 0.9%). A moderate or major bleeding event was related with longer in-hospital stay (11.42 ± 5.85 vs. 6.89 ± 3.31 days; $p < 0.001$). Moderate or major bleeding events predictors that showed statistical significance were a GRACE score > 140 (OR 5.17; CI 1.13-23.57; $p = 0.02$), a CRUSADE score > 50 (OR 3.37; CI 1.33-8.48; $p = 0.008$) and an history of previous major bleeding (OR 3.26; CI: 1.37-9.50; $p = 0.007$).

Conclusions: Elderly ACS patients population (≥ 75 years old) treated with PCI are increasing in acute cardiac care unit. In this subset of patients, moderate or major bleeding events incidence relates with longer in-hospital stay. Combined use of both GRACE and CRUSADE scores at admission and an history of previous major bleeding allows a better and more accurate identification of these patients.

P270

Differences in clinical presentation of survivors from acute myocardial infarction who died before and after 90 days following discharge from the index MI (analysis from PL-ACS registry)

M Gierlotka,¹ M Hawranek,¹ M Gasior,¹ M Tajstra,¹ L Pyka,¹ A Kazik,¹ D Olszowski,¹ A Lekston,¹ M Zembala¹ and L Polonski¹

¹Silesian Center for Heart Diseases, Medical University of Silesia, 3rd Department of Cardiology, Zabrze, Poland

Significant number of patients discharged home after acute myocardial infarction (AMI) die early in following months. The aim of this analysis was to compare clinical presentation of survivors from AMI who died before and after 90 days following discharge.

Methods: We used the Polish Registry of Acute Coronary Syndromes (PL-ACS) database (for baseline characteristics of AMI patients from year 2009) linked to the database from the only health insurer in Poland (National Health Fund) for follow-up mortality up to 1 year. From 25738 patients with AMI (49% NSTEMI and 51% STEMI), 1688 (6.7%) died during hospitalization. During next 1 year 1894 (8.1%) from 23487 survivors died. We compared patients with early (up to 90th day) to patients with late death (from 91st day to 1 year).

Results (table): After discharge from MI 40% (756 patients) died early and 60% died after 90th day from the index MI. There were no difference between the groups in terms of age, sex and most of the baseline clinical characteristics parameters except for hypertension and prior MI which were significantly less frequent in patients with the early death and cardiogenic shock on admission which were more frequent. Invasive treatment (PCI or CABG) were used in more than 50% of patients in both groups. Left ventricle ejection fraction was slightly lower in patients who died early. Resuscitated cardiac arrest during hospitalization was significantly more frequent in patients with early (4.6%) than with late death (0.9%), $p < 0.0001$. In multivariate analysis in-hospital cardiac arrest was the most powerful predictor of early vs. late death (OR = 5.88, 95%CI = 2.60-13.30, $p < 0.0001$).

Conclusion: Survivors of AMI who had resuscitated cardiac arrest during acute phase of MI had significantly higher probability of early than late death following discharge from the hospital.

Table 1.

	Death from discharge to 90 th day	Death from 91 st day to 1 year	P value
STEMI, %	42.3	38.1	0.068
Prior MI, %	20.8	25.7	0.028
Killip 4 on admission, %	4.4	2.5	0.042
Cardiac arrest during hospitalization, %	4.6	0.9	<0.0001
PCI, %	52.4	55.8	0.19
LVEF $\leq 35\%$, %	40.4	36.7	0.18

P271

Gender difference in risk factors of in-hospital death among patients with myocardial infarction

I A Leonova,¹ N Tretyakova,¹ N Trostyanskaya¹ and S Boldueva¹

¹North-Western State Medical University named I.I. Mechnikov, St-Petersburg, Russian Federation

The study included 1201 patients with myocardial infarction (MI) (816 men and 385 women).

Hospital mortality rate for males was 7.46 %, while for women it was 2.5 times higher - 17.93% (p < 0,001). In the analysis of middle-aged dead attracted attention that for men and women, it was about the same and 69 years (69,59 ± 10,54 years for men and 69,46 ± 9,96 years for women). In analyzing the structure of hospital mortality was found that 24-h mortality in women was 76.9 %, in the group of men - 33,3% (p < 0,01). The most frequent cause of death in both men and women according to autopsy studies had cardiac arrest - 95.65 % in the group of women and 87.50 % men. Noteworthy is that the cause of this type of death in women was 26.08 % of the cases with the development of myocardial rupture and hemotamponade , whereas men at autopsy ruptures were not reported. In men, the second most frequent cause of death was pulmonary thromboembolism - in 12.5% of cases, against 4.35 % in women (p > 0,05). Multivariate regression analysis identified quantitative and qualitative factors affecting mortality in men and women separately. Factors affecting the men's risk of dying in the hospital were age older than 62 years (RR 11.1 p = 0.0001), circular MI/ right ventricular MI (RR 9.8 p = 0.001), stroke history (RR 5.2 p = 0.05), > 2 MI (RR, 3.8 p = 0.0001), VT / VF in the first day of MI (relative risk, 6.6 p = 0, 01), the SA and AV block (RR 3.8 p = 0.05), atrial fibrillation / atrial flutter (RR 8.1 p = 0.005). By the same factors for women were congestive heart failure (RR 17.7 p = 0.0001), VT / VF in the first day of MI (RR 13 p = 0.01), the SA and AV block (RR 8.1 p = 0.05) , creatinin > 117 mmol / l (RR 5.5 p = 0.0005), potassium < 4.15 mmol / l (RR 3.8 p = 0.0005), sodium < 136.5 mmol / l (RR 3.37 p = 0.0001), glucose > 9 mmol / l (RR 3.27 p = 0.003).

Thus, both men and women on mortality are equally influenced rhythm and conduction disturbances. Males also have an impact on mortality were age, number and localization of MI , while women –heart failure, metabolic and electrolyte disorders . In men, the highest predictive value are factors such as age and ventricular arrhythmias in the acute period, for women as such factors are acute heart failure and rhythm and conduction disturbances.

P272

The carriage of the G allele at position 319 of the gene ABCA1 in women with coronary artery disease in young and middle-aged can prevent myocardial infarction

I A Leonova,¹ V Feoktistova,¹ O Sirotkina,¹ S Boldueva,¹ T Vavilova¹ and L Gaykovaya¹

¹North-Western State Medical University named I.I. Mechnikov, St-Petersburg, Russian Federation

In recent decades, the incidence of coronary heart disease (CHD) has been increase among young and middle-aged women. The important role in the development of coronary atherosclerosis is given to a breach of from peripheral tissues to the liver of high-density lipoproteins. The main protein of reverse cholesterol transport is ATP - binding cassette transporter A1 (ABCA1). Currently, a large number of known polymorphic markers ABCA1 gene, but its role in the development and course of coronary heart disease in young and middle age is still not clear.

Objective: To study the distribution of genotype frequencies of polymorphisms ins319, C69T gene reverse cholesterol transporter ABCA1 in young and middle-aged with coronary artery disease (CAD) and study the influence of genetic markers for the disease.

Materials and Methods: The study of the distribution of allelic variants ins319, C69T gene reverse cholesterol transporter ABCA1 performed by PCR followed by restriction analysis in 121 women (52,1 ± 6,0 years) with CAD and coronary angiography verified coronary atherosclerosis (stenosis of more than 70 vessels %), 99 of them - with myocardial infarction (MI) and a history of 22 - without MI.

Results: In the group of women with MI revealed the following distribution of genotype frequencies of the polymorphism S69T gene ABCA1 - 37%, 47% and 16% in the group without MI - 36%, 50% and 14% for the SS, ST and TT, respectively. No significant differences in the groups studied were found. For ABCA1 gene polymorphism ins319 genotype distribution in MI group was as follows - 78%, 21%, 1%, in women without MI - 56%, 44%, 0% to NN, GN, GG, respectively. Found a statistically significant increase in the frequency of the mutant allele G in the hetero- and homozygous gene ABCA1 in the group of women with CAD and without a history of MI (p = 0.03).

Conclusions: The carriage of the G allele at position 319 of the gene ABCA1 in women with CAD in young and middle-aged stands protective factor in relation to the development of MI.

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Risk factors and in-hospital clinical course of acute myocardial infarction in women of durres district

E Zera,¹ FV Flavia Duma¹ and ML Mimoza Lezha²

¹Regional hospital of durres, Durres, Albania ²University Hospital Center Mother Theresa, Cardiology, Tirana, Albania

Background: Acute myocardial infarction is the main cause of mortality and morbidity both in men and women (30% of all deaths).The some studies emphasize that the evolution, complications and mortality in myocardial infarction in women are more severe.

Aim: To observe clinical, investigational and therapeutic aspects in women with acute myocardial infarction (AMI) versus men with the same pathology, hospitalized in the same period in cardiology department.

Method.390 pts consecutive men and women with AMI presented in the Cardiology, Regional Hospital between September 2012 to September 2014 were included in the study. Demographic, diagnostic,therapeutic,and clinical data were collected from hospital medical records. Gender differences were assessed by the chi-square test for categorical variables and by Student's t-test for continuous variables.Value $P \leq 0.05$ was considered significant.

Results: Of 390 pts,122 were women(W) and 268 were men(M). Of them 73% were hypertensive, 31% diabetes, 55.6% smokers, 41%, positive family history and 27% with dyslipidemia.The women were significantly older than the men (72 ± 8.7 vs 63 ± 11) $p < 0.001$. A significantly higher proportion of women compared to men had a history of diabetes (34.4% vs.29.4%), hypertension (82% vs 68%), obesity (54% vs 50%),high level of trygliceride (14.7% vs 7%), previous vascular accident (7.3%vs 4,4%), but a lower percentage had a history of smoking(16.3%vs 73.5%), previous MI (5.7% vs 10.8%), revascularization procedure (25.0% vs 41.0%). The women more frequently had an AMI of anterior localization (46.1%vs 36.1%), had a significantly higher Killip class at admission (Killip IV;18.4% vs 10.9%), cardiogenic shock (4.9% vs 1.8%),Ventricular Fibrillation (5.7%vs 4.1%). A higher proportion of women had ≥ 3 risk factors(27% vs 18%).The w received almost the same pharmacological treatment like men but were less likely to undergo invasive procedure,even after correcting for age (OR,1.27;95% CI,0.58-2.57; $P=0.05$). Women less frequently had chance to undergoing PCI or surgery revascularization compared with men. Mortality were higher in women than men(13.1%vs 5.5%). $P < 0.05$

Conclusions: Women with AMI were older than men and had higher incidence of hypertension, diabetes

mellitus, obesity and high level of trygliceride. Women less frequently received coronary angiography, PCI, revascularization surgery compared with men but receive already the same pharmacological treatment like them. Women have more complications and a worse prognosis, higher mortality, largely as a function of clinical factors.

P274

Impact of smoking on the in hospital outcomes in patients with acute myocardial infarction in durres population

E Zera,¹ SV Sonela Xinxo² and ML Mimoza Lezha³

¹Regional hospital of durres, Durres, Albania ²University Hospital Center Mother Theresa, Institution of public health , Tirana, Albania ³University Hospital Center Mother Theresa, Cardiology, Tirana, Albania

Background: Smoking is a coronary risk factor that enhance acute myocardial infarction (AMI) probability, but some international surveys showed that smokers with AMI have lower mortality. Although the impact of smoking on the risk of AMI has been investigated,its impact on the clinical outcomes is still controversial.

Aim: To evaluate the impact of smoking on hospital outcome in men and women with AMI in Durres population.

Methods: 420 pts with AMI admitted in cardiology October 2012 to October 2014 were included in the study. The baseline characteristics,traditional risk factors for CHD and in-hospital outcome were recorded. Statistical analyses were performed with SPSS 16.0.Continuous variables were expressed as mean \pm standard deviation.Student t test was used to compare continuous variables and categorical variables were compared using Anova test. To determine the influence of various factors on mortality a logistic regression analysis was performed. The odds ratios (OR) and 95% confidence intervals (CI)were also calculated. A P value of <0.05 was considered statistically significant.

Results: Of420pts,291 were male,129 were women.Ofthem 230 were smokers and 190 nonsmokers (54,7vs45.3%, $P < 0.05$).The women were significantly older than the men (72 ± 5.9 vs 62 ± 7.5) $P < 0.05$.The proportion of male smokers was significantly higher than that of women (71%vs 17.8%, $P < 0.05$). Male smokers were younger five years than nonsmokers(61 ± 3.8 vs 66 ± 07) $P < 0.05$).Female smokers were younger than nonsmokers (72 ± 4.3 vs 73 ± 3.0) but the difference is no significant.In both genders, prevalence of hypertension and diabetes mellitus was lower in smokers than in nonsmokers ($P < 0.05$),prevalence of family history was higher in smokers, no significant difference was observed in lipid parameters,left ventricular ejection fraction and in hospital stay in smokers compared

to nonsmokers. In both genders, anterior MI localization and ≥ 2 Killip class was lower in smokers group $P < 0.05$. Single-vessel disease was more frequently observed in smokers 17.3% vs 14.3%, whereas multivessel disease was more common in nonsmokers (12.1% vs 6.9%). Pulmonary edema, cardiogenic shock were lower in smokers but AV block 3.7% vs 7.8% $p < 0.05$ and VT 0% vs 1.7% $p < 0.05$ were higher in this group. In-hospital mortality was lower in smokers 6.5% vs 15.3%, but smoking status was not an independent predictor of mortality.

Conclusions: Smoking decreased the age of first AMI and was not an independent predictor of mortality. Smokers were younger, had less hypertension and diabetes, had more single vessel disease, less anterior IM, Killip class and had lower mortality rate.

P275

Prognostic value of the ST-segment deviation score in patients with suspected acute myocardial infarction

K Grimm,¹ R Twerenbold,² K Wildi,³ C Puelacher,¹
T Nestelberger,¹ J Boeddinghaus,¹ M Rubini Gimenez,³
T Reichlin,³ R Aباacherli⁴ and C Mueller²

¹University Hospital Basel, Clinical Research Cardiology, Basel, Switzerland

²University Hospital Basel, Department of Cardiology, Basel, Switzerland

³University Hospital Basel, Basel, Switzerland ⁴Schiller AG, Baar, Switzerland

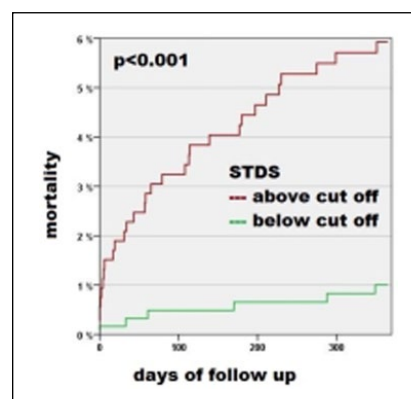
Purpose: ST-segment deviation score (STDS), a summation of all ST-segment deviations from baseline in a standard 12-lead ECG, has shown to correlate with mortality in patients with acute coronary syndrome. However, it is unknown whether these findings can be generalized to the clinical important setting of unselected patients presenting with acute chest pain, in which the early and reliable detection of patients at higher risk still presents an unmet clinical need.

Methods: In this prospective study ECGs of 1155 patients presenting with symptoms of chest pain to the ED were assessed and the STDS, which was defined as the sum of absolute deviations in mm (1mm=0.1mV) from baseline in the ST-segment in all 12 ECG leads, was determined. Patients with left ventricular hypertrophy, all kind of intraventricular blocks, pacemaker or no digital ECG available were excluded. The endpoints were all-cause mortality within 30 and 365 days.

Results: 11 patients (1%) died within 30 days and 36 patients (3.1%) within 365 days. The optimal cut-off value for STDS for the prediction of death during follow up as determined using the approach of Youden was 3.6mm. Patients with a STDS above cut-off had a six-fold risk for death (figure; $p < 0.001$). Multivariate Cox regression analysis showed that the STDS adjusted for covariates like

cardiovascular risk factors, age and high-sensitivity cardiac Troponin T levels remained a strong independent predictor of death in the ensuing year (HR 1.18, $p < 0.001$).

Conclusions: The ST-segment deviation score, easily determined, helps to detect patients at higher risk of death as patients with elevated STDS have a 6-fold risk of death in the ensuing year compared to patients with STDS below cut-off.



mortality depending on STDS.

P276

Usefulness of a metabolic score in risk stratification of patients with acute coronary syndrome.

A T Timoteo,¹ T P Silva,¹ A V Monteiro,¹ P P Teixeira,¹
R Carvalho,¹ M L Ferreira¹ and R C Ferreira¹

¹Hospital Santa Marta, CHLC, Lisbon, Portugal

Background: Metabolic syndrome (MS) is an aggregation of several risk factors related to metabolic disturbances associated with obesity and insulin resistance. Several epidemiological studies demonstrated the association between MS and cardiovascular event in mid- and long-term follow-up in the general population. We sought to develop a metabolic score in the context of acute coronary syndromes (ACS) with the variables usually included in the MS definition and to evaluate its predictive ability for mid-term all-cause mortality.

Methods: We studied patients admitted with an ACS at a single-centre coronary care unit and included in a ACS registry. We evaluated the occurrence of all-cause mortality at one-year follow-up. A point was given to each marker on admission: previous hypertension, obesity (BMI > 30 Kg/m²), increased triglycerides (> 150 mg/dl), low HDL-cholesterol (< 40 mg/dl in males and < 50 mg/dl in females) and increased blood glucose (≥ 148 mg/dl – cut-off obtained

by ROC curve analysis), creating three groups (sum 0, sum 1-2, sum 3-5) for Kaplan-Meier survival analysis. Thereafter, these variables were entered in a multivariate logistic regression model (using continuous variables as continuous) that was used for the development of a metabolic risk score. The regression coefficient of each variable was used to determine the score for each variable.

Results: We included in the analysis 2336 patients, with a mean age of 63 ± 13 years, 72% males, 64.8% with ST-segment elevation myocardial infarction. One-year mortality was 8.2%. In the comparison of the three initial groups, there is a progressive increase of mortality with time according to the increase in risk markers sum (Log-rank, $p=0.0002$). The metabolic score developed from the logistic regression model showed a reasonable predictive ability (AUC 0.701, 95% CI 0.665 – 0.738), with similar predictive capacity in ST-elevation ACS (AUC: 0.704, 95% CI 0.659 – 0.750) and non-ST ACS (AUC 0.696, 95% CI 0.632-0.759).

Conclusions: The metabolic risk score, although not as effective as GRACE risk score, allows a reasonable stratification for mid-term all-cause mortality in patients with ACS, and similar to the one described for TIMI risk score. It will be interesting to study if its association to other risk stratification scores can improve their predictive ability.

ST-elevation myocardial infarction - ACS

P277

The role of psychosomatic factors and hypodynamia in the development of acute myocardial infarction in middle and old age men and women

I Zheltova¹ and IA Sukmanova¹

¹Altay Regional Cardiology Centre, Cardiology department for patients with acute myocardial infarction, Barnaul, Russian Federation

The topicality of the research: It is known that physical inactivity and psychosomatic risk factors are leading in the development of CHD.

The goal of the research: To evaluate the influence of psychosomatic factors and hypodynamia in the development of MI in men and women of middle and elderly age.

Materials and Methods: 188 patients of middle and elderly age with MI were surveyed, aged $60,8 \pm 0,6$ years, divided into 4 groups. The first group included 66 (35,1%) middle-aged men, aged ($53,9 \pm 0,5$ years), the second group included 46 (24,5%) elderly men aged ($66,2 \pm 0,7$ years), the third included 44 (23,4%) elderly women aged ($69,8 \pm 0,7$ years), the fourth included 32 (17%) middle-aged women aged ($54,7 \pm 0,9$ years). The control group included 74

patients (38 men and 36 women) with no established CHD. All patients were examined not only with laboratory and instrumental methods of diagnosis, but also their level of hypodynamia, depression and anxiety.

Results: Reduced levels of physical activity were diagnosed in 40 (60.6%) middle-aged men and in 36 (78,3%) elderly men, $p=0,07$. Hypodynamia was diagnosed in 24 (75%) patients of middle age and in 35 (79,5%) elderly women, $p=0,8$, among the women surveyed. Depression was diagnosed in 5 (7,6%) patients among the middle-aged men, in 8 (17,4%) patients among the elderly men, $p=0,19$. In groups of women depression was diagnosed in 5 (16,5%) and in 19 (43,2%) patients of middle and elderly age, respectively, $p=0,02$, which indicates an increase in the age-related incidence of depressive disorders associated with cognitive decline as well as the significant impact of depression on AMI development in the female population, especially in the elderly. Increased level of anxiety while testing was diagnosed in 13 (19,7%) middle-aged men and in 6 (13%) elderly men, $p=0,5$. Among the women surveyed increased level of anxiety was diagnosed in 13 (40,6%) and 7 (15,9%) patients of middle and elderly age, respectively, $p=0,03$, referring to the greater frequency of anxiety disorders occurrence in middle aged patients and the important effect of increased level of anxiety in a group of middle-aged women.

Conclusions: Thus, using logistic regression it was proved that a decrease in physical activity and psychosomatic risk factors are predictors of MI development in the surveyed groups of patients. It was determined that hypodynamia is more important than psychosomatic risk factors for men, regardless of age. It was revealed that an increased level of anxiety has greater significance for middle-aged women in the development of MI, and for elderly patients - depressive disorders.

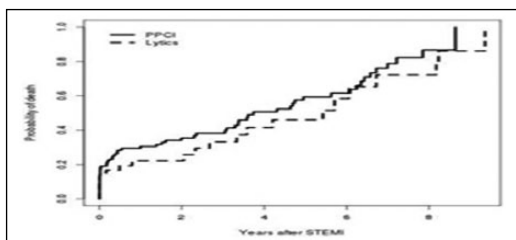
P278

Thrombolysis of selected elderly patients with STEMI who present early to a non-PCI capable hospital is non-inferior for survival to transfer PCI

J G Murphy,¹ RS Wright,¹ GW Barsness,¹ J Herrmann,¹ RJ Lennon,¹ JL Holmen¹ and GS Sandhu¹

¹Mayo Clinic, Division of Cardiovascular Diseases and Internal Medicine, Rochester, United States of America

The optimal treatment for ST elevation myocardial infarction (STEMI) in very elderly patients (≥ 80 years), who present at a non PCI capable community hospital is unknown; randomized controlled trials to date have not adequately evaluated this issue.



Thrombolysis vs transfer PCI in Elderly.

We tested the hypothesis that a strategy of thrombolysis for patients who presented at non PCI capable hospitals within 3 hours of symptom onset would be effective. We report outcomes using thrombolysis for those who presented ≤ 3 hours from symptom onset and transfer for PCI for those who presented >3 hours or had contraindications to thrombolysis.

Methods: Our study was a non-randomized, 9 year actuarial survival study of 155 very elderly (≥ 80 years) patients with STEMI who presented to non-PCI capable community hospitals.

Results: There was no significant difference in age, gender mix, body mass index, systolic and diastolic blood pressure or heart rate between the treatment groups. Median door to device time for the transfer PCI group was 143 minutes while median door to needle time was 30 minutes for the thrombolysis group. The incidence of stroke was significantly higher in the thrombolytic group 4 (10%) versus 1 (1%); $P = 0.008$, including hemorrhagic stroke 2 (5%) versus 0 (0%); $p = 0.21$. The actuarial death rate was statistically similar in both treatment groups at 1,3, 5 years was 30.5 %, 38.3%, 59.3% for the delayed PCI group versus 22.2%, 33.2% 46.0% for the thrombolysis group; $P = \text{NS}$. The hazard ratio for survival suggested similar long-term outcomes HR 0.745 (95% CI 0.45, 1.24; $p=0.25$).

Conclusion: These data suggest that a strategy of thrombolysis for patients who present within 3 hours of symptom onset was not associated with excess mortality compared to a strategy of delayed perfusion with PCI for those who present after 3 hours.

P279

Audit of STEMI management and outcomes in patients aged over 85 years

A Wood¹

¹Glenfield Hospital, Cardiology, Leicester, United Kingdom

Patients presenting with STEMI are increasingly likely to be over 85 with multiple co-morbidities. There is a perception that outcomes are worse after PPCI in these patients, and that they may also be less likely to receive effective treatments.

Audit aims were to look at outcomes post STEMI and at whether we are treating elderly STEMI patients as effectively as we do younger patients

Methods: Retrospective audit of a single centre from 2007 to 2013, using data from the MINAP and BCIS databases, comparing patients above and below age 85. Review of case notes for a subgroup of patients. All patients with a diagnosis of STEMI included.

Results: 212 patients over 85 and 2540 under 85 identified; mean age 88.7 (SD 3.1) for elderly and 62.1 (SD 12.3) for younger patients. Elderly patients less likely to receive reperfusion therapy; 61% of elderly were reperfused versus 70% of younger patients. Older patients much less likely to receive drug eluting stents (33% versus 75%). Door to reperfusion time similar (median 52.5, IQR 39.75-79.24 in the elderly; v. median 47.5, IQR 29-76), and call to reperfusion times also similar. Length of stay longer in the elderly (median 6 days, IQR 3-13 v. median 3 days, IQR 2-6 days). Survival to discharge lower in the elderly (71% of the total cohort compared to 89% of the younger patients, including those not revascularised; of those elderly patients who had PPCI 84% survived to discharge). 78% of the elderly were living in their own homes prior to the MI, and 76% returned to own home; there was a small increase in the number requiring nursing home care. 91% of the elderly walking independently prior to admission versus 84% on discharge. 30% had cognitive impairment or confusion pre MI versus 40% post MI.

Conclusions: This data covers a period of changing practice, from the thrombolysis to the PPCI era, and from bare metal to drug eluting stents. Over that time period however it appears that elderly patients are less likely to have reperfusion therapy and less likely to receive drug eluting stents. Length of stay is longer and survival is lower than with younger patients, however of those who survive, most go back to their prior level of independence.

This audit supports current practice of performing PPCI in elderly patients with STEMI unless they present too late or are extremely frail. We should explore whether increased length of stay for the elderly is because of medical or social issues; if due to medical complexity, this may need to be reflected in the tariff for STEMI in the elderly so that hospitals are not financially penalised for treating these patients.

P280

Blood glucose control in ACS patients treated with Vildagliptin vs. standard treatment Idit Dobrecky-Mery, Adir Somer, Zaid Gassan, Ghanayim Mustafa, Uri Rosenschein Cardiology department, Bnai-Z

I Dobrecky-Mery,¹ G Zaid,¹ M Ghanayim¹ and U Rosenschein¹

¹Bnai Zion Medical Center, Cardiology departement, Bnai-zion hospital, Haifa, Israel

Background: Mortality in diabetic patients with ACS is 2-3 times higher than in non-diabetics. Hyperglycemia adds to an already-poor prognosis. Vildagliptin, an oral anti-diabetic drug of the DPP4 inhibitor class, prevents breakdown of endogenous GLP1 and has been shown to reduce hyperglycemia in T2DM.

Objective: We studied Vildagliptin for improved glucose levels control and clinical outcome of ACS in diabetics.

Methods: 58 T2DM adult patients naïve to DPP4 Inhibitors were enrolled when admitted to ICCU with ACS diagnosis. Metformin was discontinued during hospitalization and patients divided into two groups in a randomized controlled manner. Control group received SC Insulin injections to control blood glucose values below 140 mg/dl or 180 mg/dl postprandial. Study group received SC Insulin and Vildagliptin with the same target. GFR > 50 ml/min patients received Vildagliptin 50mg x 2/day; GFR < 50 ml/min received 1/day. Blood glucose values, measured every 4 hours, were corrected with SC Insulin.

Data was documented for each measuring, mean glucose values per hospitalization day, insulin values given for correction (I.U.s) and any hypoglycemic events. Power analysis showed power 70% and effect size 0.35 for current sample size.

Results: Preliminary tendencies depict lower mean±SD glucose levels during hospitalization in study group than controls, 159.40±30.87 mg/dl vs. 172.2±40.8 mg/dl respectively. Two severe hypoglycemia (Glucose < 40mg/dl) documented in the Insulin arm translates to 7.41% vs. 0% probability of hypoglycemic event in control vs. study group.

Conclusions: In T2DM patients hospitalized for ACS, addition of Vildagliptin showed lower mean blood glucose values than in patients receiving only insulin. Lower dosage of insulin (I.U.s) was needed for correction of blood glucose values among study group patients, as compared to controls. These lower glucose values were achieved with no hypoglycemia using Vildagliptin and may address the unmet need in T2DM ACS patients.

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Renal safety among ACS patients under treatment with Galvus (Vildagliptin)

I Dobrecky-Mery,¹ A Somer,¹ M Hammoud,¹ E Radizishevsky,¹ E Rivlin,¹ N Goldberg¹ and U Rosenschein¹

¹Bnai Zion Medical Center, Cardiology departement, Bnai-zion hospital, Haifa, Israel

Objective: Assessing the feasibility of DPP4-I as glucose lowering treatment for type 2 DM patients during ACS while monitoring kidney function tests

Methods: 58 T2DM Patients older than 18 years were enrolled when admitted to the ICCU with the diagnosis of ACS. pregnant patients and patients with previous exposure to DPP4 Inhibitors were excluded.

Metformin was discontinued during hospitalization and patients were randomly divided into two groups– patients in control group received SC Insulin injections to achieve fasting blood glucose values below 140 mg/dl or 180 mg/dl postprandial. Patients in the treatment group received both SC Insulin and Vildagliptin 50 mg BID with the same blood glucose values target.

During hospitalization, Creatinine values were measured and GFR (MDRD equation) was calculated: on admission (before undergoing cardiac catheterization), at discharge and after the first follow-up meeting -30 days after discharge.

Repeated measure test was done to calculate the difference between groups in GFR value changes between admission and discharge,.

Results: The tests showed that the groups differ in their change between admission and discharge GFR levels (F(1,46)=3.16, p=0.08): The control arm (Insulin only) showed marginal significant decline (t(22)=1.94, p=0.06) in GFR values from admission (M=77.60, SD=30.56) to discharge (M=70.98, SD=23.85), this marginal significant result will hopefully turn into a significant one with few additional patients. In comparison, the Vildagliptin arm didn't show significant change (t(24)=0.53, p=0.60) in GFR values from admission (M=69.72, SD=20.67) to discharge (M=71.40, SD=27.35).

Conclusion: Administration of Vildagliptin during hospitalization to T2DM patients presenting with Acute Coronary Syndrome even in proximity with cardiac catheterization, does not impair kidney function and does not lead to Acute Renal Failure (ARF).

P282

Radial versus femoral approach in diabetic patients with ST elevation myocardial infarction submitted to primary angioplasty: data from a national registry

MA Nogueira,¹ AT Timoteo,¹ SA Rosa¹ and R Cruz Ferreira¹

¹Hospital Santa Marta, Department of Cardiology, Lisbon, Portugal

Background: There are several studies pointing out the existence of clinical benefits regarding the radial approach (versus femoral) in patients (pts) with acute coronary syndrome (ACS). In a small study, it has been documented a lower mortality rate as well as a lower number of MACE (Major Adverse Cardiac Events) in diabetic pts with ST elevation myocardial infarction (STEMI) submitted to primary angioplasty using transradial access.

Purpose: Analyse in a population included on a national registry of ACS if the diabetic pts with STEMI have a lower rate of complications, cardiovascular events and mortality using a radial approach for primary angioplasty versus a femoral approach.

Methods: We evaluated demographic, baseline clinical characteristics and treatment of diabetic pts admitted with a STEMI and submitted to primary angioplasty. Primary outcome: Combined endpoint of death, MI, ischemic stroke and major hemorrhage according to GUSTO (Global Use of Strategies to Open Occluded Arteries) criteria both in-hospital and after 1 year. Secondary outcomes: death, MI, ischemic stroke and major hemorrhage. Logistic regression analysis was performed to identify mortality predictors.

Results: From the total number of 699 pts included in the analysis, in 64.2% (449 pts = Group I) the radial approach had been used versus 35.8% (250 pts = Group II) for the femoral approach. Regarding demographic and clinical characteristics both groups were similar. In univariate analysis, group I was associated with a lower mortality at 1 year (including in-hospital death), comparing to group II (HR = 0.48; CI 95% 0.29-0.78; p=0.003). This result was confirmed in multivariate analysis for the identification of independent predictors (HR radial approach = 0.40; CI 95% 0.17-0.96; p = 0.041). Regarding other outcomes, the radial approach did not show superiority comparing to femoral access.

Conclusions: In diabetic patients with ST segment elevation submitted to primary angioplasty, the radial approach was strictly associated with a lower mortality comparing to the femoral approach, corroborating the advantage in using the former approach in this clinical scenario.

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Chronic kidney disease: does it change acute myocardial infarction clinical presentation?

M Madeira,¹ F Caetano,¹ I Almeida,¹ M Costa¹ and L Goncalves¹

¹Hospital and University Center of Coimbra; Faculty of Medicine, University of Coimbra, Department of Cardiology, Coimbra, Portugal

Purpose: Painless acute myocardial infarction (AMI) leads to late admission and diagnosis, with a negative impact on prognosis. Chronic kidney disease (CKD) increases cardiovascular risk and is associated with silent ischemia. It is not yet defined whether CKD influences AMI clinical presentation. Our aim was to determine if CKD and its severity influence AMI presentation (chest pain vs painless); and to evaluate its impact on in-hospital and follow-up (FU) prognosis.

Methods: 2750 patients (P; 63% male; 72±10 years) included in a national multicenter register of AMI were divided according to clinical presentation (CP-G: chest pain; NCP-G: no chest pain). Clinical variables, therapeutic strategies and in-hospital mortality were compared. FU concerning mortality and cardiovascular hospitalization was done.

Results: 12% of P had an atypical presentation, being dyspnoea the most common symptom (48%). Those P were older (72±11vs74±10, p<0.01), with higher diabetes mellitus incidence (40%vs49%, p<0.01); no differences on gender were found. Glomerular filtration rate (GFR; mL/min/1.73m²) was lower on NCP-G (67±31vs55±27, p<0.01); and the incidence of atypical symptoms increased with the degree of kidney dysfunction (GFR<30: 18% vs 30 ≤ GFR<60: 15% vs GFR ≥ 60: 8%, p<0.01). 9% of P with STEMI and 13% of P with NSTEMI had atypical presentation. The time between the onset of symptoms and hospital admission doubled in NCP-G (600 vs 1160minutes, p<0.01). In STEMI P the time between first medical contact and reperfusion therapy was also increased (120 vs 170minutes, p<0.01). NCP-G had higher Killip-Kimbal class (KK ≥ II: 18%vs58%, p<0.01), lower left ventricle ejection fraction (51±13%vs46±12%, p<0.01); more severe coronary artery disease (3 vessel: 29%vs34%, p=0.03) and were less treated with coronary revascularization (88%vs66%, p<0.01). This group also had more complications during hospitalization: cardiogenic shock (5%vs13%, p <0.01), dysrhythmia (6%vs14%, p<0.01), cardiac arrest (3%vs7%, p<0.01), major bleeding (2%vs6%, p<0.01) and mortality (4%vs9%, p<0.01). At first year of FU, there were no differences in mortality, but there was a trend to more cardiovascular hospitalization in NCP-G (14%vs21%, p=0.057). In multivariate analysis,

CKD remained as an independent predictor of atypical presentation (OR=1.9, $p<0.01$), pairing diabetes (OR=1.5, $p<0.01$) and age (OR=1.0, $p<0.01$).

Conclusion: CKD, namely the more advanced stages, should come as a red-flag in P with atypical symptoms. The delay in hospital admission and in the start of appropriate therapy might lead to a worse prognosis in this population.

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Prognostic value of body mass index in patients with st-segment elevation myocardial infarction. is the obesity paradox real?

M T Lopez Lluva,¹ A Jurado Roman,¹ F Lozano Ruiz Poveda,¹ I Sanchez Perez,¹ V Hernandez Jimenez,¹ M Marina Breyse,¹ N Pinilla Echeverri¹ and A Moreno Arciniegas¹

¹Hospital General Universitario de Ciudad Real, Ciudad Real, Spain

Background: Despite the increased risk of developing coronary artery disease associated with obesity, recent studies in patients with acute myocardial infarction have suggested that obesity may exert protective effects (the “obesity paradox”). Our objective was to evaluate the cardiovascular mortality rate at one-year follow-up in patients with ST-segment elevation myocardial infarction (STEMI) regarding to their body mass index (BMI).

Methods: 189 consecutive patients (mean age 62 years, 78.8 % men) with STEMI, undergoing primary percutaneous coronary intervention (PCI), who were admitted to our University Hospital from September 2012 to December 2013, were prospectively included. Patients were divided in three groups according to their BMI: 1. Normal weight (NW) (<25 kg/m²) (n = 35), 2. Overweight (OW) (25-29.9 kg/m²) (n=96) and 3. Obese (OB) (≥ 30 kg/m²) (n = 54). Demographics, clinical and biochemistry data, left ventricular function and angiographic data were assessed in every patient.

Results: The mean BMI was 27.81 ± 3.8 kg/m² in men and 28.9 ± 3.8 kg/m² in women. Obese patients had a higher frequency of chronic kidney disease (NW 0%, OW 1.1 % and OB 2.7%, $p = 0.037$). A trend was observed in overweight patients to be female (NW: 2.7%, OW 9.7% and OB 9.2 %, $p = 0.09$) and hypertensive (NW 6%, OW 23,9% and OB

18.5%, $p = 0.08$). No statistically significant difference ($p=0,11$) in mortality rate was observed between the three groups: NW 1.6%, OW 1.1% and OB 2.7%. On multivariate analysis, BMI was not associated with mortality (odds ratio (OR) 1.01 (95% CI 0.81 to 1.27)). Independent risk factors

for mortality were: age (OR 1.2 (95% CI 1.03 to 1.22), $p=0.01$), Killip class IV at admission (OR 23.3 (95% CI 3,25 to 166,62), $p=0.002$) and severe systolic dysfunction (OR 17.38 (95 % CI 2,80 to 108.08), $p=0.02$).

Conclusions: Obesity is highly prevalent in STEMI patients, particularly among women. No difference was observed in one-year survival according to BMI in patients with STEMI after successful PCI

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Effect of pre-hospital identification of STEMI diagnosis by ambulance system on time lines of STEMI care in primary PCI hospitals

H Schuehlen,¹ B Maier,² W Rutsch,² M Stockburger,³ S Behrens,⁴ G Plock,⁵ S Poloczek,⁵ R Schoeller⁶ and H Theres⁷

¹Vivantes Auguste-Viktoria Klinikum, Klinik für Innere Medizin - Kardiologie, Diabetologie und konservative Intensivmedizin, Berlin, Germany ²Berlin Myocardial Infarction Registry at TU Berlin, Berlin, Germany ³Havelland-Kliniken, Nauen, Germany ⁴Vivantes Humboldt Klinikum, Berlin, Germany ⁵Fire Department, Berlin, Germany ⁶DRK Kliniken Berlin | Westend, Berlin, Germany ⁷Charite - Campus Mitte (CCM), Berlin, Germany

Background: Optimal interaction of primary care services is pivotal for timely care of STEMI patients (pts). In physicians-escorted emergency medical systems (EMS), a clear pre-hospital identification of a STEMI by ECG could anticipate speedy in-hospital care. The goal of our First Medical Contact (FMC) initiative of our Registry was to evaluate primary care logistics of STEMI pts with FMC by the physicians-escorted EMS in our town.

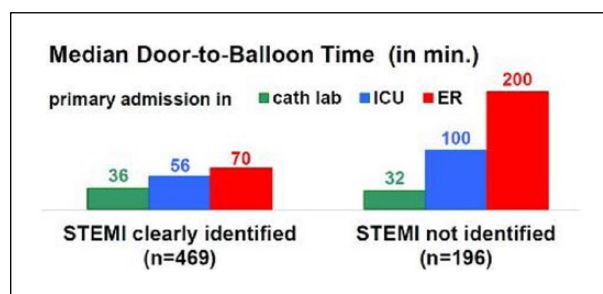
Methods: Our Registry has prospectively analyzed data on primary care of pts with myocardial infarction since 1999. For the FMC initiative, all Registry pts of 2012 with FMC by a physician-escorted EMS were re-assessed for detailed time lines (time of emergency call, ECG, diagnosis etc.). All pre-hospital ECGs were re-analyzed according to ESC guidelines. This identified 756 pts with a definite STEMI by pre-hospital ECG.

Results: In 472 of these 756 pts (62.4%) with definite STEMI by pre-hospital ECG, STEMI was clearly noted as diagnosis in the EMS protocol; in 85 pts (11.2%) ventricular fibrillation was noted, in 199 (26.3%) STEMI was not identified (protocol denotes NSTEMI or similar, arrhythmias, or no diagnosis).

Time delays in all 756 pts (median + IQR) were, symptom onset – FMC, 59 min (26;154); FMC – door, 35 min (27;45); door – balloon, 68 min (44;113). FMC - door was similar in different subgroups. Door-to-balloon times were shortest in pts transferred directly to the cath lab, and

longest in pts. brought to the ER. These differences were substantial in pts without pre-hospital identification of STEMI (see figure).

This analysis suggests that a clear pre-hospital STEMI identification anticipates speedy care for primary PCI. Strengthening ECG competence in EMS may be an effective way to improve quality of care.



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Pre-hospital and hospital delay in patients with acute ST elevation myocardial infarction in a tertiary care center

G Youssef,¹ HS Al Taaban,¹ HH Kassem,¹ HH Rizk¹ and OA Ameen²

¹Cairo University Hospitals, CardioVascular Department, Cairo, Egypt ²Beni-Suef University Hospital, Cardiology, Beni-Suef, Egypt

Purpose: Time is crucial in the management of acute ST elevation myocardial infarction (STEMI). The earlier the presentation, the less the myocardial damage. Delayed presentation reduces the efficacy of reperfusion therapy and decreases the chance of myocardial salvage. The delay varies widely across different countries. The total ischemic time refers to the summation of the pre-hospital delay and hospital delay.

Methods: We included all patients who were admitted with acute STEMI in two university hospitals, over a period of two years. We recorded the time delay between the onset of acute severe symptoms till their arrival to the hospital (Pre-hospital delay). We also recorded the time delay between the arrival to hospital and the institution of reperfusion therapy -thrombolysis or primary PCI- (hospital delay). We analyzed causes of pre-hospital delay as either patient-related or transportation-related. We categorized hospital delay causes as staff-related or system-related.

Results: We recruited 95 patients, 65 (68.4%) were males, 57 (60%) patients had history of hypertension, 55 (57.9%) had diabetes, 45 (47.4%) were current smokers and 39 (41.1%) patients had prior history of cardiac diseases. The

mean pre-hospital delay time was 5.3 ± 4.3 hours. Forty nine percent of this time was spent before patients decide to go to hospital (patient-related causes) and 51% of pre-hospital delay time was spent in transportation. Thirty patients (31.6%) underwent primary PCI and 65 patients (68.4%) received thrombolytic therapy. The mean door to needle time was 90.8 ± 32.1 minutes while the mean door to device time was 146.8 ± 39.7 minutes. In 49.5% of cases, the hospital delay was system-related while in 50.5% the reason was staff-related. Chest pain started at home in 75 (78.9%) patients but only 2 (2.1%) patients called for an ambulance, the rest of patients preferred going to hospital using their private cars and taxi cab. The mean total delay time to thrombolytic therapy was 6.5 ± 3.3 hours, while the mean total delay time to PCI was 7.8 ± 2.7 hours.

Conclusion: Pre-hospital delay was mainly due to difficult trafficking while hospital delay was equally related to delayed physician inertia and poor health care resources. The prolonged total delay time from onset of chest pain till reperfusion may render reperfusion therapy ineffective. Governmental measures to facilitate trafficking and promote ambulance calling in emergencies may reduce the pre-hospital delay, while providing proper equipment and trained personnel to healthcare centers may reduce the hospital delay time.

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Clinical presentation, management and outcome of ST-elevation myocardial infarction in Peru

D Espinoza,¹ CP Rebaza,¹ O Araoz,¹ J Espinoza,¹ CM Pereda¹ and A Mantilla²

¹Instituto Nacional Cardiovascular Essalud, clinical cardiology department, Lima, Peru ²Instituto Nacional de Oftalmologia, Lima, Peru

Purpose: To determine the clinical characteristics, therapeutic interventions, and hospital outcomes from a registry of patients with acute ST segment elevation myocardial infarction.

Methods: Data were reviewed for patients who presented to the hospital within 24 hours of the onset of symptoms of an acute ST segment elevation myocardial infarction between January 2012 and December 2014. Type of intervention, and in hospital morbidity and mortality were tabulated.

Results: Data from 491 patients are included. The majority were male (84%) with a mean age of 65.6 ± 12.3 years. Hypertension (54%) and tobacco use (31%) were the most frequent cardiovascular risk factors. Renal insufficiency was present in 11.8% of patients and was associated with increased mortality.

Fibrinolytic therapy was performed in 142 patients with a success rate of 49.3% and mortality of 7.0%. The average door to needle time was 92.8±78.7 minutes. Primary angioplasty within the first 12 hours of onset of symptoms was performed in 213 patients. The average door to balloon time was 280.5 ±129.4 minutes with a mortality of 8.9%. Only 13 patients (6.1%) had a door to balloon time of ≤ 120 minutes. Door to balloon times >120 minutes were due to patients being transported from hospitals without a catheterization laboratory. Cardiac surgery was performed in 57 patients with a mortality of 26.3%, however, 12 (21%) had cardiogenic shock (mortality=91.7%), 6 (11%) had mechanical complications (mortality=33.3%) and 39 (68%) were hemodynamically stable (mortality=5.2%). Morbidity included heart failure (18.7%), cardiogenic shock (12.0%), atrial fibrillation (10.2%), atrioventricular block (6.7%) and rupture of the left ventricular free wall (3.7%). Mortality for the entire group was 12.02%. The highest mortality was in patients with cardiogenic shock (76.3%) and rupture of the left ventricular free wall (66.7%).

Conclusions: Management of patients in this registry with acute ST elevation myocardial infarction was based on international guidelines. Hospital morbidity and mortality, however, were higher compared to data published in most international registries. Mortality and morbidity can likely be reduced by earlier initiation of fibrinolytic therapy and more rapid transport of patients to a hospital with angioplasty available.

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Prognostic significance of transaminases after acute ST-elevation myocardial infarction: Insights from a cardiac magnetic resonance study

S Reinstadler,¹ HJ Feistritzner,¹ G Klug,¹ A Mayr,² J Mair,¹ WM Franz¹ and B Metzler¹

¹Innsbruck Medical University, Department of Internal Medicine III, Cardiology, Innsbruck, Austria ²Innsbruck Medical University, Department of Radiology, Innsbruck, Austria

Purpose: In patients with ST-elevation myocardial infarction (STEMI), the relationship between transaminases and myocardial damage detected by cardiac magnetic resonance (CMR) imaging is unknown and the prognostic value incompletely investigated.

Methods: CMR imaging was performed in 167 STEMI patients 2.3 [1.6-3.9] days after successful reperfusion with primary percutaneous coronary intervention (PCI). Blood samples for transaminase measurement (aspartate transaminase (AST) and alanine transaminase (ALT)) were obtained serially from day 1 to day 4 after PCI. Patients were

followed for major adverse cardiac events (MACE) for 2.7 [1.1-3.3] years.

Results: Admission and peak concentrations of AST and ALT were significantly associated with left ventricular ejection fraction ($p<0.001$), infarct size ($p<0.001$) and the presence of microvascular obstruction ($p<0.01$). Peak values of both transaminases showed a stronger correlation with CMR parameters as compared with admission values (all $p<0.05$). In Kaplan-Meier analysis, a high peak AST or high peak ALT was associated with reduced MACE free survival (both $p<0.01$), whereas admission values were not (both $p>0.05$). Peak AST (HR: 4.93 [1.70-14.32], $p=0.003$) and peak ALT (HR: 5.67 [1.94-16.56], $p=0.002$) were independent predictors of MACE after adjusting for clinical risk factors. However, when accounting for CMR parameters, the association remained not significant ($p>0.05$). The prognostic value of peak AST or ALT was similar with creatine kinase activities.

Conclusions: Transaminases measured in the acute phase after PCI for STEMI are associated with systolic dysfunction, more extensive myocardial necrosis and microvascular injury with subsequent prognostic information on MACE at long-term follow-up. The prognostic value of transaminases is however similar to creatine kinase.

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Left atrium enlargement predicts poor outcomes after ST-elevation acute coronary syndrome

S Leao,¹ F Cordeiro,¹ P Magalhaes,¹ M Moz,¹ J Trigo,¹ P Mateus,¹ P Fontes¹ and I Moreira¹

¹Hospital Center of Tras-os-Montes and Alto Douro, Cardiology, Vila Real, Portugal

Background: Diastolic function assessed by Doppler echocardiography provides important prognostic information after acute myocardial infarction, although Doppler variables are affected by multiple factors and may change rapidly. Left atrial (LA) volume is less influenced by acute changes and reflects subacute or chronic diastolic function.

Aim: Evaluate prognostic impact of LA volume index in ST-elevation Myocardial Infarction (STEMI) patients.

Methods: Ninety consecutive STEMI patients, admitted for primary percutaneous coronary intervention, that had a transthoracic echocardiogram with assessment of left ventricular (LV) systolic and diastolic function and measurement of LA volume during admission, were identified retrospectively. The LA volume was corrected for body surface area, and the population was divided according to LA volume index of 34 mL/m². The primary

study endpoint was a composite of re-infarction, unplanned revascularization and all-cause mortality.

Results: LA volume index was higher than 34 mL/m² in 48 patients (53.3%). The two groups were not significantly different for sex, cardiovascular risk factors and previous history of coronary disease. Patients with LA enlargement were older (67.7 years vs 62.2 years, $p=0.049$). Ischemic time was not significantly different between groups (6,9 hours vs 7,6 hours, $p=0,470$) but LA dilation was associated with larger infarct size, assessed by Troponin T elevation (7,07ng/mL vs 5,25ng/mL, $p=0,014$). During a follow-up of 19,3 months (IQR 15,4-23,2), primary composite endpoint occurred in 21 patients (23,3%). LA dilation was predictor of re-infarction, unplanned revascularization or death (hazard ratio 3.00, 95% CI 1.10 to 8.20, $p= 0.032$). These findings remained true after adjustment for age and LV systolic function.

Conclusions: LA volume higher than 34 mL/m² predicts poor clinical outcomes (re-infarction, unplanned revascularization or death) after STEMI. This finding is independent of clinical factors and LV systolic function.

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Mean platelet volume as a risk factor for death, re-infarction, and heart failure in acute ST segment elevation myocardial infarction

JR Delgado,¹ MX Gordillo,¹ CP Rebaza,¹ CM Pereda¹ and D Espinoza¹

¹Instituto Nacional Cardiovascular Essalud, clinical cardiology department, Lima, Peru

Introduction: Mean platelet volume (MPV) is a marker for platelet reactivity. Larger platelets are associated with higher metabolic and enzymatic activity and may have a greater potential for thrombus formation.

Objective: To determine if MPV is a risk factor for major cardiovascular events in patients hospitalized with acute ST segment elevation myocardial infarction (STEMI).

Materials and Methods: We retrospectively analyzed 317 patients admitted to our center and treated for acute STEMI presenting within 24 hours of symptoms between January 2013 and December 2014. Patients were divided into 2 groups according to MPV: <10.5 fL or ≥ 10.5 fL. Baseline characteristics, treatment, and in-hospital outcomes were compared. MPV was measured by standard laboratory methods.

Results: The two groups (MPV<10.5 fL vs ≥ 10.5 fL) differed only in the percentage receiving thrombolytic therapy (35.1% vs 22.8%, $p=0.014$). An MPV ≥ 10.5 fL

was associated with a relative risk for re-infarction of 13.37 (95% confidence limit (CL)=0.74-239.74, $p=0.0783$), for death from all causes of 1.30 (95% CL=0.67-2.53, $p=0.4448$), and for heart failure of 1.03 (95% CL=0.66-1.62, $p=0.8901$).

Conclusions: The presence of MPV ≥ 10.5 is not a risk factor for death from all causes or heart failure. While it didn't reach statistical significance, re-infarction may be associated with larger volume of medial plaque, but further studies with more patients are needed to establish this.

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Residual SYNTAX score after PCI in latecomers with STEMI

O Makarycheva,¹ E Konovalova,¹ Y Lukianova,¹ V Manchurov,¹ A Shpektor¹ and E Vasilieva¹

¹Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

This study evaluated the prognostic value of the residual SYNTAX score (rSS) on adverse outcomes in patients with STEMI admitted late after symptoms onset and treated by PCI.

Methods: The three-year outcomes were assessed in 55 patients with STEMI hospitalized after 12 hours or more from symptoms onset. The mean time from the onset of symptoms to admission was 76.5 hours. All patients underwent PCI with stenting. We calculated post-PCI residual SYNTAX-Scores (rSS). Clinical outcomes included death and major adverse cardiac events (MACE, a composite of death, non-fatal MI, or revascularization for ischemia)

Results: Of the patients, 5 (9 %) experienced complete revascularization (rSS 0) and all of them were event-free to the end of the follow-up period. The 50 patients (91%) with incomplete revascularization (rSS>0) had increasing three-year MACE rates (22%) and mortality (18%). But the difference between those with rSS 0 and those with rSS>0 was not significant, mostly because there were few patients with complete revascularization; 20 (36%) patients had $0 \leq rSS < 10$ (mean 5.2 ± 3.5) and 35 (64%) patients had $rSS \geq 10$ (mean 19.9 ± 8.4). The three-year mortality was 16.3%. The mortality in the $0 \leq rSS < 10$ group was lower than in the $rSS \geq 10$ group, but not significantly (5.0% vs 22.8%, $p 0.09$). The MACE composite was significantly higher in the $rSS \geq 10$ group than in the $0 \leq rSS < 10$ group (28.6% vs 5%, $p= 0.04$).

Conclusion: Greater residual coronary lesions after PCI in patients with STEMI hospitalized after 12 hours of symptoms onset, as quantified in the rSS are associated with increased long-term risk of adverse cardiac events

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The results of regional STEMI network: does in-hospital mortality reflect the effect in clinical practice?

OM Posnenkova,¹ DV Duplyakov,² AR Kiselev¹ and SM Khokhlunov²

¹Research Institute of Cardiology of Saratov State Medical University, Cardiology Innovation Department, Saratov, Russian Federation ²Samara Regional Cardiology Dispensary, Samara, Russian Federation

The network for patients presenting with ST-segment elevation myocardial infarction (STEMI) was initiated in urban region of Russia in 2010. The purpose of the present study was to analyze the effect of STEMI network based on nonselective sample of STEMI patients.

Methods: The data from STEMI patients consecutively admitted in the Coronary Care Unit of Regional Hospital were extracted from 2008 and 2013 acute coronary syndrome registries. In 2008 thrombolysis was the most preferred reperfusion therapy. In 2013 primary PCI was performed in 24/7 regimen. We compared clinical characteristics, medical treatment, reperfusion therapy, and in-hospital mortality among STEMI patients in 2008 and 2013. Cox's regression model was constructed to evaluate the impact of primary PCI on in-hospital mortality.

Results: 355 STEMI patients (75.1% - men, mean age 56.4±14.5) were included in the registry of Regional Hospital in 2008, and 823 (67.4% - men, mean age 61.4±12.7) STEMI patients were included in 2013. Primary reperfusion was performed in 71.4% of STEMI patients in 2008 vs 79.5% in 2013 (p=0,003). STEMI network changes the structure of reperfusion therapy. 43.9% of patients received thrombolytic therapy in 2008 and only 14.6% - in 2013 (p<0,001). Primary PCI was carried out in 23.1% of STEMI patients in 2008 and in 62.9% of the patients in 2013 (p<0,001). Door-to-needle time was 30 minutes or less in 73.7% of patients in 2008 vs 82.8% in 2013 (p=0,168). Door-to-balloon time was 90 minutes or less in 4.8% of patients in 2008 vs 36.9% in 2013 (p<0,001). Recommended drugs were administered as following (2008 vs 2013): dual antiplatelet therapy – 30.9% vs 81.9% (p<0,001), beta-blockers – 88% vs 85%, ACE-Is/ARBs – 80% vs 80%, statins 78% vs 78% (p>0,05). In-hospital mortality rate was 7% in 2008 and 10.5% in 2013 (p 0,059). Constructed Cox's regression model ($\chi^2= 1052.3$, p<0.001) revealed that major impact on in-hospital mortality in clinical practice was produced by statins (OR 0.19, p<0.001), ACE-Is/ARBs (OR 0.22, p<0.001), beta-blockers (OR 0.20, p<0.001) followed by the factor of age (OR 1.01, p=0.005) and systolic blood pressure (OR 0.99, p=0.046). The influence of PCI performance was not statistically significant (p>0.05).

Conclusions: Regional STEMI network improved primary PCI implementation and PCI-associated treatment. But in-hospital mortality did not decrease. The study showed that in a real-world the impact of primary PCI on short-term prognosis may absent in some cohorts. Thus, in-hospital mortality should be used with caution for evaluation the effect of STEMI networks in clinical practice.

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Reperfusion time five years after the onset of STEMI-Code. Have we improved?

O Merono Duenas,¹ LRG Lluís Recasens,¹ NRB Nuria Ribas,¹ CGG Cosme Garcia-Garcia,¹ NS Neus Salvatella,¹ HT Helena Tizon,¹ DB Deva Bas,¹ PP Paula Poveda,¹ AF Andres Fernandez¹ and JM Julio Marti¹

¹Hospital del Mar, Barcelona, Spain

Introduction: ST-elevation myocardial infarction (STEMI) reperfusion network (STEMI-Code) was created in Catalonia in June 2009. In this setting, the mortality in STEMI has decreased. This could be explained by the greater rate of reperfusion due to the global spread of primary angioplasty and by better secondary prevention strategies. Despite this improvement in mortality, time to reperfusion has worsened compared with the pre-Code period and clinical guidelines emphasize the importance of prompt reperfusion.

Objective: The objective of the study is to evaluate whether there are differences in reperfusion times between the first period of implementation of the STEMI-Code (2009-2010) and the second period (2011-2013) and how these times can affect the long-term prognosis.

Methods and Results: We analyze data from 456 patients with STEMI admitted to our unit between 2009-2013 (113 patients in the first period of STEMI-Code and 343 in the second one). Global reperfusion rate was 86.1%. The median time between first medical contact and balloon inflation in the first period was 101 minutes (p25-p75:73-144) and in the second period was 94 min (p25-p75:72-129) (p = 0.36). In overall, 33.9% of patients received reperfusion therapy more than 120 minutes after first medical contact (no differences between the first and second period of STEMI-Code). With a median follow-up of 626 days (p25-p75: 324-895) patients with delayed reperfusion had worse outcomes, with greater rate of death, re-infarction and readmission (24.4% vs 14.9 %; p = 0.020). In multivariate analysis adjusted for age, sex, and ejection fraction, delayed reperfusion remained an independent predictor of worse outcomes.

Conclusion: Although rates of STEMI reperfusion in STEMI-Code are very high, our reperfusion times have not improved significantly between the first and the second period of application of the Code. The 33.9% of patients received reperfusion therapy latter than 120 minutes after first medical contact, and such patients with delayed reperfusion have worse outcomes at long-term follow-up.

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ST-segment elevation myocardial infarction in patients under 45 years. Is it a different entity?

M T Lopez Lluva,¹ I Sanchez Perez,¹ F Lozano Ruiz Poveda,¹ A Jurado Roman,¹ N Pinilla Echeverri,¹ M Marina Breysse,¹ A Moreno Arciniegas¹ and J Piqueras Flores¹

¹Hospital General Universitario de Ciudad Real, Ciudad Real, Spain

Background: Although atherosclerosis is a progressive disease that begins very early, the occurrence of acute myocardial infarction (AMI) in young patients is a rare entity. In recent years there has been an increase in its prevalence in relation to a detrimental in lifestyle. The aim of study was to determine the difference in presentation, risk factors, and outcomes of young patients with ST-segment elevation myocardial infarction (STEMI)

Methods: The study included 189 consecutive patients with STEMI admitted in the Coronary Care Unit, in a university hospital, from September 2012 to December 2013. The group I consisted of 169 patients aged equal to or above 45 years and the group II consisted of 20 patients aged below 45 years.

Results: The mean age of group I was 65.14 years (SD, 11.91 years), with 76.9% (130 patients) being men. Mean patient age in group II was 40.1 years (SD, 6.18 years), and 95% (19 patients) of patients were men.

Older patients show a great prevalence of arterial hypertension (53% vs. 15%, $p=0.001$) and diabetes (34.7% vs. 5%, $p=0.026$), whereas cigarette smoking (48.8% vs. 80%, $p=0.028$) was significantly more frequent in young patients. Both groups underwent primary percutaneous coronary intervention (pPCI). There was no difference in the radial access ($p=0.38$).

No difference in clinical outcomes was observed between the two groups: acute stent thrombosis (I 1.2% vs. II 0%, $p=0.79$), reinfarction (I 18% vs. II 5%, $p=0.36$), major vascular complications (I 10.1% vs. II 5%, $p=0.40$), ventricular arrhythmias (I 20.8% vs. II 40%, $p=0.06$), stroke (I 1.8% vs. 0%, $p=0.71$), cardiovascular death

(I 6.5% vs. II 0%, $p=0.28$), except for heart failure which was significantly more frequently in the older group (I 20.4% vs. II 0%, $p=0.01$)

Conclusions: The prevalence of STEMI in patients younger than 45 years at our center is 11%, similar to that reported in other series. It is an entity with different clinical features. Cigarette smoking is the most common risk factor in young patients. This population has as well as a better short-term prognosis (lower complication rate) although no significant differences, except for heart failure, have been observed probably due to the small sample size.

Non ST-elevation myocardial infarction - ACS

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ST-segment and T-wave changes among patients with non-ST elevation myocardial infarction and severe 3 vessel CAD on coronary angiogram

K Ikeda¹ and HB Calleja¹

¹St. Luke's Medical Center, Dr. HB Calleja Heart and Vascular Institute, Quezon City, Philippines

Background: The distinction between ST-elevation and non-ST elevation infarction is widely accepted and employed as a guide to management. However, infarction simultaneously involving opposite LV walls may create vectors that cancel out and hence may not produce the usual ST-changes on ECG.

Objective: The objective of this study is to describe ST segment and T-wave changes among patients with NSTEMI and severe 3 vessel CAD on coronary angiogram.

Methods: This is a descriptive, cross-sectional study wherein records and ECG of adult Filipino patients with NSTEMI and severe 3-vessel CAD were reviewed.

Results: Majority of the 227 subjects were male, smoker, hypertensive, diabetic, and with family history of CAD. ST-depression was not a common finding however, T-wave inversion in V4 – V6 (54.3%) and abnormal R-wave progression (69.1%) were noted.

Conclusion: There is no specific ST-T-wave pattern in the ECG of NSTEMI patients with severe 3 vessel CAD. This is in concordance with the theory that opposing vectors from the wide area of involved myocardium in the presence of severe CAD hinders the development of significant ST and T wave shifts.

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ST-segment deviation score as a diagnostic tool in the early diagnosis of acute myocardial infarction

K Grimm,¹ R Twerenbold,² K Wildi,³ C Puelacher,¹
T Nestelberger,¹ J Boeddinghaus,¹ M Rubini Gimenez,³
T Reichlin,³ R Abächerli⁴ and C Mueller²

¹University Hospital Basel, Clinical Research Cardiology, Basel, Switzerland

²University Hospital Basel, Department of Cardiology, Basel, Switzerland

³University Hospital Basel, Basel, Switzerland ⁴Schiller AG, Baar, Switzerland

Purpose: The ST-segment deviation score (STDS) might be a useful diagnostic tool in the detection of ischemic signs in patients suspected of acute myocardial infarction. Optimal cut-off values are still left to be determined as well as options how to make optimal use of this method in order to improve diagnostic accuracy.

Methods: In this prospective study we determined the STDS in 1155 consecutive patients presenting with symptoms suggestive of AMI to the emergency department. Patients with left ventricular hypertrophy, all kind of intraventricular blocks, pacemaker or no digital ECG available were excluded. The STDS was defined as the sum in mm (1mm=0.1mV) of absolute deviations in the ST-segment at J-point automatically determined in all 12 leads of the initially recorded ECG. The final diagnosis was centrally adjudicated by two independent cardiologists. Diagnostic accuracy of the STDS was measured with the help of ROC-analysis.

Results: AMI was the final diagnosis in 211 (18%) patients (177 NSTEMI, 34 STEMI). The diagnostic accuracy of the STDS at J-point measured by the AUC was 0.66 (95% CI, 0.62-0.7). In patients with no history of coronary artery disease (n=772) the AUC amounted to 0.69 (95% CI, 0.63-0.74). The optimal cut-off value for the STDS was determined by the approach of Youden, the result was 4.6mm with a sensitivity of 52%, specificity of 75% and negative predictive value of 86%. Among patients with a preceding digital ECG available (n=346) and an increasing STDS, the change in STDS resulted in an AUC of 0.66 (95% CI, 0.55-0.76) and an optimal cut-off value of 2mm.

Conclusions: The STDS, in conjunction with clinical examination and biomarker findings, might be of help in the diagnosis of AMI in acute chest pain patients, especially in patients with no history of coronary artery disease.

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Pre-hospital and hospital delay in patients with non-ST elevation myocardial infarction/unstable angina in a tertiary care center

G Youssef,¹ HS Al Taaban,¹ HH Kassem,¹ HH Rizk¹
and OA Ameen²

¹Cairo University Hospitals, Cardiovascular Department, Cairo, Egypt ²Beni-Suef University Hospital, Cardiology, Beni-Suef, Egypt

Purpose: Because patients cannot differentiate whether chest pain is due to STEMI or non-STEMI/UA, early presentation is desirable in all cases of acute prolonged chest pain. Early recognition of the cause of acute chest pain and early institution of therapy seems to be beneficial. Causes of delayed presentation varies widely across different countries because of different patients' profile and different healthcare capabilities. The total ischemic time refers to the summation of the pre-hospital delay and hospital delay.

Methods: We included all patients who were admitted with non-STEMI/UA to two university hospitals from March 2013 to December 2014. We recorded the time delay between the onset of acute severe symptoms till their arrival to the hospital (Pre-hospital delay). We also recorded the time delay between the arrival to hospital and the institution of definitive therapy (hospital delay). We analyzed causes of pre-hospital delay as either patient-related or transportation-related. We categorized hospital delay causes as staff-related or system-related.

Results: We recruited 315 patients, 200 (63.5%) were males, 68 (21.6%) were illiterate, 91 (28.9%) were unemployed, 194 (61.6%) patients had history of hypertension, 180 (57.1%) had diabetes, 106 (33.7%) were current smokers and 196 (62.2%) patients had prior history of cardiac diseases. The mean pre-hospital delay time was 8.7 ± 9.7 hours. Sixty six percent of this time was spent before patients decided to go to hospital (patient-related causes) and 34% of pre-hospital delay time was spent in transportation. The mean hospital delay time was 137.1 ± 56.2 minutes. In 89.8% of cases, the hospital delay was system-related while in 10.2% the reason was staff-related. Chest pain started at home in 217 (68.9%) patients but only 9 (2.9%) patients called for an ambulance, the rest of patients preferred going to hospital using their private cars (n=135, 42.9%), taxi cab (n=131, 41.6%) or by a public bus (n=39, 12.4%). The mean total delay time to definitive therapy was 11.0 ± 9.8 hours.

Conclusion: Pre-hospital delay was mainly patient-related, despite that most of the patients had prior history of cardiac disease. Hospital delay was mainly related to poor health care resources. The prolonged total delay time from onset of chest pain till definitive therapy may have a negative impact on the outcome. Governmental measures to promote ambulance calling in emergencies may reduce the pre-hospital delay, while providing proper equipment and trained personnel to healthcare centers may reduce the hospital delay time.

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Invasive management and long-term survival according to age in patients with non-ST elevation myocardial infarction

KM Kvakkestad,¹ J Eritslund,¹ E Fossum² and S Halvorsen¹

¹Oslo University Hospital, Department of Cardiology Ullevaal, Oslo, Norway

²Oslo University Hospital, Department of Cardiology Rikshospitalet, Oslo, Norway

Purpose: We aimed to describe the management and long-term survival of patients with non-ST elevation myocardial infarction (NSTEMI) according to age.

Methods: Prospective cohort study. All consecutive NSTEMI patients admitted to our hospital from 2005-2011 were registered into a local registry. Risk factors, management and in-hospital complications were recorded. Vital status was obtained from the Norwegian Cause of Death registry, with censoring date 31.12.2012. Cumulative survival estimates were computed with the Kaplan-Meier method.

Results: A total of 5159 NSTEMI patients were registered (35% female), with median age 70 years. More than 90% of patients <80 years were treated with an invasive strategy, versus 45% of patients \geq 80 years (Table). Elderly patients were less likely to be treated with antiplatelet drugs and statins compared to younger patients. Median follow-up time was 1043 days. Survival after four years ranged from 94% in patients <60 years, 76% in patients 60-79 years to 40% in patients \geq 80 years (Figure).

Conclusions: The use of an invasive strategy was high and prognosis favourable in NSTEMI patients <80 years. In patients \geq 80 years, an invasive strategy was less frequently applied, and long-term survival was lower compared to younger patients.

Table 1.

	<40 years n=71	40-59 years n=1210	60-79 years n=2492	\geq 80 years n=1386
Coronary angiography, %	95.8	96.3	91.0	45.0
Percutaneous coronary intervention, % of angiographed	50.0	56.4	49.4	49.8
In-hospital mortality, %	0	1.5	3.2	11.2

Patients with non-ST elevation myocardial infarction 2005-2011, N=5159.

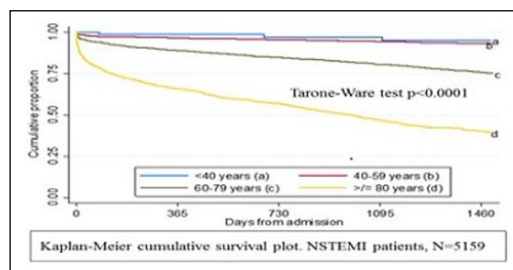


Figure.

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Persistent chest pain despite initial therapy adds important information in the assessment of patients with suspected acute myocardial infarction and left bundle branch block

A Santos-Ortega,¹ JG Acosta-Velez,¹ J Figueras-Bellot,¹ RM Lidon-Corbi,¹ A Sambola-Ayala,¹ J Baneras-Rius,¹ D Garcia-Dorado¹ and JA Barrabes-Riu¹

¹University Hospital Vall d'Hebron, Cardiology department, Barcelona, Spain

Purpose: Identification of patients with left bundle branch block (LBBB) who can benefit from emergent coronary angiography for suspected acute coronary occlusion (ACO) is challenging. We aimed to assess the value of clinical, electrocardiographic and echocardiographic variables on admission in identifying patients with ACO among those with suspected acute myocardial infarction (AMI) and LBBB.

Methods: Patients admitted to our coronary unit from 2008 to 2014 with suspected AMI and LBBB who underwent coronary angiography during hospitalization were selected. Several electrocardiographic variables that have been related to AMI (ST deviation concordant with QRS), ischemic cardiomyopathy (QRS voltage in V3 \leq 21 mm) or new LBBB (maximum S/T amplitude <2.5) were assessed. All patients underwent an echocardiographic exam in the first hours upon admission.

Results: Of 98 patients included, 22 (22.4%) had an ACO (TIMI flow grade 0-1 in a culprit lesion). As compared to the remaining patients, those with ACO had similar (p=NS) age (70 \pm 12 vs 73 \pm 9 years, respectively), gender (64 vs 59% males), systolic blood pressure (140 \pm 35 vs 140 \pm 31 mmHg) and rate of Killip class>2 (14 vs 32%) but a lower heart rate at presentation (74 \pm 21 vs 94 \pm 26 bpm, p=0.001). The presence of chest pain (77 vs 70%), previous effort angina (27 vs 32%), \geq 2 chest pain episodes in the last 24 h (18 vs 33%) or diaphoresis (64 vs 44%) were similar among groups (p=NS), but persistent chest pain after initial

therapy was more frequent in ACO patients (64 vs 25%, $p=0.001$). Concordant ST deviation was more frequent in patients with ACO (37 vs 5%, $p=0.001$) but QRS voltage in $V3 \leq 21$ mm was found similarly (54 vs 59%, $p=0.696$) and maximum S/T amplitude <2.5 was paradoxically less common in ACO patients (23 vs 54%, $p=0.010$). Despite having a higher CKmb peak (188 ± 152 vs 62 ± 77 ng/mL, $p=0.001$), patients with ACO had also similar left ventricular ejection fraction (46 ± 12 vs $43 \pm 12\%$, $p=0.270$) and comparable rates of non-septal hypokinesia (91 vs 72%, $p=0.070$), significant diastolic dysfunction (47 vs 30%, $p=0.216$) and right ventricular function (TAPSE 19 ± 4 vs 20 ± 4 mm, $p=0.317$) than those without ACO. A multivariable analysis retained concordant ST deviation (OR 5.53, 95%CI 1.23-24.79, $p=0.022$) and persistent chest pain (OR 3.25, IC95% 1.03-10.22, $p=0.046$) as independent predictors of ACO.

Conclusion: In patients with suspected AMI and LBBB, besides concordant ST deviation, the persistence of chest pain despite initial therapy seems to be the only clinical, electrocardiographic or echocardiographic variable on admission that helps identify those with ACO.

P300

Decision making in acute coronary syndromes - an audit of inter-operator variability and usage of the multidisciplinary team in a busy district general hospital

LAE Brown,¹ E Onwordi,¹ M Connaughton,¹ A Dana,¹ H Griffiths,¹ PC Strike¹ and AR Hobson¹

¹Portsmouth Hospitals NHS Trust, Portsmouth, United Kingdom

Introduction: Significant variation has been noted in the use of strategies for revascularisation. Recommendations from a 2014 BCS/BCIS/SCTS working group and ESC guidelines promote the use of a multidisciplinary team (MDT) in decisions regarding coronary revascularisation. Previous studies have shown an underuse of MDTs in selection of revascularisation strategy.

At our centre 5 interventional cardiology consultants carry out approximately 1000 inpatient standby coronary angiograms (SBCA) per year. We analysed data to review uniformity of practice and usage of the MDT.

Methods: The last 50 acute coronary syndrome (ACS) patients attending for SBCA under each operator were identified from cath lab records. Records of the procedure were used to determine revascularisation strategy and baseline characteristics. Comparison was made between the 5 operators. MDT discussion was defined as either formal discussion in our revascularisation meeting or discussion of

revascularisation strategy with at least one other consultant cardiologist.

Results: There was no significant difference in age, sex or cardiovascular risk factors between the 5 groups.

There was a significant difference in management choice between the 5 operators ($p=0.02$). Greatest variation was seen in PCI, being performed in 28 to 60% of cases, depending on operator. Only 14 cases (5.6%) had documented MDT discussion (Fig. 1).

Conclusion: We have shown significant inter-operator variability in revascularisation strategy and very low rates of MDT discussion in ACS patients undergoing SBCA. Our current policy mandates discussion of revascularisation strategy in all elective patients with significant coronary lesions. A similar model may be appropriate for ACS cases and reduce inter-operator variability in revascularisation strategy.

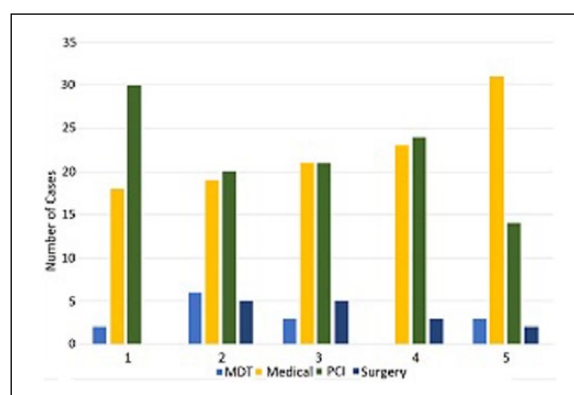


Figure 1. Outcome of SBCA by operator.

P301

Major bleeding predictors and complications in patients with acute coronary syndromes

J M Amado,¹ D Bento,¹ D Silva,¹ J Guedes,¹ N Marques,¹ W Santos,¹ P Gago,¹ J Mimoso¹ and I Jesus¹

¹Faro Hospital E.P.E., Faro, Portugal

Introduction: Major bleeding is a well known complication after acute coronary syndromes (ACS). Patients with major bleedings have been identified as risk patients to adverse outcomes. Our main goal was to determine predictors of major bleeding in patients admitted with acute coronary syndromes and its association with other potential post myocardial infarction complications.

Methods: A retrospective, descriptive and correlational study was performed, involving patients with ACS

from 1/October/2010 to 30/October/2014. The patient demographic, clinical and therapeutic data were collected at admission. GUSTO major bleeding criteria were applied to determine patients with major bleedings. A telephonic 1 year follow-up was performed. SPSS 20.0 was used to calculate an univariate and multivariate statistical analysis for 1 year mortality.

Results: During our study period, 2302 patients were admitted due to ACS. 46 (2%) had presented major bleeding. Patients with bleeding were older ($74,7\pm 10,0$ vs $65,8\pm 13,4$ anos, $p=0,00$), hypertensive ($81,8\%$ vs 68% , $p=0,03$) and had more often previous history of: "angina pectoris" (56 vs 41% , $p=0,03$), of neoplasia ($17,8$ vs $4,1\%$, $p=0,00$) and of bleeding ($22,7$ vs 3% , $p=0,00$). No differences were found concerning gender or other previous diseases.

When analyzing admission data we found that major bleeding was associated to STEMI diagnosis ($60,9$ vs $43,8\%$, $p=0,01$), Killip-Kimball class III/IV ($21,7\%$ vs 5% , $p=0,00$), lower left ventricle ejection fraction (LVEF) (mean LVEF $48,7\%$ vs $57,5\%$, $p=0,00$), higher heart rate (89 vs 76 bpm, $p=0,00$), lower hemoglobin value on admission ($13,0$ vs $13,8$ g/dl, $p=0,00$) and to coronariography performed by femoral access ($p=0,00$).

No association was found between bleeding and previous medications.

We observed that age, previous bleeding history, STEMI and admission heart rate were independent predictors of major bleeding.

Patients with major bleeding had more often stroke, ($6,5$ vs $0,4\%$, $p=0,00$), reinfarction ($6,5$ vs $0,9\%$, $p=0,00$), higher in-hospital mortality ($17,4$ vs $3,8\%$, $p=0,00$) and higher 1 year mortality ($26,1$ vs $8,4\%$, $p=0,00$).

Conclusions: Major bleeding was associated with age and patients comorbidities.

Patients admitted with STEMI, higher heart rates, depressed LVEF, KK class III/IV, lower hemoglobin values and the ones who receive femoral catheterization have more often major bleedings.

Age, previous bleeding, STEMI and admission heart rate are independent predictors of major bleeding.

Patients who suffer major bleedings have more frequently in-hospital complications and higher mortality rates.

P302

Acute coronary syndrome in patients with diabetes mellitus. population characterization and one year mortality predictors

J M Amado,¹ D Bento,¹ D Silva,¹ J Guedes,¹ N Marques,¹ W Santos,¹ P Gago,¹ J Mimoso¹ and I Jesus¹

¹Faro Hospital E.P.E., Faro, Portugal

Introduction: Acute coronary syndromes (ACS) are one of the leading causes of morbidity and mortality among the diabetic patients. This study pretends to characterize the diabetic population with acute coronary syndrome admitted in our center and to determine their one year mortality predictors.

Methods: A retrospective, descriptive and correlational study was performed, involving patients with ACS from 1/October/2010 to 30/October/2014. The patient demographic, clinical and therapeutic data were collected at admission. A telephonic 1 year follow-up was performed. SPSS 20.0 was used to calculate an univariate and multivariate statistical analysis for 1 year mortality.

Results: During the period of study, there were 2302 patients admitted with a ACS, 633 (27,5%) with Diabetes Mellitus (DM). Compared with patients without DM, DM patients were older ($69,2\pm 11,8$ vs $64,7\pm 13,8$ years, $p=0,00$), had higher prevalence of female gender ($p=0,00$), and had less ST segment elevation myocardial infarction (STEMI) ($p=0,00$). DM patients had more comorbidities: arterial hypertension ($p=0,00$), dyslipidemia ($p=0,00$), kidney failure ($p=0,00$) and peripheral vascular disease ($p=0,00$), as well as higher frequency of previously diagnosed coronary disease ($p=0,00$) or stroke. ($p=0,02$).

When admission characteristics were compared DM patients had less admissions from the pre-hospital emergency department ($p=0,00$), had higher prevalence of KK III/IV class ($p=0,00$), and a lower left ventricle ejection fraction (LVEF) ($55\pm 14\%$ vs $58\pm 12\%$, $p=0,00$). DM patients were less often submitted to invasive angiography ($p=0,00$).

On the follow-up period DM patients had higher rates of hospital readmissions

($p=0,01$), and higher in-hospital, 30 days and anual mortality rates, respectively 5,7%, 6,2% e 13,1%.

Age, peripheral vascular disease, STEMI, depressed LVEF and KK III/IV at presentation were found as independent mortality predictors.

Conclusion: Patients with DM had older age and a higher prevalence of comorbidities. This patients were less often submitted to invasive coronary angiography and they had a higher mortality rate than patients without DM.

We found that age, STEMI diagnosis, peripheral vascular disease, depressed LVEFF and KK III/IV on admission were independent mortality predictors.

Sudden death / resuscitation

P303

A complex and rare syndrome causing cardiac arrest: systemic capillary leak syndrome

A Pratesi,¹ F Orso,¹ S Fumagalli,¹ F Sgrilli,¹ I Fiordelli,¹ I Giannini,¹ G Mannarino,¹ F Tarantini,¹ N Marchionni¹ and P Valoti¹

¹Geriatric Cardiac Intensive Care Unit, Geriatric Cardiology and Medicine Unit, Florence, Italy

A 73 year old woman was referred to the Intensive Care Unit on February 2015, for post-anoxic coma after cardiac arrest. The patient was reported to be in good health until a few days before the event. She exercised regularly. The only known risk factor for atherosclerosis was dyslipidaemia. A year before she was admitted to the ER for, allegedly, “dehydration during influenza”. The night before the event, she experienced vomiting and diarrhoea, progressive weakness with myalgia involving the limbs. The next morning, she felt weak and experienced a pre-syncope episode of short duration. During transfer to the hospital, she underwent cardiac arrest with pulseless electrical activity (ROSC 18 minutes, with ALS). At arrival to the hospital, a total-body CT scan showed only extravasation of venous blood at the level of the right adductor muscles. The blood test demonstrated neutrophilia, hemoconcentration, severe hypoproteinemia (total protein levels <2 g/dl), hypocholesterolemia (total cholesterol levels <50 mg/dl), renal insufficiency, high level of ferritin (3408 ng/ml). The first few days of hospitalization were characterized by hemodynamic instability, with the need of vasopressor and fluid therapy; she developed disseminated intravascular coagulation due to deficiency of liver-produced coagulation factors. Rapidly, she became anasarctic with marked lower limbs pitting edema, resulting in the development of compartment syndrome and rhabdomyolysis that required continuous renal replacement therapy (CRRT). During hospitalization, the throat swab turned positive for influenza B virus; all the other culture tests were negative. Concentrations of plasma IL-6 and IL-10 were markedly increased. The blood test also demonstrated the presence of monoclonal gammopathy of undetermined significance. After few days, she achieved hemodynamic stability but remained comatose (GCS 3). Her CT scan showed ischemic lesions in bilateral hypothalamus. We believe her clinical picture to be compatible with Systemic Capillary Leak Syndrome, also known as Clarkson Disease, of which 250 cases have been reported since 1960. The syndrome is characterized by shock secondary to a massive loss of intravascular fluid, hypoalbuminemia, hemoconcentration and severe edema

of the face, trunk, and extremities; this condition may lead to compartment syndromes, rhabdomyolysis, renal failure and stroke. Our patient presented the whole spectrum of signs and symptoms. Although appropriate therapy was implemented, based on literature guidelines, she died of pulmonary complications.

P304

Mechanical chest compression devices do not seem to improve outcome after out-of hospital cardiac arrest

P Sulzgruber,¹ S Zeiner,¹ M Poppe,¹ P Datler,¹ M Keferboeck,¹ E Lobmeyr,¹ R Van Tulder,¹ A Buchinger¹ and F Sterz¹

¹Medical University of Vienna, Emergency Medicine, Vienna, Austria

Background: In the 2010 guidelines for adult Advanced Life Support (ALS) of both, the American Heart Association and the European Resuscitation Council, LUCAS™ and AutoPulse® were specifically mentioned the first time as automated mechanical chest compression (CC) devices. Recently three large post product placement studies, comparing the outcome of patients suffering from an out of hospital cardiac arrest (OHCA) and being treated with mechanic CC devices to those who received manual CC, found equivalent results for both groups. Thus the question arises whether those results could be replicated using the devices on a daily routine treating OHCA patients.

Methods: Therefore we prospectively enrolled 948 patients suffering OHCA in Austria, treated by the local Municipal Emergency Medical Service (EMS) within a 12-month period. To address the study goals we compared subgroups according to “manual” and “mechanical” CC. Chi-Square test and Mann-Whitney-U test were used to assess differences between subgroups. Uni- and multivariate Cox regression hazard analysis were used to assess the influence of mechanic CC on survival.

Results: A mechanical CC device was assessed in 30.2% (n=283) of all cases demonstrating a strong and direct association with in-hospital mortality in the entire study cohort with an HR per one standard deviation (1-SD) of 1.59 (95% CI 1.21-2.09, p=0.01). Moreover even after adjustment for potential cofounders, within the multivariate model, mechanical CC still remained significantly and directly associated with in-hospital mortality with an adj. HR per one 1-SD of 1.38 (95% CI 1.04-1.84, p=0.026). Interestingly patients who received mechanical CC had a significantly worse neurological outcome - measured in favorable cerebral performance category (CPC) 1 and

2 - than the manual CC group (56.8% mechanic vs. 78.6% manual, $p=0.009$). Furthermore there was no difference in subgroups comparing the quality of cardio pulmonary resuscitation according to compression rate, hands-on fraction and ventilation rate that might explain the worse outcome in the mechanical CC subgroup.

Conclusion: Even a high quality of CPR in both, manual and mechanical CC group, outcome in patients who received mechanical CC was significantly worse. This gives the impression, that the assessment of mechanical CC is not beneficial for patients suffering OHCA. Potential factors that contribute and impact on a worse outcome in patients receiving mechanical CC need to be elucidated in detail further.

P305

Disagreement in the criteria for implantation of cardioverter-defibrillator for the prevention of sudden death in patients with hypertrophic cardiomyopathy

R Rodrigues,¹ AM Ferreira,² H Marques,² P Goncalves² and N Cardim²

¹Hospital Sao Bernardo, CHS, Setubal, Portugal ²Hospital da Luz, Cardiac Imaging, Lisbon, Portugal

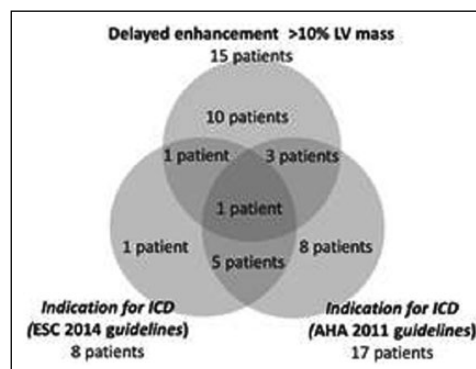
Introduction: The identification of patients with hypertrophic cardiomyopathy (HCM) who will benefit from the implantation of a cardioverter-defibrillator (ICD) for primary prevention of sudden cardiac death (SCD) remains challenging. Our aim was to assess the prevalence and agreement between 3 different criteria for ICD implantation in HCM patients undergoing cardiac MRI.

Methods: We studied 75 patients with HCM (56 male, age 52 ± 16 years) undergoing cardiac MR for diagnostic confirmation and/or risk stratification. For each patient, the indication for ICD implantation was assessed according to the AHA 2011 criteria, the new HCM Risk-SCD score ($\geq 4,0\%$ at 5 years), and the presence of delayed enhancement exceeding 10% of myocardial mass - recently proposed as a possible criterion.

Results: Of the 75 patients, 4% had a family history of SCD, 8% non-sustained ventricular tachycardia, 4% unexplained syncope, and 3% abnormal exercise blood pressure response. The maximum wall thickness was 20 ± 5 mm. According to the AHA 2011 criteria, ICD implantation should be considered in 22% of patients (1 criterion, $n=17$), and would be categorical in 3% (2 criteria, $n=2$). The median HCM Risk-SCD score was 2.3% (interquartile range 1.7% -3.1%), and in 11% of patients ($n=8$) the ICD implantation could or should be considered according to

this criteria. On cardiac MR, delayed enhancement was present in 79% of patients ($n=59$) and exceeded 10% of myocardial mass in 20% ($n=15$). The agreement between the various criteria was poor. Only 1 patient had indication for ICD by all the 3 criteria.

Conclusion: In HCM patients undergoing cardiac MR, the indication for ICD ranged from 11-22% depending of the used criteria, with poor agreement between them. Prospective multicenter validation of these criteria is warranted.



P306

A non-invasive variant of preventing sudden death in patients after myocardial infarction using a bio-feedback method

I A Leonova,¹ I Yarmosh,¹ S Boldueva¹ and N Suvorov²

¹North-Western State Medical University named I.I. Mechnikov, St-Petersburg, Russian Federation ²Institute for Experimental Medicine of the RAMS, St-Petersburg, Russian Federation

The increasing of activity of sympathetic nervous system was shown during myocardial infarction (MI). There are data that biomanagement application increases the vagal influences on a heart rate for patients with chronic coronary artery disease.

The purpose of this study was the assessment of changes of vegetative regulation of heart rate at patients with MI, receiving along with standard methods of treatment and rehabilitation sessions of cardiorespiratory training (CRT).

48 patients with IM in early period of disease at the age from 40 till 70 years were surveyed. The main group was created from 29 people by whom CRT (5–10 sessions) was carried out. The assessment of efficiency and safety of CRT was carried out on a clinical picture and on parameters of heart rate variability (HRV) before, after and during CRT. Control group consisted of 19 patients receiving only standard treatment. During CRT the content of carbon dioxide was measured in exhaled air.

During carrying out of CRT, and after CRT worsening of clinical picture at patients of the main group was not observed. HRV analysis at patients of the main group showed that after end of CRT decrease in an index of tension ($p < 0,05$), increase in an indicator of the general dispersion of heart rate ($p < 0,05$), and also a tendency to increase of vagal part of total power during spectral analysis ($p = 0,05$) was observed. Normalization of heart rate and arterial pressure, growth of cardiorespiratory index and index of a variation took place, cardiorespiratory synchronization was restored. Persons from control group had no such changes.

Thus, application of CRT realizing a mode of functional biomanagement of heart rate, as the instrument of psychophysiological support of standard medicament therapy showed efficiency of its use in the program of rehabilitation of patients with a myocardial infarction. The result of a comprehensive approach is reduction of sympathetic and increase of vagal influences on heart rate, normalization of the main indicators of cardiovascular system.

P307

Initial predictors of survival in out-of-hospital cardiac arrest with return of spontaneous circulation

K Ablasser,¹ A Lecher,¹ D Lewinski¹ and F Fruhwald¹

¹Medical University of Graz, Department of Cardiology, Graz, Austria

Introduction: Out-of-hospital cardiac arrest is associated with very high mortality even after successful resuscitation with return of spontaneous circulation. Long term outcome predictions are often difficult. Goal of this study was to look at initial biomarkers at presentation to cardiac care unit (CCU) to predict mortality within 60 days after cardiac arrest.

Method: A retrospective analysis of all consecutive post-cardiac arrest (CA) patients admitted to your CCU in the time March 2013 till July 2014 who had return of spontaneous circulation (ROSC) was performed.

Results: Overall 50 consecutive patients with out-of-hospital cardiac arrest were admitted to the CCU with ROSC in the studied time period. Overall 60-day mortality, the primary endpoint, was 60% with a mortality on the CCU of 52%. Mean duration of CCU-stay was 9 ± 9 days. Baseline characteristics show 20% woman, average age of 62.6 and 54% ventricular fibrillation (VF) to 46% non-shockable primary rhythm.

Initial documented non-shockable rhythms have a significant worse prognosis compared to patients in VF (75% vs. 45% mortality, $p = 0.044$). Initial systolic or diastolic blood pressure at presentation to CCU does

not predict mortality, in contrast to heart rate (HR). HR below the median of 70/min was associated with a highly significant better outcome in the subgroup of patients with VF (33.3% vs 64.3% mortality, $p = 0.04$). This was not true for patients presenting with non-shockable rhythm at CPR.

Lactate as well as pH correlate highly significant with mortality at day 60. Patients with a pH over the median (7.2565) have a 60-day survival of 65% vs. 22% ($p = 0.006$). Similar significant results are observed for patients above and below the lactate median (3.2) (62% vs. 25% survival; $p = 0.002$). Initial Neuron-specific enolase (NSE) concentration (68.2 $\mu\text{g/l}$ vs. 41.3 $\mu\text{g/l}$, $p = 0.05$) was significantly increased in patients with poor outcome. However s100 did not correlate with mortality.

Conclusions: Mortality of patients who retained ROSC arriving on the CCU after out-of-hospital cardiac arrest is very high. High initial serum lactate levels, low pH and low HR were predictive of worse outcome. As indicators of neurological damage only initial and maximum NSE levels, but not S100, were markers of poor outcome.

P308

Female sex is not associated with worse resuscitation rates after out-of hospital cardiac arrest

M Winther-Jensen,¹ H Soholm,¹ J Kjaergaard,¹ J Bro-Jeppesen,¹ JH Thomsen,¹ FK Lippert,² L Kober,¹ M Wanscher³ and C Hassager¹

¹Rigshospitalet - Copenhagen University Hospital, Department of Cardiology, Copenhagen, Denmark ²Emergency Medical Services, Capital Region of Denmark, Denmark ³Rigshospitalet - Copenhagen University Hospital, Copenhagen, Denmark

Purpose: This study aimed at investigating whether female sex was associated with different resuscitation rates.

Methods: 3936 patients suffering EMS-attended OHCA in the greater Copenhagen area 2002-2011 were stratified by sex and successful vs. unsuccessful resuscitation. Pre-hospital data were collected according to Utstein guidelines. Comorbidities prior to arrest were obtained from the Danish National Patient Registry. Chance of successful resuscitation was assessed in logistic regression adjusting for sex, age, comorbidity, primary rhythm, witnessed arrest, bystander cardiopulmonary resuscitation and arrest in public. Fig. 1 depicts predicted values derived from a univariate model using age as predictor in the two sexes in the age range of the population (18-101 years). Density of resuscitated patients is shown with dots.

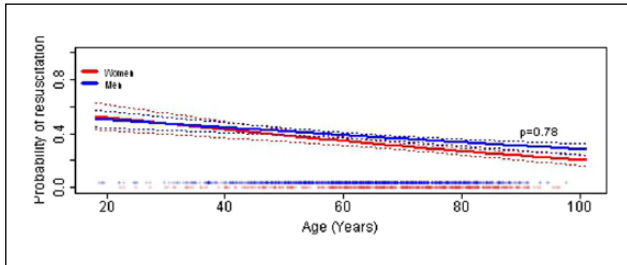


Figure. 1: Probability of resuscitation.

Results: 1345 patients were women, 30% (n=407) were successfully resuscitated, compared to 2596 men with 38% (n=976) being successfully resuscitated, significantly more than women, $p < 0.001$. For men as well as women, patients who could not be resuscitated were significantly older; fewer had OHCA in public places, witnessed arrest, bystander CPR, shockable rhythm and cardiac aetiology. In univariate logistic regression female sex was associated with lower odds of successful resuscitation, OR: 0.71 (0.60-0.85), $p < 0.001$, but this was not significant when adjusting for confounders. In successfully resuscitated patients, women were on average 7 years older than men and in unsuccessfully resuscitated patients, women were 8 years older than men, but female sex did not interact with age in terms of probability of resuscitation, $p = 0.78$ (fig 1)

Conclusions: More men than women are resuscitated from OHCA, but this difference seem to be explained by factors other than sex.

P309

Coronary angiographies and percutaneous coronary interventions are performed less often in women than men after out-of-hospital cardiac arrest

M Winther-Jensen,¹ H Soholm,¹ C Hassager,¹ J Bro-Jeppesen,¹ JH Thomsen,¹ FK Lippert,² L Kober,¹ M Wanscher³ and J Kjaergaard¹

¹Rigshospitalet - Copenhagen University Hospital, Department of Cardiology, Copenhagen, Denmark ²Emergency Medical Services, Capital Region of Denmark, Denmark ³Rigshospitalet - Copenhagen University Hospital, Copenhagen, Denmark

Purpose: The incidence of out-of-hospital cardiac (OHCA) arrest is lower among women. On average, women are older, and they less often present with shockable rhythm compared with men. This study aimed at investigating the utilization of acute coronary angiography (CAG) and percutaneous coronary intervention (PCI) in men and women.

Methods: Between 2002 and 2011, 876 men and 344 women were successfully resuscitated after OHCA and survived to hospital admission in the greater Copenhagen area. Pre-hospital data were collected according to Utstein guidelines and data on comorbidities prior OHCA were obtained from the Danish National Patient Registry.

Results: Women were older at arrest (68 vs. 63 years, $p < 0.001$), less often had arrest in public ($p < 0.001$) and bystander cardiopulmonary resuscitation ($p = 0.03$). Only 40% of women presented with a shockable initial rhythm vs. 60% of men, $p < 0.001$. Fewer women had presumed cardiac etiology ($p = 0.01$) and fewer women had a Charlson comorbidity index of 0 (30 vs. 42%, $p = 0.001$). Women less often received CAG and PCI within the first 24 hours post ROSC, OR_{cag}: 0.58, CI: 0.33-0.99, $p = 0.049$, and, OR_{pci}: 0.34, CI: 0.15- 0.74, $p = 0.01$, when adjusting for shockable rhythm, ST-segment myocardial infarction, arrest in public, witnessed arrest, comorbidities, age, time to return of spontaneous circulation, cardiac etiology and bystander cardiopulmonary resuscitation.

Conclusions: Women less often receive acute CAG and PCI after out-of-hospital cardiac arrest, even when adjusting for other confounders.

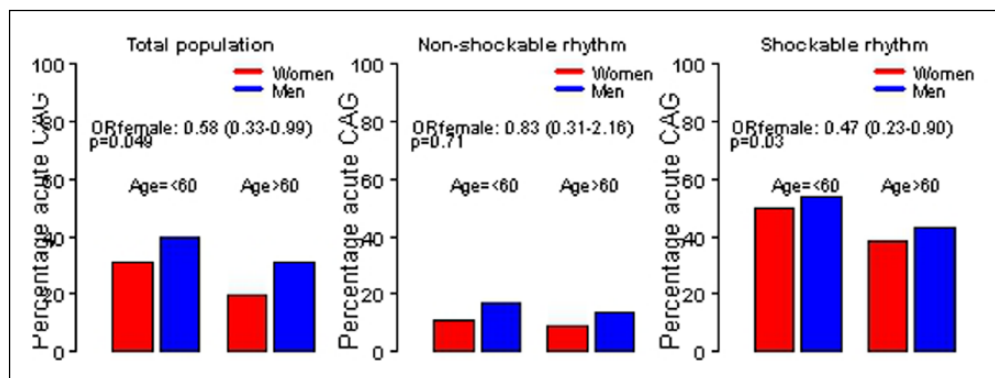


Figure 1. Percentage of acute CAG.

P310

Comorbidity index and mortality in comatose survivors of out-of-hospital-cardiac arrest (OHCA): Implications for target temperature management at 33 or 36 C

M Winther-Jensen,¹ H Soholm,¹ N Nielsen,²
J Kjaergaard,¹ J Hartvig Thomsen,¹ T Pellis,³ M Frydland,¹
M Wanscher,⁴ T Cronberg⁵ and C Hassager¹

¹Rigshospitalet - Copenhagen University Hospital, Department of Cardiology, Copenhagen, Denmark ²Hospital of Helsingborg, Helsingborg, Sweden ³Santa Maria degli Angeli Hospital, Department of Intensive Care, Pordenone, Italy
⁴Rigshospitalet - Copenhagen University Hospital, Copenhagen, Denmark
⁵Lund University, Lund, Sweden

Purpose: The aim was to investigate how the co-morbidity burden of comatose survivors of out-of-hospital cardiac arrest (OHCA) affects outcome and whether it modifies the effect of target temperature management (TTM).

Methods: This is a post-hoc study of the TTM trial in which 939 patients were randomized to 24 hours of TTM at either 33 oC or 36 oC and found similar effect in both arms regarding mortality and recovery to good neurological outcome. An adapted Charlson Comorbidity index (CCI) was calculated based on available comorbidities, ranging from 0 to 15. Patients with CCI ≥ 3 were pooled for analysis. The CCI is a weighted, validated index used for predicting short-term mortality by taking into account 22 conditions.

Results: Patients with higher CCI were older, $p < 0.001$ and less often had bystander cardiopulmonary resuscitation performed, $p = 0.02$. No patients had CCI 1.

Crude HR for death was significantly higher for CCI2 and ≥ 3 compared to CCI0, HRCCI2: 1.81, CI: 1.37-2.4, $p < 0.001$ and HRCCI ≥ 3 : 1.72, CI: 1.41-2.1, $p < 0.001$. In multivariate Cox regression neither CCI2 nor ≥ 3 were significantly associated with higher mortality; HRCCI2: 1.28, CI: 0.94-1.76, $p = 0.12$ and HRCCI ≥ 3 : 1.20, CI: 0.96-1.50, $p = 0.10$.

We found no interaction between the allocated target temperature and increasing CCI levels with regards to mortality, $p = 0.89$.

Conclusion(s): Co-morbidity burden is associated with higher crude mortality following OHCA, but when adjusting for confounders, this influence is no more than modest. The association between CCI and mortality is not modified by TTM at 33 oC or 36 oC.

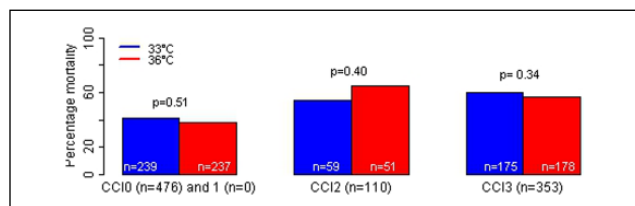


Figure 1.

Syncope

P311

A rare cause of recurrent syncope

Al Azevedo,¹ A Dias,¹ M Teixeira¹ and V Gama Ribeiro¹

¹Hospital Center Vila Nova Gaia, Porto, Portugal

Purpose: Catecholaminergic polymorphic ventricular tachycardia (CPVT) is an inherited channelopathy characterized by the occurrence of adrenergic mediated polymorphic ventricular tachyarrhythmias. Although a rare disease, its recognition is important because of its high mortality rate. The authors present an index case of CPVT, in a young woman with recurrent syncopes.

Methods and results: A 32-year-old woman presented in the emergency department with history of a non-traumatic transient total loss of consciousness, preceded by dizziness, with short duration (less than 1 minute), rapid and spontaneous recovery, while working at the factory. Her prior medical history included previous episodes of syncope, which began in the adolescence. There was no family history of syncope or sudden cardiac death. Physical examination, laboratory evaluation and transthoracic echocardiography were unremarkable. Initial 12-lead ECG revealed a sinus rhythm, normal corrected QT interval, with frequent polymorphic ventricular premature beats (VPB). The patient was treated with beta-blocker, after which she had no recurrence of syncope. She underwent further investigation: 24-hour Holter monitoring - frequent polymorphic VPB and several asymptomatic episodes of non-sustained polymorphic and bidirectional VT; cardiac magnetic resonance - structurally normal heart; exercise test on treadmill - with exercise duration and heart rate increase, the number of isolated VPB increased to trigeminal and bigeminal VPB and non-sustained and bidirectional VT were seen; sequencing of the ryanodine (RyR2) and calsequestrin (CASQ2) genes - no pathological mutations. She was encouraged to avoid physical and emotional stress and to maintain beta-blocker therapy. Patient's siblings and daughter were referred to clinical evaluation and exercise testing.

Discussion and conclusion: The diagnosis of CPVT was confirmed by the presence of a structurally normal heart, normal corrected QT interval and exercise induced polymorphic VPB and polymorphic and bidirectional VT in this 32-year-old woman. Despite the history of recurrent syncope, she remained event free with beta-blocker therapy.

CPVT is a rare but life-threatening disease and should be considered in the case of recurrent syncope, in young individuals. Diagnosis is based on clinical evidence and exercise testing, which is the goldstandard. Therapy is mandatory in all diagnosed individuals. Exercise testing in first-degree relatives is needed, even in the case of a mutation-negative index patient.

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Reversal of various reflex syncopes in patients by voluntary sniffs or gasps.

M Bavolarova,¹ Z Tomori,² A Brandeburova²
and V Donic²

¹L.P. University Hospital, 4th Department of Internal Medicine, Kosice, Slovak Republic ²PJ Safarik University, Department of Medical Physiology, Kosice, Slovak Republic

Three airway reflexes (Aspiration reflex, Expiration reflex and Cough reflex) very strongly activate the brainstem central pattern generator of breathing. These reflexes can effectively modify the “central mechanisms” of various vital functions, normalizing many hypo- and hyperfunctional disorders, if not hindered by severe or fixed changes, both in animal experiments and probably also in human studies. The gasp- and sniff-like aspiration reflex (AspR) is characterized by spasmodic inspirations without subsequent active expiration and can be elicited even during agonal gasping before a death in cats. The strong resuscitation potential of AspR was proved by termination of progressive hypotension and atrio-ventricular blockade in a cat, during gasping stage caused by severe asphyxia.

Purpose: To test the presupposed resuscitation potential of voluntary sniffs or gasps also in patients with reflex syncopes and various arrhythmias. Provocation of AspR or sniffs have strong sympathomimetic effect. Revitalisation effects of voluntary sniffs may be extraordinary important for presupposed cardio-pulmonary auto-resuscitation, applicable whenever and everywhere by the properly trained patients.

Methods: We examined two 62- and 56-years old female patients with a history of vaso-vagal syncopes using the head-up tilt table test. The patients were tilted at the angle of 60 degrees according to the standard Westminster protocol. At the moment of blood pressure dropping they were asked to perform voluntary sniffs. The patients were monitored by Spiroson continually recording changes in airflow, tidal volume and ECG.

Results: In both cases voluntary sniffs stopped further dropping of blood pressure, stabilized the circulation and prevented the development of the syncope.

Conclusions: These two cases confirmed the sympathomimetic effect of voluntary equivalent of the aspiration reflex. Therefore the voluntary sniffs can be recommended for prevention of reflex syncopes.

Moderated Poster Session 2: acute coronary syndromes (STEMI, Non -STEMI) Sunday, 18 October 2015 15:15 - 16:15

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Prevalence of acute aortic dissection in the entire metropolitan area of Tokyo

H Yoshino,¹ T Shimokawa,² K Nagao³ and
M Takayama⁴

¹Kyorin University School of Medicine, Tokyo, Japan ²Teikyo University, Cardiovascular Surgery, Tokyo, Japan ³Nihon University School of Medicine, Tokyo, Japan ⁴Sakakibara Heart Institute, Department of Cardiology, Tokyo, Japan

Background: Acute aortic diseases (AAD) including acute aortic dissection and impending rupture of aortic aneurysm are fatal cardiovascular conditions. The prevalence of AAD is thought to be low compared with that of acute myocardial infarction (AMI), but still remains uncertain. The clinical data of AAD from a single center are not enough to show the whole feature of clinical characteristics of AAD. We have to know the exact prevalence of AAD in the entire metropolitan area of Tokyo to make a strategy for AAD, which needs to include emergent surgical treatment. The data from a large number of patients in the Tokyo AAD Super-Network provide much information regarding the various characteristics of AAD.

Methods and Results: The Tokyo AAD Super-Network is comprised of 67 hospitals in Tokyo and covers the entire metropolitan area of Tokyo. From November 2010 to October 2011, 1626 cases (1265 cases with acute aortic dissection and 361 cases with impending rupture of aortic aneurysm) were admitted to the hospitals. The incidence was 10 AAD/100,000 of people/year, almost 1/4 of that of AMI, which is higher than the previous reports. The average time of transportation from first medical contact to the final hospitals was 49 min. In 78% of the patients, the acceptance of the patients to the hospital after the first call from emergent medical system was achieved and in 89% of the patients after the second call to the hospital. Number of patients with type A dissection was almost same as that of type B (50.5% vs. 49.5%). Among patients with type A dissection, patients with communicating type is more prevalent than with non-communicating type (73% vs. 27%). However, among those with type B dissection, number of patients with communicating type dissection is slightly smaller than that of compared patients with non-communicating type dissection (41% vs. 59%).

Conclusion: The incidence of AAD is higher than the previous reports. Half of the patients have type A AAD. So, optimal treatment of AAD should be based on the implementation of networks between hospitals connected by an efficient ambulance service. Our comprehensive new AAD network registry has been started and will provide the higher quality of care for the higher-risk patients with AAD.

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The effect of catheter based revascularization strategy on 1-year mortality in ST-segment elevation acute coronary syndrome patients with multi-vessel coronary disease without cardiogenic shock.

G Witberg,¹ S Matetzky,² I Goldenberg,² N Shlomo,² D Hasdai,¹ R Kornowski¹ and Z Iakobishvili¹

¹Rabin Medical Center, Department of Cardiology, Petach Tikva, Israel

²Sheba Medical Center, Leviev Heart Center, Tel Hashomer, Israel

Background: The optimal revascularization strategy for STEMI patients without cardiogenic shock who have multivessel CAD remains controversial. The traditional “culprit lesion only” PCI strategy has been challenged by recent randomized trials that showed the prognostic benefits of immediate treatment of non-culprit arteries or their treatment by in-hospital staged PCI.

Purpose: To study the effect of revascularization strategy on 1-year all-cause mortality results in consecutive STEMI patients with multivessel CAD who present without cardiogenic shock.

Methods: In a retrospective analysis of a national ACS survey (compiling data from 19 PCI centers), we compared the impact of the culprit only approach vs. the treatment of non-culprit arteries approach on 1-year mortality rates for patients who underwent primary PCI due to STEMI and were found to have multivessel CAD during 2008-2013 and were not in cardiogenic shock.

Results: A total of 826 patients (688 culprit lesion only, 79 immediate treatment of non-culprit arteries and 59 early staged PCI) were included. The 3 groups were well matched regarding all major demographic and clinical characteristics. At 1-year follow up, patients treated by immediate non-culprit PCI had higher mortality rates compared to patients treated by culprit lesion only or staged PCI (16.4% vs. 5.6% in culprit lesion only and 5.0% for staged PCI, $p=0.011$). In a group of 192 patient quartets matched by age and Killip class (2:1:1 ratio of culprit lesion only, immediate non-culprit and staged PCI), there was no difference in 30 days or 1-year mortality between the revascularization strategies.

Conclusion: In real-world STEMI patients with multivessel CAD, who do not present with cardiogenic shock, culprit lesion only and staged PCI strategies are associated with similar 1-year mortality rates, whereas an immediate non-culprit PCI strategy tends to be associated with increased mortality, probably due to selection bias of performing multivessel PCI in more severe patients.

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TIMI flow in STEMI patients treated with ticagrelor, clopidogrel or prasugrel in the prehospital settings

C El Khoury,¹ M Demarquet,² E Flocard,³ M Bischoff,³ A Eskandarian,² P Serre² and E Bonnefoy⁴

¹Hospital Center Lucien Hussen, Emergency Department, Vienne, France

²General Hospital Fleuryat, Emergency Department, Bourg en Bresse, France

³Hospital Center Lucien Hussen, RESUVal, Vienne, France

⁴Cardio-vascular Hospital, Hospices Civils de Lyon, ICCU, Lyon, France

Introduction: Prehospital administration of ticagrelor as compared to cathlab administration showed no benefit, nor harm. This analysis of the RESCUE network registry looked at the effect of prehospital ticagrelor on reperfusion and bleeding as compared to non ticagrelor thienopyridines in real life.

Material and methods: We evaluated the initial TIMI flow in the culprit artery, the final TIMI flow, hospital mortality and one month mortality in an analysis of patients included in the registry from June 2010 to August 2014.

Results: 3922 patients were included of which 1147 in the ticagrelor group and 2775 in clopidogrel/prasugrel group. The two populations were similar in terms of age (median age 61 years versus 63 years), sex (76% of men in each group), cardiovascular risk factors, infarct location and cardiogenic shock. Initial TIMI 3 flow in the culprit artery was similar in both groups: 21% ticagrelor versus 22%. There was also no difference in the final flux: 92% vs 90%. In hospital mortality in ticagrelor group was 3.3% versus 6.2% ($p<0.05$) and one month mortality was 5.1% versus 9.2% ($p<0.05$).

Conclusions: We did not find any difference in TIMI 3 flow at admission or after angioplasty in the ticagrelor group as compared to other antiplatelet agents. Our results confirm those of the Atlantic study.

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Discharge of chest pain patients from emergency care to a chest pain clinic: an observational study of referral source and final diagnosis.

S J Ingram,¹ G Mckee,² M Quirke,³ N Kelly¹ and A Moloney¹

¹Adelaide & Meath Hospital, Incorporating the National Children's Hospital, Dublin, Ireland ²Trinity College Dublin, School of Nursing and Midwifery, Dublin, Ireland ³Trinity College Dublin, Centre for Practice and Healthcare Innovation, , Dublin, Ireland

Chest pain accounts for 5-10% of Emergency Departments (ED) visits per year. Protocol driven discharge of non-Acute Coronary Syndrome (ACS) patients from ED can effectively reduce hospital admissions. Further outpatient investigation is recommended for patients discharged; however there is a dearth of published evidence regarding this group. In December 2011 a Cardiology Registered Advanced Nurse Practitioner (RANP) and Clinical Nurse Specialist (CNS) (Cardiology Nurses) chest pain service commenced in an Irish acute hospital. Clinic referrals comprised of Cardiology nurse referrals during consult hours and Out-of-hours referral by ED physicians. The objective of the service is to expertly assess and risk stratify chest pain patients enabling those with suspected coronary heart disease (CHD) to be identified and treated, whilst those without, to be safely discharged.

Purpose: This study aims to investigate the characteristics and outcomes of non-ACS chest pain patients discharged from ED and referred to a chest pain clinic. The secondary objective was to compare the patient characteristics and outcomes by referral type (cardiology nurse or ED physician)

Methods: A one site observational study of all patients attending the chest pain clinic over a two year period. Data was extracted from case notes. Ethical approval was granted. Analysis used chi and t-test as appropriate.

Results: Overall, 8,317 patients presented to the ED with chest pain during this timeframe. A total of 1041(13%) patients were referred to the chest pain clinic, 467 by cardiology nurses and 574 ED Physicians. Overall patient profile: Mean age 54.2 years, 53% male, 18% previous history of CHD. Overall confirmed diagnosis; 76% non-cardiac chest pain, 15% diagnosed with CHD, 9% non-obstructive disease, 1% pre-existing CHD. Late presentation ACS of 1% was safely detected. There was significant differences ($p < 0.001$) between referral type for age, history of CHD, GRACE risk score, stress test result and confirmed diagnosis. Initial assessment and referral by the cardiology nurses compared to ED Physicians resulted in more referrals of: older patients (56.5 yrs./52.3 yrs.); those with a history of CHD (24%/13%); a higher proportion of intermediate GRACE score (10%/5%); positive stress tests (21%/12%) and confirmed cardiac diagnosis (30%/18%).

Conclusion: Safe discharge from ED care was proven with a 1% ACS pick up and 15% diagnostic rate of CHD.

Cardiology nurse expertise in initial assessment in the emergency department ensured more appropriate referral, diagnosis and resource use of the chest pain clinic.

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Comparison of main clinical parameters and outcomes between groups of patients with type 1 and 2 myocardial infarction

P Serpytis,¹ G Navickas² and A Skujaite³

¹Vilnius University, Department of Cardiovascular Medicine, Vilnius, Lithuania ²Vilnius University Hospital Santariskiu Klinikos, Department of Cardiology and Angiology, Vilnius, Lithuania ³Vilnius University, Faculty of Medicine, Vilnius, Lithuania

Purpose: To evaluate the clinical onset, course, treatment and outcome differences between patients with type 1 or 2 myocardial infarction (MI).

Methods: Retrospective study was conducted to analyse data of 1668 patients with MI diagnosis registered in the database of acute coronary syndromes monitoring system during the year 2011-2015. Patients with type 1 or 2 MI were picked out. The average age of these patients was 66.74 ± 11.98 years. Demographic parameters: age, sex; clinical parameters: anaemia, tachycardia, new onset atrial fibrillation, functional capacity; laboratory tests: troponin, creatinine, BNP concentrations; coronary angiography data, intervention and medical treatment application and disease outcomes were examined. The difference was considered statistically significant when $p < 0.05$.

Results: Type 1 MI was diagnosed for 1467 patients (87.95%), type 2 MI – 116 patients (6.95%). Comparing groups of patients with type 2 and 1 MI significant differences ($p < 0.05$) were found between the number of patients with anaemia (65% vs. 27%), tachycardia (38% vs. 9%), new onset atrial fibrillation (13% vs. 4%) and significantly (< 100 m.) impaired functional capacity (44% vs. 19%). Group of patients with type 2 MI also had lower troponin concentration (8.95 ± 18.8 vs. 22.83 ± 70.0). Meanwhile, age (67.56 ± 13.0 vs. 66.68 ± 11.9), gender (females 39% vs. 34%; males 61% vs. 66%), GRACE risk score (131.74 ± 42.7 vs. 122.15 ± 32.0) and creatinine (122.53 ± 126.6 vs. 104.75 ± 142.9) and BNP (1346.39 ± 1714.4 vs. 959.17 ± 2445.6) concentrations did not have significant differences ($p \geq 0.05$). Patients with type 2 MI were characterized by lower number of damaged coronary arteries (49% vs. 28%; $p = 0.004$) and a lower degree of stenosis (56% vs. 14%; $p < 0.001$). Coronarography (87% vs. 96%; $p = 0.002$), percutaneous coronary intervention (42% vs. 82%; $p < 0.001$) and antiplatelet treatment (54% vs. 76%; $p < 0.001$) were

applied less often for these patients. Number of MI complications was equal in both groups. Group of patients with type 2 MI stood out with higher hospital mortality (10% vs. 4%; $p=0.049$).

Conclusions: Type 2 MI is diagnosed almost 12 times less frequent than type 1 MI, however patients with type 2 MI have higher hospital mortality. These patients are more frequently diagnosed with anaemia, tachycardia, new onset atrial fibrillation, significantly impaired functional capacity and lower troponin concentration than those with type 1 MI. Patients with type 2 MI are also characterized by lower number of damaged coronary arteries and lower degree of stenosis, and have intervention and antiplatelet treatment applied less often.

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Characterization of the observational zone of the 1h-hs-cTn-algorithm in the early diagnosis of acute myocardial infarction

T Nestelberger,¹ K Wildi,² R Twerenbold,²
C Puelacher,¹ K Grimm,¹ J Boeddinghaus,¹
M Rubini Gimenez,² R Abaecherli,³ T Reichlin⁴ and
C Mueller⁴

¹University Hospital Basel, Cardiovascular Research Institute Basel, Basel, Switzerland ²University Hospital Basel, Internal Medicine, Basel, Switzerland ³SCHILLER AG, Biomed. Research and Signal Processing, Baar, Switzerland ⁴University Hospital Basel, Cardiology, Basel, Switzerland

Objective: High-sensitivity cardiac troponin (hs-cTn) 1h-algorithms allow the safe “rule-out” as well as

accurate “rule-in” of acute myocardial infarction (AMI) in about 75% of patients. Diagnostic uncertainty remains in the remaining 25% of patients classified to the “observational zone”. We aimed to better characterize these patients.

Methods: In a prospective multicenter diagnostic study we enrolled 2219 and 1836 consecutive patients respectively, presenting with acute chest pain to the emergency department and classified them to “rule-in”, “observational zone” and “rule-out” according to the hs-cTnT and hs-cTnI 1h algorithm. The final diagnosis was adjudicated by two independent cardiologists using all information including coronary angiography, echocardiography, serial hs-cTnT levels and three month follow up. Mortality at 720-days was the prognostic endpoint.

Results: AMI was the final diagnosis in 17% of patients. Overall, patient characteristics of the hs-cTnT “observational-zone” and the hs-cTnI “observational zone” were similar. Pre-existing coronary artery disease (57% vs. 38% vs. 24%) and previous coronary revascularization (46% vs. 27% vs. 21%) were even more common in the “observational zone” as compared to the “rule-in” and the “rule-out” zone (all $p<0.001$). The most common adjudicated diagnoses in the “observational zone” were non-cardiac disease (38%), non-coronary cardiac disease (24%), unstable angina (21%), and AMI (15%). Cumulative 720-day survival rate was 86%, which was significantly lower as compared to “rule-out” ($p<0.001$) and comparable to “rule-in” ($p=ns$).

Conclusion: More than half of “observational zone” patients had pre-existing coronary artery disease and more than half had an adjudicated cardiac cause of chest pain. Long-term mortality was unexpectedly high.

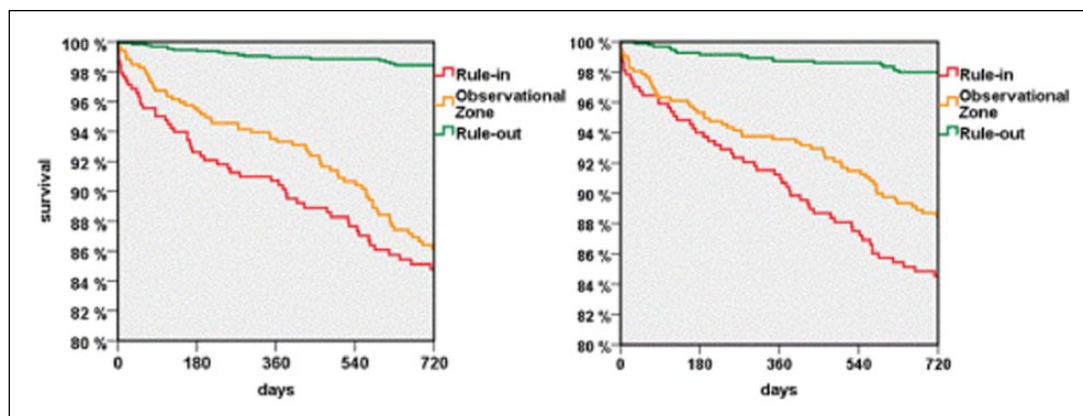


Figure 1.

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Sexuality after a cardiovascular event: a hidden issue.

R Piccari,¹ S Bartolini,¹ M Franchini,¹ L De Lio,¹
A Terranova,¹ F De Santis,¹ S Baldoni¹ and
M Uguccioni¹

¹San Camillo Forlanini Hospital, Department of Cardiology,
Rome, Italy

Background: After cardiovascular events, patients (pts) and their families often have to face many changes in their private lives that arise as consequences of the disease. In addition, therapy sometime can compromise the quality of life significantly, in particular for the negative impact on sexual life. Healthcare providers should perform a careful evaluation of possible sexual dysfunction caused by therapy and accordingly advise pts about the likelihood of side effects, with the aim of increasing compliance and quality of life.

Aim: This study focuses on the prevalence of sexual activity problems in pts after the hospitalization for Acute Coronary Syndrome (ACS) throughout the 30 days following the discharge. The objective is developing an educational intervention to better manage this aspect of daily life.

Method: Observational study. During the follow-up visit, a self-administered questionnaire was delivered to pts discharged with a diagnosis of ACS STEMI and NSTEMI to assess the quality of sexual life, Hospital Anxiety and depression Scale (HADS).

Results: From 1 September 2014 to 31 January 2015, 102 pts had ambulatory monitoring on the 30th day after being discharged from our UOC Cardiology 1 Hospital in Rome. 81 of them (22 females and 59 males) agreed to participate to the study. The average age was 61.46 years (SD±11.74, 29 MIN, MAX 82); there were not significant differences between genders in relation to the main social-economic factors (average age, marital status, level of education, income, physical activity). On the contrary there was a correlation in the ASEX scale with regards to gender (Pearson correlation coefficient=0.25, p=0.024), anxiety (Pearson=0.22, p=0.048) and depression (Pearson=0.28, p=0.011). Problems related to the sexual sphere were detected in 14 women out of 22 (63.5%), and in 21 men out of 59 (35.5%), (OR=3.17, 95%CI=1.14 to 8.77). The group with sexual problems had higher prevalence of disorders related to anxiety (OR=2.67, 95% CI=1.05 to 6.8) and depression (OR=3.88, 95%CI=1.45 to 10.39).

Conclusion: After cardiovascular events several factors such us drug therapy or the psychological state can negatively impact sexual life, more frequently in women. The aim of our observational study is to raise awareness of healthcare providers on this important aspect by improving health education before the discharge and in outpatient follow-up.

Inflammation and atherothrombosis in ACS

Sunday, 18 October 2015

16:15 - 17:45

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The relationships among inflammatory cytokines and monocyte subsets in patients with acute myocardial infarction treated invasively.

A Tycinska,¹ E Idzkowska,¹ M Rusak,² P Miklasz,³
A Eljaszewicz,³ E Waszkiewicz,¹ M Dabrowska,²
A Bodzenta-Lukaszyk,⁴ WJ Musial¹ and
M Moniuszko³

¹Medical University of Bialystok, Department of Cardiology, Bialystok, Poland ²Medical University of Bialystok, Department of Hematological Diagnostics, Bialystok, Poland ³Medical University of Bialystok, Department of Regenerative Medicine and Immune Regulation, Bialystok, Poland ⁴Medical University of Bialystok, Department of Allergology and Internal Medicine, Bialystok, Poland

Background and Aim: Three main monocytes subsets: classical (CD14++CD16-, Mon1), intermediate (CD14++CD16+, Mon2) and non-classical (CD14+CD16++, Mon3) were demonstrated to play differential role in atherosclerosis. In addition, recent experimental data point to indispensable role of monocytes in acute myocardial infarction (AMI) and in post-infarction healing, however, limited research has been done in humans. Therefore in the current study, we aimed to determine whether changes in inflammatory mediators observed in patients with AMI can be related to changes in different monocyte subsets.

Methods: In 14 consecutive AMI patients (mean age 62.3±13.7, 11 men) Mon1, Mon2 and Mon3 monocytes as well as cytokines - IL-6, IL-7 and IL-10 were measured twice (by flow cytometry and Magnetic Luminex® Performance Assay, respectively) - at admission and after a mean of 4.5 (±0.4) months of observation. All patients were treated within first 12h with successful percutaneous coronary intervention. The extension of MI was indirectly assessed by maximal troponin I

values (max. TnI) as well as by left ventricle ejection fraction (LVEF) with a mean $45.1 \pm 8.5\%$ assessed within first 24h.

Results: During follow up we observed significant decrease in IL-6 levels and increase in IL-7 levels (from 6.3 ± 7.6 to 1.8 ± 1.2 pg/mL, $p=0.007$ and from 11.7 ± 6.9 to 20.8 ± 5.2 pg/mL, $p=0.003$, respectively). Mon1 numbers tended to decrease, and both Mon2 and Mon3 numbers tended to increase, however these changes were not significant. LVEF significantly correlated with baseline IL-10 ($r=0.53$, $p=0.005$). Multiple stepwise linear regression analysis showed that baseline levels of IL-6 ($\beta=0.9$, $p<0.001$), IL-10 ($\beta=-0.4$, $p<0.001$), Mon2 ($\beta=0.2$, $p=0.003$), and Mon3 ($\beta=-0.1$, $p=0.02$) were independently associated with CRP. After follow up, Mon2 numbers were associated with CRP ($\beta=-0.9$, $p=0.04$), and Mon2 ($\beta=-0.9$, $p=0.008$), Mon3 ($\beta=-0.41$, $p=0.05$) and IL-6 ($\beta=0.46$, $p=0.02$) with max. TnI values.

Conclusions: Our data indicate that different monocyte subsets can be differentially involved in regulation of inflammatory responses underlying acute phase of AMI as well as post-infarction myocardial healing.

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Monocyte subset distribution is associated with mortality of critically ill patients

KA Krychtiuk,¹ M Lenz,¹ L Wutzlhofer,¹ K Huber,² G Maurer,¹ G Heinz,¹ J Wojta¹ and WS Speidl¹

¹Medical University of Vienna, Department of Internal Medicine II, Division of Cardiology, Vienna, Austria ²Wilhelminen Hospital, 3rd Department of Internal Medicine, Cardiology and Emergency Medicine, Vienna, Austria

Purpose: Despite the fact that patients admitted to an ICU suffer from various pathologies, many develop a systemic inflammatory response syndrome (SIRS). As key regulators of innate immunity, monocytes may be crucially involved in SIRS development. Monocytes can be distinguished into three subsets: Classical monocytes (CD14⁺⁺CD16⁻; CM), non-classical monocytes (CD14⁺CD16⁺⁺; NCM) and intermediate monocytes (CD14⁺⁺CD16⁺; IM), the latter shown to be particularly pro-inflammatory. The aim of our present study was to analyze whether monocyte subset distribution at admission or 72 hours after admission in critically ill patients is associated with 30-day survival.

Methods: In this prospective, observational study, 195 consecutive patients admitted to a cardiac ICU at a tertiary

care center were enrolled. Blood was taken at admission and after 72 hours. Distribution of monocyte subsets was analyzed by flow-cytometry.

Results: Mean Apache II score was 19.5 ± 8.1 and 30-day mortality was 25.4%. At admission, NCM were significantly lower in non-survivors as compared to survivors [2.65 (0.42-5.53) vs. 4.36 (0.67-7.66) %; $p=0.010$] whereas CM and IM did not differ according to 30-day survival. In contrast, 72 hours after admission, monocyte subset distribution shifted towards an increased proportion of IM [9.4 (3.8-13.1) vs. 4.3 (2.3-8.1); $p=0.005$] with a concomitant decrease of CM [86.8 (78.5-89.3) vs. 89.6 (84.9-93.1); $p=0.009$] in non-survivors versus survivors, respectively. NCM at day 3 were not associated with death at 30 days. Kaplan Meier analysis revealed that NCM at admission below the median predicted early mortality (day 0 to day 10; $p<0.001$), whereas CM and IM at day 3 were associated with late mortality (CM: $p=0.036$; IM: $p=0.003$).

Conclusions: Circulating monocyte subsets are associated with 30-day mortality in critically ill patients. The innate immune system as reflected by monocyte subset distribution plays a major role in ICU outcome despite varying admittance pathologies.

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Differential regulation of pro-angiogenic microRNAs in patients with first-time anterior STEMI.

M Hortmann,¹ M Mohr,¹ C Schoenichen,¹ M Mauler,¹ F Pankratz,¹ C Jaenich,¹ S Grundmann,¹ C Bode¹ and I Ahrens¹

¹Heart Center, University of Freiburg, Cardiology and Angiology I, Freiburg, Germany

Background: The extent of myocardial damage in STEMI depends on time to reperfusion on one hand and on ischemia/reperfusion injury triggering a cascade of cellular and humoral reactions on the other hand. Circulating progenitor cells are thought to play a critical role in the regeneration of vital myocardium post STEMI. However, these cells are very susceptible to oxidative stress, which results in loss of their functional capacity. We examined the effect of ischemia/reperfusion injury in patients with first-time anterior STEMI on progenitor cell function and expression of angiogenesis-related microRNAs, which have been associated with progenitor cell function. In addition, we examined the expression of cardiomyocyte-related miRNAs associated with myocardial damage.

Methods: After informed consent, peripheral blood was obtained from patients (n=15) with first-time acute anterior STEMI 18±6 hours after PCI and a control group of healthy donors (n=10). Functional capacity of circulating progenitor cells was determined by CFU-Hill assay. The angiogenesis-related microRNAs miR-222, miR-34a, miR-92a, miR-126, miR-130a and miR-221 were determined by quantitative real time PCR from serum of patients. In addition, microRNAs that have been associated with myocardial damage (miR-499, miR-21, miR-214, miR-195, miR223, miR-150 and miR-133a) were determined.

Results: A significant reduction of CFU-Hill colonies was found in patients with STEMI compared to healthy controls (14.8 ± 3.3 vs. 8.1 ± 2.3, p ≤ 0,05). Patients with STEMI had significantly increased serum levels of miR-499, whereas miR-21 was decreased. In the group of angiogenesis-related microRNAs, expression of miR-126, miR-130a, miR-92a and miR-34a were significantly decreased compared to healthy controls.

Conclusion: Compared to healthy controls, we found a significant reduction of CFU-Hill colonies as a marker of reduced functional capacity of circulating progenitor cells in patients with first-time anterior STEMI after successful reperfusion therapy by PCI. The increased expression of miR-499 in patients with STEMI described in the literature could be confirmed in the small selected group of our patients. The effect of decreased levels of miR-126, miR-92a, miR-130a, miR-21 and miR-34a on progenitor cell function is currently evaluated and may lead to the development of novel therapeutic concepts to prevent ischemia/reperfusion associated myocardial injury.

Young Investigators Award Session Sunday, 18 October 2015 16:15 - 17:45

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Circannual pattern and TEMPerature-related incidence of Eletrical STorm: preliminary data from the TEMPEST study

F Guerra,¹ M Flori,¹ P Bonelli,¹ L Cipolletta,¹
C Carbucicchio,² M Izquierdo,³ E Kozluk,⁴
K Shivkumar,⁵ M Vaseghi⁵ and A Capucci¹

¹Marche Polytechnic University, Cardiology Clinic, Ancona, Italy
²Cardiology Center Monzino IRCCS, Milan, Italy ³University Hospital
Clinic of Valencia, Valencia, Spain ⁴Medical University of Warsaw, Warsaw,

Poland ⁵University of California Los Angeles, Cardiac Arrhythmia Center,
Los Angeles, United States of America

Purpose: Observational studies have demonstrated that arrhythmic events are non-randomly distributed throughout long-term follow-up. Moreover, ventricular tachyarrhythmias and heart failure decompensations show a temporal pattern that can be in some cases related to specific time intervals both from a year- and a single day-prospective. Identifying potential temporal pattern could be even more important in patients experiencing electrical storm (ES), in which a cluster of ventricular tachycardias (VTs) or ventricular fibrillation (VFs), negatively affects short- and long-term survival. The aim of the present study is to delineate clinical characteristics of ES patients and describe prevalence and incidence of this life-threatening event according to temporal and geographical variables.

Methods: The Circannual pattern and TEMPerature-related incidence of Eletrical STorm study is a multicentre, international clinical registry enrolling patients from five arrhythmologic centres worldwide. For each patients ES start date and end date were collected, as were hour of admission for ES. Clinical variables such as number of VT/VF episodes, and device and pharmacological therapy were also collected. Geographical location of each patient was used to extract data regarding atmospheric temperature and climate details the day of the event and the week before.

Results: Of out a total of 235 patients admitted for ES, 187 were males (79.6%) and the median age at the time of presentation was 65 years. During the acute phase of ES, each patient had a median of 7 episodes of VT/VF, and experienced a median of 3 ATP and 3 shocks during the event. 59% of patients experienced ES during day-time hours (p=0.028). Similarly, incidence of ES was significantly more prevalent during work-days, with Saturdays and Sundays registering the lowest prevalence of ES (10.4 and 7.2% respectively, vs 16.5% daily mean from Monday to Friday; p<0.001). ES prevalence was homogenously distributed across the 12 months. No association has been seen between monthly average temperature, minimum temperature, maximum temperature, temperature variation and incidence of ES. Stratifying temperature data according to geographical location of enrolling centre provided similar results.

Conclusions: ES incidence does not seem to be affected by atmospheric temperature, climate details, and geographical location. On the other hand, ES prevalence is significantly higher during day-time hours and during work-days, potentially underlying a sympathetic trigger in these kind of patients.

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Shock wave treatment reduces neuronal degeneration upon spinal cord ischemia via a Toll-like receptor 3 dependent mechanism

D Lobenwein,¹ C Tepekoeylu,¹ R Kozaryn,¹
E Pechriggl,² M Bitsche,² H Fritsch,² P Paulus,³
M Czerny,⁴ M Grimm¹ and J Holfeld¹

¹Innsbruck Medical University, Department of Cardiac Surgery, Innsbruck, Austria ²Innsbruck Medical University, Department of Anatomy, Histology and Embryology, Innsbruck, Austria ³JW Goethe University, Department of Anesthesiology, Frankfurt am Main, Germany ⁴University of Freiburg, Department of Cardiac Surgery, Freiburg, Germany

Objective: Paraplegia following spinal cord ischemia represents the most severe complication of aortic surgery. Shock wave treatment (SWT) was shown to induce angiogenesis and regeneration in ischemic tissue. In pre-clinical as well as clinical studies SWT had a favorable effect on ischemic myocardium. We therefore hypothesized that SWT may have a beneficial effect on spinal cord ischemia as well.

Methods: Aortic cross clamp was performed between left carotid and left subclavian artery in 10-12 weeks old male C57/B16 wild-type mice. Animals were randomly divided in a treatment group (SWT, 500 shock waves at 0.1mJ/mm², 5Hz) and untreated controls (CTR), n=6 per group. RNA expression of angiogenic and inflammatory cytokines was measured after 24 and 48 hours. Immunofluorescence staining for degenerating neurons (Fluoro Jade B) and macrophages (Iba-1) was performed after 7 days. An ex-vivo spinal slice culture was performed for evaluation of Toll-like receptor (TLR) signaling. Spinal cords from wild type, TLR3 knockout and TLR4 knockout animals were cultured and set under hypoxia for 24 hours. Treatment groups (SWT) received shock wave treatment following hypoxia and were cultured for another 24 and 48 hours.

Results: Real-time PCR analysis revealed higher gene expression of angiogenic factors VEGF-A after 24h (SWT 0.21±0.06 vs. CTR 0.07±0.01, p=0.028) and 48h (SWT 0.11±0.02 vs. CTR 0.07±0.01, p>0.05) as well as HIF-1α after 24h (SWT 0.11±0.04 vs. CTR 0.04±0.01, p>0.05) and 48h (SWT 0.09±0.02 vs. CTR 0.01±0, p=0.016). Early increase of inflammatory mRNA expression was observed after 24h by TNFα (SWT 0.03±0.003 vs. CTR 0.005±0.003, p=0.007) and TGFβ (SWT 0.57±0.05 vs. CTR 0.17±0.08, p=0.003). This resulted in a markedly decreased number of degenerating neurons in the treatment group 7 days after ischemia (SWT 74.50±8.14 vs. CTR 250.2±42.98, p=0.0025). Standardized coordination and motor tests performed at day 1, 3 and 7 postoperatively

revealed a significantly better performance and outcome of the animals in the treatment group. In addition a Kaplan-Meier analysis revealed a survival benefit of SWT compared to normal animals. Effects of SWT were abolished in TLR3 knockout animals, whereas it was unchanged in TLR4 knockouts.

Conclusion: Shock wave treatment induces angiogenesis and modulates inflammation in spinal cord ischemia via the activation of TLR3. This results in a marked decrease of degenerating neurons and may therefore develop as an adjunct to the treatment armamentarium for paraplegia upon aortic cross clamp.

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Risk stratification in chest pain patients comparison of natriuretic peptides to novel biomarkers of cardiovascular stress

E Zengin,¹ C Sinning,² F Ojeda,¹ M Seiffert,¹ T Zeller,¹
R B Schnabel,¹ C Bickel,³ K J Lackner,² S Blankenberg¹ and
D Westermann¹

¹University Heart Center Hamburg, Clinic for General & Interventional Cardiology, Hamburg, Germany ²Johannes Gutenberg University Mainz (University Hospital of Mainz), Mainz, Germany ³Federal Armed Forces Hospital, Department of Internal Medicine, Koblenz, Germany

Aim: Natriuretic peptides are the standard biomarker for risk stratification in cardiovascular disease. In chest pain patients identifying individuals with an adverse outcome in the follow-up is of paramount importance to allocate further treatment and novel biomarkers of cardiovascular stress like copeptin (AVP) and midregional proadrenomedullin (MR-proADM) might allow refinement in risk stratification.

Methods: In the AtheroGene study, 885 patients (N=435 unstable angina, N=172 subacute myocardial infarction, N=278 acute myocardial infarction) presented with acute coronary syndrome (ACS) to the emergency department. Natriuretic peptides were measured with B-type natriuretic peptide (BNP), N-terminal pro B-type natriuretic peptide (NT-proBNP), midregional pro atrial natriuretic peptide (MR-proANP) and the novel biomarkers midregional proadrenomedullin and copeptin. The median follow-up time was 3.6 years and during this time 102 patients died of cardiovascular causes or had a non-fatal myocardial infarction.

Results: Survival analysis in Kaplan-Meier curves including rising quartiles of each biomarker and testing with the log-rank test showed MR-proADM and MR-proANP as the best predictor of the outcome (p<0.001

for both) followed by AVP and NT-proBNP ($p=0.02$ and $p=0.03$); BNP was not significant $p=0.3$. In Cox-Regression analysis results were confirmed with MR-proADM as best predictor and a hazard ratio (HR) of 13.9 ($p<0.001$), followed by MR-proANP with a HR=3.4 ($p<0.001$) and AVP HR=1.7 ($p=0.03$). NT-proBNP and BNP were not significant in this fully adjusted model including the classical risk factors, body mass index, sex, age and renal function.

Conclusion: In patients presenting with chest pain and ACS the natriuretic peptide MR-proANP was a strong predictor of the outcome; however the standard natriuretic peptides BNP and NT-proBNP might be not as predictive due to the slower peak after chest pain onset. In contrast to this finding, novel biomarkers of cardiovascular stress like MR-proADM and copeptin add considerable information regarding the outcome and might be additional useful in risk prediction in patients presenting with ACS.

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Early percutaneous balloon atrial septostomy effectively discharge the left heart in children and adults supported by venoarterial ECMO

A-E Baruteau,¹ A J Torres,¹ NS Boscamp,¹ L Morin,² J Petit,² E Belli,³ EA Bacha¹ and JA Vincent¹

¹Columbia University Medical Center, Pediatric Cardiology, New York, United States of America ²Surgical Centre Marie Lannelongue, Pediatric Cardiac Surgery, Le Plessis Robinson, France ³Institut Hospitalier Jacques Cartier, Pediatric Cardiac Surgery, Massy, France

Purpose: Transcatheter techniques are emerging for left atrial (LA) decompression under ECMO. We hypothesized that balloon atrial septostomy (BAS) efficiently discharges the LA and that early timing of LA decompression is associated with LV functional recovery.

Methods: From 2000 to 2014, BAS was performed in 64 patients [32 adults: median age 37.0 (18-72) years, median weight 65.0 (44-86) kg; and 32 children: median age 8.0 (0.3-17.9) years, median weight: 29.0 (5.3-69.9) kg]. Indications for ECMO support included acute myocarditis (31.2%) and nonmyocarditis cardiac disease, mostly end-stage dilated cardiomyopathy (32.8%). BAS was required because of pulmonary edema/hemorrhage and LV distension. Mean balloon diameter was 21.8±8.4mm.

Results: Adequate LA decompression was achieved in all patients. Mean LA pressure fell from 24.2±6.9mmHg to 7.8±2.6mmHg ($p<0.001$). LA to right atrial pressure gradient fell from 17.2±7.1mmHg to 0.09±0.5mmHg ($p<0.001$). Echocardiography showed an unrestrictive left-to-right atrial shunting in all patients. Improvement of day-1 chest X-ray was observed in 76.6%, clinical status in 98.4% and pulmonary hemorrhage in 14 of 14 patients. Complications occurred in 6 (9.4%) patients, represented by pericardial effusion, fast atrial fibrillation, ventricular fibrillation requiring defibrillation, transient complete heart block and femoral venous dissection requiring covered stent placement. In the 37 (57.8%) patients who were successfully decannulated, median ECMO duration was 9 (4-24) days. After a median follow-up of 12.3 (0.1-142) months, 34.4% patients died, 15.6% received a LV assist device as a bridge to transplantation, 32.8% were transplanted and 56.2% are home discharged and alive. Age <18 years, weight <30 kg, acute myocarditis, end-stage dilated cardiomyopathy, postoperative dysfunction, pre-BAS LA mean pressure ≥ 30 mmHg and ECMO duration ≥ 96 hours prior to BAS were identified as risk factors for death or heart transplant.

Conclusions: Percutaneous BAS effectively discharges the LA in both adults and children under venoarterial ECMO. Early BAS in the first 4 days after ECMO placement, may help better LV functional recovery.

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Can TAVI patients receive aspirin antithrombotic prophylaxis as patients after surgical aortic bioprosthesis implantation?

K Czerwinska,¹ M Zembala,² M Dabrowski,³ A Witkowski,³ A Ochala,⁴ J Kochman,⁵ D Dudek,⁶ P Kubler,⁷ D Jagielak⁸ and J Stepinska¹

¹Institute of Cardiology, Department of Intensive Cardiac Care, Warsaw, Poland ²Silesian Center for Heart Diseases (SCHD), Department of Cardiac Surgery and Transplantology, Zabrze, Poland ³Institute of Cardiology, Department of Interventional Cardiology and Angiology, Warsaw, Poland ⁴7th Public Hospital of the Silesian Medical University, Katowice, Poland ⁵Medical University of Warsaw, Warsaw, Poland ⁶Jagiellonian University Medical College, Krakow, Poland ⁷Military Hospital of Wroclaw, Clinic of Cardiology, Wroclaw, Poland ⁸Medical University of Gdansk, Department of Cardiac Surgery, Gdansk, Poland

Dual antiplatelet therapy (DAPT) with aspirin (ASA) and clopidogrel (CLOP) after TAVI has been recommended. TAVI pts, due to numerous comorbidities, frequently required combined therapy with oral anticoagulants

(OAC). Neither DAPT nor combined therapies are evidence based. On the basis of national Polish TAVI registry (POL-TAVI), we assess the impact of periprocedural anticoagulation on early, post-TAVI vascular complications (VC).

Methods: This was a multicenter, prospective observational study. VC were defined according to VARC-2 scale, including both major and minor events.

Results: Between 2013-2014yr, in 21 Polish centres 827pts were included; 55% women (age 78,72±14,7yr, logEuroscore 18.78±14.47%). VC occurred in 135 (16.32%) pts; 103 (76.29%) were major, 32 (23.7%) were minor VC. The impact of anticoagulation pre-/post-TAVI were assessed in 723 (87.42%)/722 (87.3%) pts, respectively. Monotherapy pre-/post-TAVI: ASA 278 (38.45%)/130 (18%)pts, CLOP 5 (0.7%)/20 (2.77%)pts, OAC 92 (12.72%)/47 (6.5%) pts. Combined therapy pre-/post-TAVI: DAPT 182 (25.17%)/337(46.67%)pts, triple antithrombotic therapy (TAT) 66 (9.1%)/67 (9.27%)pts, OAC+ASA 91 (12.58%)/87 (12.04%) pts, OAC+CLOP 9 (1.2%)/34 (4.7%) pts. ASA monotherapy pre-/post-TAVI was related to the smallest number of VC: OR 0.576 95%CI [0.369-0.899], p=0.01/OR 0.07 95%CI [0.018-0.309], p<0.0001. DAPT/TAT pre-/post-TAVI increased the risk of VC: OR 1.577 95%CI [1.025-2.427],p=0.04/OR 1.936 [1.060–3.537], p=0.04. Comparing to other therapies ASA before and after TAVI reduced the risk of early, in-hospital VC (Table1). Stroke/valve embolization after TAVI occurred in 26 pts (combined vs. monotherapy=NS).

Conclusions: Aspirin before and after TAVI is safer and as effective as combined therapy.

Table 1. Anticoagulation and VC in POL-TAVI pts.

Antithrombotic therapy	PRE-TAVI OR 95%CI	POST-TAVI OR 95%CI
ASA vs DAPT	0.49 (0.29-0.829);0.007	0.083 (0.02-0.347);<0.0001
ASA vs TAT	0.48 (0.239-0.970); 0.04	0.07 (0.016-0.327);<0.0001
ASA vs OAC+ASA	0.49 (0.2608-0.938); 0.03	0.059 (0.013-0.2599);0.0002
ASA vs OAC+CLOP	NS	0.027 (0.005-0.130);<0.0001

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Two hour algorithm for triage towards rule-out and rule-in of acute myocardial infarction using high-sensitivity cardiac troponin I

J Boeddinghaus,¹ T Reichlin,² R Twerenbold,² K Wildi,³ T Nestelberger,¹ K Grimm,¹ C Puelacher,¹ M Rubini Gimenez,³ R Abaecherli⁴ and C Mueller²

¹University Hospital Basel, Cardiovascular Research Institute Basel (CRIB), Basel, Switzerland ²University Hospital Basel, Department of Cardiology, Basel, Switzerland ³University Hospital Basel, Department of Internal Medicine, Basel, Switzerland ⁴Schiller AG, Biomed. Research and Signal Processing, Baar, Switzerland

Purpose: We aimed to develop a high-sensitivity cardiac troponin I (hs-cTnI) 2h-algorithm that allows to safely “rule-out” and accurately “rule-in” acute myocardial infarction (AMI) in as many patients as possible.

Methods: We prospectively enrolled 1435 unselected patients presenting to the emergency department with symptoms suggestive of AMI with an onset or peak within the last 12 hours. Final diagnosis was adjudicated by two independent cardiologists using all information including coronary angiography, echocardiography, serial hs-cTnT levels and clinical history. Hs-cTnI was measured at presentation and after two hours in a blinded fashion. A diagnostic algorithm incorporating hs-cTnI values at presentation and absolute changes within the first two hours was derived.

Results: AMI was the final diagnosis in 17% of the patients. The hs-cTnI 2h-algorithm classified 56% of patients as “rule-out”, 17% as “rule-in” and 27% in the “observational zone”. Resulting sensitivity and negative predictive value (NPV) were 99.2% and 99.8% for “rule-out”, and specificity and positive predictive value (PPV) were 95.2% and 75.8% for “rule-in” (Figure). Cumulative 30-day and 720-day survival rates were 100%, 97.9% and 95.8% (p<0.001) and 97.6%, 87% and 84.9% (p>0.001) in patients classified as “rule-out”, “observational zone” and “rule-in”, respectively.

Conclusions: A simple algorithm incorporating hs-cTnI baseline values and absolute changes over two hours

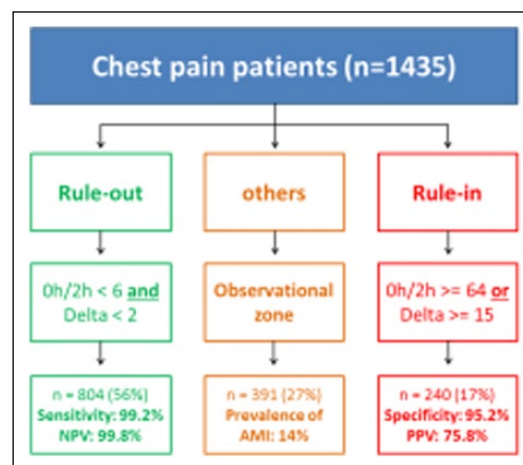


Figure. Performance of the algorithm.

allowed a triage towards safe “rule-out”, or accurate “rule-in”, of AMI in the vast majority of patients with only one quarter requiring more prolonged monitoring and serial blood sampling.

Morning Poster session Sunday, 18 October 2015 08:30 - 12:30

Acute aortic syndrome

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Aortic insufficiency indicated higher risk for progressive ascending aorta dilatation and adverse aortic events in bicuspid aortic valve disease after isolated aortic valve replacement

YS Wang,¹ BT Wu,² LL Dong¹ and XH Shu¹

¹Shanghai Institute of Cardiovascular Diseases, Zhongshan Hospital-Fudan University, Shanghai, China, People's Republic of ²Fudan University, Zhongshan Hospital-Department of Transfusion, Shanghai, China, People's Republic of

Purpose: Aberrant flow pattern in the context of congenital fragility bestows bicuspid aortic valve disease (BAVD) with propensity towards ascending aorta dilatation, aneurysm and dissection. Whether isolated aortic valve replacement (AVR), the routine practice to remedy valve dysfunction, can prevent further dilatation in ascending aorta remains controversial. The present study compared long term adverse aortic events after AVR among BAVD patients with stenosis or insufficiency valve dysfunction, and intended to illuminate on the rationale for preventive aortic interventions.

Methods: BAVD patients who underwent isolated AVR procedure in our facility from June 2006 to January 2009 were retrospectively included. All patients were followed up annually by transthoracic echocardiography, and adverse aortic events defined as the occurrence of aortic dissection/rupture, aortic related death or the need for ascending aortic surgery were duly recorded.

Results: Among 196 BAVD patients included in the present study, 84 had an aortic insufficiency phenotype (BAV-AI group), and 112 were aortic stenosis (BAV-AS group). BAV-AI group demonstrated younger age [(46 ±13) vs. (56 ±14) years, p<0.001], male preference (79.8% vs. 67.0%, p=0.047), and wider aortic root diameter [(38.1±4.6) vs. (34.0±3.9) mm, p<0.001]. The median

follow-up was 72 (66-78) months, and isolated AVR could prevent further dilatation in aortic root [(35.8±4.7) vs. (36.0±4.9) mm, p=0.121] but not in ascending aorta [(39.9±4.6) vs. (41.8±5.7) mm, p<0.001]. Annual rate of dilatation in ascending aorta was 0.29 (0.19-0.79) mm in BAV-AI and 0.18 (0.10-0.29) mm in BAV-AS groups (p<0.001). Multivariate linear regression analysis identified aortic insufficiency (standardized β =0.317, p<0.001) and ascending aorta diameter (standardized β =0.271, p<0.001) as major factors associated with annual ascending aortic dilatation rate in BAVD patients after AVR. The incidence of adverse aortic events was significantly higher in BAV-AI group (15.5% vs. 4.5%, p=0.008). Cox regression analysis further revealed aortic insufficiency (HR=3.723, p=0.019) and preoperative ascending aortic diameter over 45mm (HR=16.840, p<0.001) as independent risk factors for adverse aortic events.

Conclusions: BAVD patients with aortic insufficiency demonstrated higher risk for accelerated ascending aorta dilatation and adverse aortic events after AVR. Preventive aortic intervention along with AVR procedure might be warranted among BAVR patients with ascending aorta diameter over 45mm, especially those with aortic insufficiency valve dysfunction.

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Hybrid approach in patients with aortic and supra-aortic pathologies: Early outcomes

P Ogutu,¹ S Zerwes,² R Jakob,² K Woelfle,² F Oertel¹ and M Beyer¹

¹Klinikum Augsburg, Cardiothoracic department, Augsburg, Germany
²Klinikum Augsburg, Vascular Surgery department, Augsburg, Germany

Background: Fifty patients with complex supra-aortic disease, underwent hybrid supra-aortic deb ranching and/or endovascular stenting. Thirty-day major adverse cardiac and cerebrovascular events were recorded and analyzed.

Methods and material: In this single centre study acute hybrid procedures involving the ascending, arch and descending aorta were performed in 22 patients, while 28 underwent debranching alone. The procedures were classified as elective, urgent and emergent and performed in the hybrid operating room. Median sternotomy was performed by the cardiac surgeon and moderate hypothermic (23-28°C) circulatory arrest established after cardiopulmonary bypass was initiated. Anastomoses to the ascending aorta or brachiocephalic trunk were completed

by the cardiac while supra-aortic debranching and endovascular stenting by the vascular surgeon. Cerebral perfusion was maintained at 18°C via the brachiocephalic truncus, axillary or carotid arteries, with a flow rate of 10–20 ml/kg/min and a mean arterial pressure at 70 mmHg.

Results: Operative freedom from endoleaks was 92%, while 30-day freedom from death and cerebrovascular events was 84% and 82% respectively. There was 1 intra-operative death. The 60-month survival expectancy was 70%. Mean hypothermic circulatory arrest time was 28 minutes.

Conclusion: Patients with aortic aneurysms or acute dissections and high peri-operative risk can be treated successfully using the hybrid approach. Major adverse cardiac and cerebrovascular events are at least comparable to conventional lone procedures hitherto performed in this group of patients. This approach immensely reduces the amount of surgical trauma for the patient.

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Initial results of the strategy for ruptured abdominal aortic aneurysm in our hospital

H Nakayama,¹ S Toma,¹ T Kobayashi,¹ R Fukuhara,¹ K Yoshitani,¹ R Taniguchi,¹ T Miyamoto,¹ Y Takatsu,¹ H Fujiwara¹ and Y Sato¹

¹Hyogo Prefectural Amagasaki Hospital, Cardiology, Amagasaki, Japan

Background: Ruptured abdominal aortic aneurysm (rAAA) is a cardiovascular emergency with high mortality rates. Intra-aortic balloon occlusion (IABO) by percutaneous procedure is reasonable; however, its effectiveness has been uncertain. Alternatively, endovascular aortic repair (EVAR) is a newer therapeutic approach for AAA, including ruptured cases. Therefore, we aimed to establish a strategy in our hospital, including both of these procedures for rAAA.

Methods: We retrospectively analysed 12 consecutive patients who presented to our hospital with rAAA from March 2013 to April 2015. We excluded patients who were in a cardio-pulmonary arrest (CPA) on arrival or who had not resuscitate (DNR) orders.

We immediately initiated percutaneous IABO procedures under local anesthesia for patients transferred to our hospital with suspected rAAA. After a successful aortic occlusion, we decided whether an open repair or EVAR was suitable for each patient. If EVAR was selected, we used two aortic occlusion balloons alternately in the bilateral common femoral arteries (double balloon technique) to minimize haemorrhage during operation.

Results: The mean age was 74.8 years and eight patients (67%) were male. Eight patients (67%) were haemodynamically unstable (unconscious or systolic blood pressure <90 mmHg) on arrival. Eleven patients (92%) were treated by EVAR, and one patient (8%) was treated by open repair due to an anatomical disparity. The mean time from arrival at our hospital to aortic occlusion (door-to-balloon time) was 76.1 min. All patients were haemodynamically stable after the IABO procedure. Ten patients (83%) survived until discharge, and two patients died during the operation. Nine patients (75%) finally reported a full recovery of their activities of daily living.

Conclusion: We showed feasible results of our strategy for rAAA. The survival benefit of this strategy is needed to assess by more rAAA cases.

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Validation of CRUSADE risk scores for predicting major bleeding in chronic kidney disease patients with acute coronary syndromes

M Sanchez-Martinez,¹ A Lopez-Cuenca,² PJ Flores-Blanco,¹ MJ Sanchez-Galian,¹ E Guerrero-Perez,¹ F Cambronero-Sanchez,³ M Gomez-Molina,¹ A Garcia-Narbon,¹ S Manzano-Fernandez¹ and M Valdes-Chavarri¹

¹University Hospital Virgen de la Arrixaca, Department of Cardiology, Murcia, Spain ²de la Vega Lorenzo Guirao Hospital, Department of Cardiology, Cieza (Murcia), Spain, Cieza, Spain ³University Hospital Morales Meseguer, Department of Cardiology, Murcia, Spain, Murcia, Spain

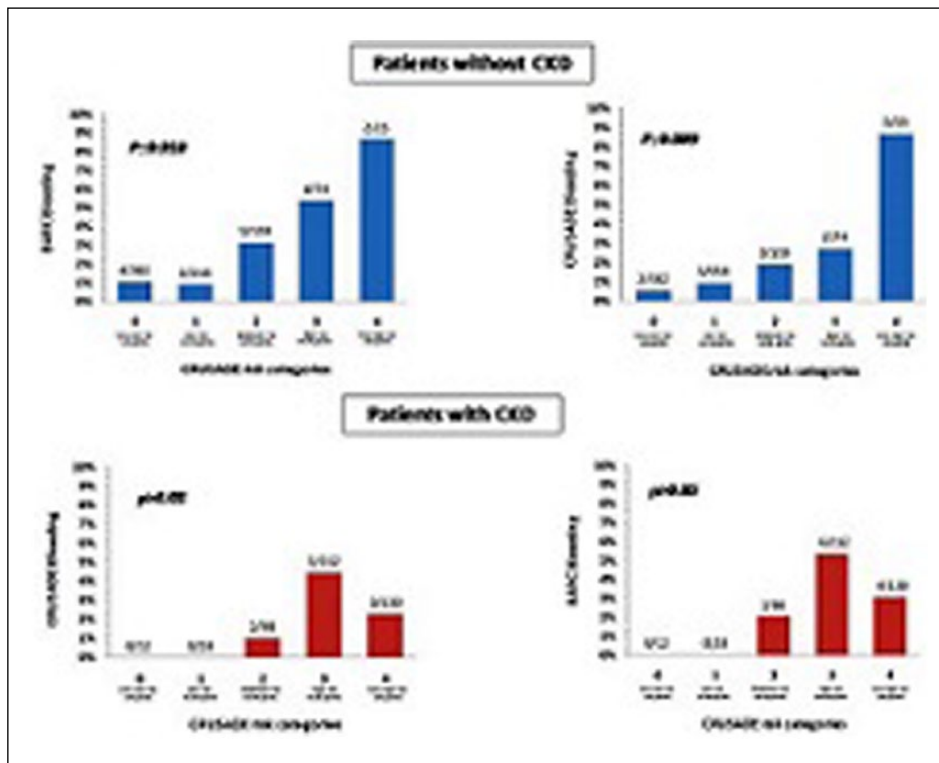
Propose: Chronic kidney disease (CKD) has been associated with a significantly increased risk for bleeding in patients with acute coronary syndromes (ACS). The CRUSADE risk score was initially developed in patients with non-ST-segment-elevation myocardial infarction to predict in-hospital bleeding. However, CRUSADE risk score has not been specifically validated in chronic kidney disease patients. Our aim was to assess predictive ability of the CRUSADE risk score in patients with concomitant ACS and CKD.

Methods: From January 2012 to August 2014, we prospectively included consecutive patients with ACS. In-hospital bleeding was defined according to CRUSADE and BARC criteria. CKD was defined as an estimated glomerular filtration rate less than 60 ml/min or presence of kidney damage (albuminuria/proteinuria) during ≥ 3 months.

Results: We included 1234 patients with an established final diagnosis of ACS (age 68±13 years), of whom 380 (31%) were CKD patients. Mean CRUSADE risk score value was 31±16 points. Patients with CKD had higher CRUSADE risk score (24±13 vs 45±12, p<0.001) and a trend towards a higher in-hospital MB rate (1.3% vs 2.4%, p=0.16). A total of 26 (2.1%) patients had CRUSADE bleeding and 29 (2.4%) had BARC bleeding. Regardless of MB definition, the predictive ability of the CRUSADE

risk score in CKD patients was lower than in non-CKD patients: 0.59 (95% CI 0.54-0.64) vs 0.71 (95%CI 0.67-0.74), p=0.028 for BARC bleeding).

Conclusions: CRUSADE risk score shows a poorer accuracy for predicting in-hospital major bleeding in CKD patients compared to those without CKD. Further studies are needed to confirm these findings, and to explore alternative scores that predict more accurately in-hospital major bleeding in CKD patients.



In-hospital MB across the CRUSADE risk.

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Evolving strategies of integrated approach to type a aortic dissection surgery: interdisciplinary challenge

C Cavoza,¹ A Campanella,¹ A Audo,¹ P Scoti,¹ M Serra,¹ G Camporini¹ and D Mercogliano¹

¹Ospedale SS. Antonio e Biagio e Cesare Arrigo, cardiothoracic and vascular department, Alessandria, Italy

Purpose: Acute aortic dissection type A is one of the most challenging diseases in cardiovascular surgery. During past decades, different management of the circulation for the cerebral and visceral organ protection has been

developed, however the optimal strategy remains the subject of ongoing debate. A collaborative team designed program directed at can improve care coordination and communication across discipline, providing feedback and quality to treating clinicians. Multidisciplinary approach are key point of implementation process and improve initial clinical outcomes.

Methods: 91 patients with a mean age of 62.6 ± 14.8 years underwent surgery for Stanford type A dissection. After sternotomy, arterial cannulation is direct into innominate artery or into the right subclavian artery. Anaesthesia was done through target controlled infusion. Antegrade unilateral or bilateral cerebral perfusion has been used during hypothermic circulatory arrest with

neuromonitoring (infrared spectroscopy). Cerebral flow autoregulation is maintained, allowing metabolism and blood flow coupling. In last 23 patients the descending thoracic aorta was perfused with a cuffed cannula

Results: Mean duration of cardiopulmonary bypass and aortic cross-clamping was 183 ± 82 and 104 ± 27 min, respectively. The mean duration of circulatory arrest and brain perfusion was 38.6 ± 15 min. Brain perfusion started after systemic circulatory arrest. Twelve patients underwent bilateral brain perfusion because of unilateral drop less than 20% of the baseline value of near infrared spectroscopy. In addition, performing low body perfusion enabled safe increase in the systemic temperature during CPB and reduced morbidity and mortality. Overall mortality was 18.6%.

Conclusions: Type A aortic dissection is a complex dynamic disease with true and false lumen, reentry sites and malperfusion syndromes affecting multiple organs.

Medical and surgical strategies must be tailored on clinical evidence and continuous re-evaluation. The success of any surgical option and monitoring modality is contingent on the vigilance and intervention strategies employed by the clinicians.

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Transportation time does not affect mortality in patients with type A aortic dissection.

H Susawa,¹ S Mikami,¹ H Takemoto,¹ K Kobayashi,¹ H Tanaka,¹ K Tanaka¹ and Y Kihara²

¹Miyoshi Central Hospital, Cardiology, Hiroshima, Japan ²Hiroshima University Graduate School of Biomedical Sciences, Department of Cardiovascular Medicine, Hiroshima, Japan

Background: Acute aortic dissection is a rare case, but if it occurs rapid diagnosis and treatment are needed. It is currently crucial for AD patients to be transferred to a specialised hospital in a safe and timely manner. However, transportation time does not fully access to affect mortality in these patients.

Methods: Thirty cases of AD confirmed with 64-slice computed tomography (20 cases of Stanford type A and 10 cases of type B) were divided into a high-risk group (eight cases, 8 Stanford type A and zero type B) and a low-risk group (22 cases, 12 Stanford type A and 10 type B) according to the hypotension (systolic blood pressure < 90 mmHg). The transportation time and mortality were compared between the high-risk group and the low-risk group, and the correlation between the measured transportation time and mortality was analysed.

Results: The transportation time and mortality were compared between Stanford type A and type B, and statistically significant differences were found. The transportation time and mortality were compared between the high-risk group and low-risk group, revealing a statistically significant difference ($p < 0.05$). Moreover, a significant correlation was not found between the transportation time and mortality ($r = 0.287$; $p = 0.367$).

Conclusions: The hypotensive patients are the greater transportation risk for AD patients with type A dissection. Transportation time does not affect mortality in patients with low-risk type A aortic dissection.

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Association of increased white blood cell count with acute kidney injury in patients with acute aortic dissection

T Takahashi,¹ T Hasegawa,¹ K Suzuki,¹ N Hirata,¹ A Endo,¹ T Fuwa,¹ M Takamatsu,¹ S Ohtsubo,¹ T Hirotani¹ and S Nakagawa¹

¹Tokyo Saiseikai Central Hospital, Tokyo, Japan

Purpose: We have previously reported that acute kidney injury (AKI) is a significant predictor of in-hospital complications in patients with acute aortic dissection (AAD). Because inflammatory response plays a key role in the development of AKI, we sought to determine the relationship between the white blood cell (WBC) count and the incidence of AKI after AAD. We also assessed a prognostic value of WBC count on admission in the setting of AAD.

Methods: We studied 112 consecutive patients with AAD admitted to our hospital within 48 hours of the onset of symptoms. Clinical characteristics, Stanford classification, extent of dissection, patency of false lumen, WBC count, serum C-reactive protein (CRP) level, creatinine (Cr) level, and in-hospital complications were assessed. Patients were divided into two groups according to the median of WBC count on admission. AKI was defined as either an increase in serum Cr level by 0.3 mg/dl or more within 48 hours or an increase in serum Cr level to 1.5 times or more the reference level.

Results: Among 112 patients (77 men; mean age, 64 ± 3 years), 54 patients had type A AAD. More smokers and open-typed AADs were observed in the high WBC group (10,800/ μ l or more, $n = 58$) than in the low WBC group (less than 10,800/ μ l, $n = 54$). The time from symptom onset to hospital admission was longer in the high WBC group than in the low WBC group (5.7 ± 7.2 h vs 2.8 ± 4.1 h, $p < 0.0001$). Patients with higher WBC count had a higher incidence of AKI than those with lower WBC count (65%

vs 35%, $p=0.009$). The in-hospital mortality rate tended to be higher in the high WBC group than in the low WBC group (17% vs 6%, $p=0.07$). There were no differences in serum CRP and Cr levels on admission between the groups. Multivariate analysis showed that Stanford type A (OR 3.7, 95%CI 1.3–10.8, $p=0.02$), history of hypertension (OR 6.3, 95%CI 1.5–27.2, $p=0.01$), and increased WBC count on admission (OR 6.8, 95%CI 1.9–24.9, $p=0.004$) were independent predictors of AKI after AAD.

Conclusion: Increased WBC count on admission was associated with the development of AKI in patients with AAD, suggesting a role of inflammation in the pathogenesis of AKI.

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Plasma catestatin: a biomarker for ST segment elevation myocardial infarction and unstable angina pectoris?

W Xu,¹ HY Yu,¹ GS Wang,¹ LG Guo¹ and W Gao¹

¹Peking University Third Hospital, cardiology, Beijing, China, People's Republic of

Objective: The aim of this study was to investigate plasma catestatin levels among patients with acute STEMI or unstable angina pectoris (UAP), and to explore the associations between catestatin and the long-term outcome of STEMI and UAP.

Methods: The study enrolled 46 acute STEMI patients and 89 UAP patients who accepted successful PCI, and 35 patients without CHD, and followed up for 2 years. The MACE included cardiovascular death, recurrent acute myocardial infarction (AMI), readmission for heart failure or revascularization.

Results: The plasma catestatin level in STEMI group (0.80 ± 0.62 ng/ml) and in UAP group (0.99 ± 0.62 ng/ml) were significantly lower than that of control group (1.38 ± 0.98 ng/ml) ($p=0.001$). There were 7 MACEs (readmission for revascularization) in the UAP group, and there were 8 MACEs (2 recurrent AMI, 3 readmission for revascularization, and 3 readmission for heart failure) in STEMI group including, during 2 years follow up after discharge. There were no significant differences between STEMI group and UAP group. The MACEs occurred at median 13.5 months after discharge. Kaplan – Meier hazard analyses showed that there were no significant differences in MACE between the patients with high level catestatin and low level catestatin ($p=0.587$). (Figure 1). In the Cox proportional hazards regression, LVEF was the only independent predictor for MACE (HR 0.95, $p=0.029$), catestatin level was not independently associated with MACE.

Conclusion: The plasma catestatin levels in STEMI and UAP patients were lower than that in the patients without CHD. The catestatin levels were not related to the MACE among CHD patients. An early deficiency of catestatin might play a pathogenic role in the subsequent development of acute coronary syndrome. Catestatin is thus emerging as a very important peptide regulating multiple functions, and identification of the molecular mechanism underlying the protective role of this peptide may lead to a novel therapeutic option in CHD.

P405

Predictive factors for postoperative stroke in patients with type A acute aortic dissection- insights from the Romanian National Acute Aortic Dissection registry (RENADA)

S Ali,¹ A Frentescu,¹ O Ionita,¹ L Antohi,¹ C Parasca,¹ M Mesina,¹ V Iliescu¹ and O Chioncel¹

¹Institute of Cardiovascular Diseases Prof. C.C. Iliescu, Bucharest, Romania

Background: Acute type A aortic dissection (AAD) is the most common catastrophic event affecting the aorta, associated to a high rate of postoperative complications and increased mortality rate. Clinical severity at presentation and complexity of surgery may contribute to adverse in-hospital outcomes.

Purpose: The objective was to identify the predictive factors for in-hospital neurologic complications, either stroke (S) or transient ischemic attack (TIA) after surgical correction of type A AD.

Methods: The Romanian National Acute Aortic Dissection registry enrolled 286 consecutive patients diagnosed with AAD at five hospital centers, between Jan 2010 and Apr 2015. Clinical relevant information available since admission through hospital discharge, such as clinical, biological features, imaging data, as well as operative data, including cardiopulmonary bypass (CBP) time, aortic cross-clamp time, need of aortic arch replacement, type of arterial cannulation, were prospectively collected.

Results: A proportion of 91% of patients diagnosed with AAD underwent surgical treatment during index hospitalization. Mean age of study cohort was 68 ± 11 years, 68% were male, and 41% associated supra-aortic vessels involvement. The prevalence of postoperative neurologic complications was 26% (15%-S and 11% TIA). Variables predictive of in-hospital postoperative neurological deficit in multivariate analysis included age (HR=1.107, CI=1.092-1.283, $p=0.007$), left common carotid artery dissection (HR=1.98, CI=1.32-2.81, $p=0.0003$), femoral

artery cannulation (HR=1.39, CI=1.112-2.016, =0.02), cardiopulmonary bypass time >70 minutes (HR=2.113, CI=1.809-2.402, p<0.001).

Conclusions: In patients admitted for type A AAD, clinical and intra-operative variables commonly collected at admission were independently associated with occurrence of neurological deficit after surgery. Our findings may be useful to further investigate the role of neurologic protection in these patients.

Acute heart failure

P406

Classifying heart failure patients to describe outpatient and inpatient care pathways in the French region Languedoc-Roussillon. First results of the cohort named “CarPathes”.

C Duflos,¹ K Solecki,¹ L Papinaud,² G Mercier¹ and F Roubille¹

¹University Hospital of Montpellier, Montpellier, France ²(3) Direction Régionale du Service Médical, CNAMTS, Montpellier, France

Introduction: Care pathways are quickly developing involving hospital and out-of hospital cares for patients with heart failure (HF). To improve the clinical management and optimize the insurance economics, we aimed at describing the care pathways and the consistency with clinical status and care access.

Methods: A retrospective cohort of patients living in the French region Languedoc-Roussillon was built. Inclusion criteria were mainly: first admission for HF in 2012; follow-up more than 1 year. The database we used (the SNIIRAM) include outpatient care claim data and hospitalization data. Patients were classified by an hierarchical ascending classification on principal components, using variables describing clinical status, use of specialized and non-specialized care, and main clinical outcomes (hospitalization, death).

Results: 2751 patients were included and followed during a median of 22 months. Mean age was 78, 484 (18%) died, 818 (30%) were readmitted at least once for heart failure. The cluster analysis revealed three different significant groups:

1/ group 1 (N=734) is characterized by a younger age, more cares with cardiologists and less main clinical outcomes.

Groups 2 and 3 are not different as regards age and comorbidities.

2/group 2 (N=1060) differs from the group 3 (N=957) : less cares out-of the hospital contrasting with more cares at hospital, especially at emergencies.

Conclusion: This cohort enables to evaluate consistency and adequation between cares and clinical status, following main clinical outcomes.

As this cohort is built in a heterogeneous region in terms of medical density or health organization, it should be a powerful tool for the study of spatial determinants.

P407

Extracorporeal life support for refractory heart failure in polytraumatized patients.

M Bugetti,¹ G Di Lascio,² G Harmelin,¹ G Sani¹ and M Bonacchi¹

¹University of Florence, Cardiac Surgery Unit - Dept of Sperimental and Clinical Medicine, Florence, Italy ²Careggi University Hospital (AOUC), Anesthesia and Intensive Care Unit - Emergency Department., Florence, Italy

Background: The sequel of severe poly-trauma may include myocardial dysfunction followed by acute heart failure and death. The Post-traumatic Cardiomyopathy is a variant of stress cardiomyopathy, characterised by a contractile abnormality with extensive left ventricular circumferential dyskinesia or kinesis with, sometimes, a hyperkinetic apex.

We report our experience with refractory cardiogenic shock and/or cardiac arrest, triggered by post-traumatic cardiomyopathy, treated with emergent extracorporeal life support.

Methods: From June 2008 to December 2014 we treated 6 adult poly-trauma patients (5 men, 1 woman, mean age: 25.3+/-14.2 years, mean ISS score 55.3+/-16.1) with veno-arterial (V-A) extracorporeal life support for refractory to conventional treatment cardiopulmonary failure/ cardiac arrest due to post-traumatic cardiomyopathy.

Results: Post-traumatic myocardial dysfunction appeared 13.8+/- 12.2 hours after intensive care unit recovery and rapidly evolved to refractory cardiopulmonary failure and Cardiac Arrest (within 4.4+/-2.6 hours of the onset). At ECLS initiation median pH was 7.10+/-0.16 (6.91-7.25), median lactate was 6.9+/-3.1 (4-10) mmol/L and median vasoactive-Inotropic Score was 194.3+/-52.7 µg/kg/min. Tissue Perfusion improved significantly within 4 h on ECLS. Cardiac function improved gradually but consistently (initial median ejection fraction was 13.6% +/- 5.2%, the median global longitudinal strain test -7.4 +/- 4.7 and at complete recovery (after 59.1 and 73.2 hours) was 63.56% +/- 8.2% and -18.43 +/- 2.5 respectively).

Conclusions: In poly-trauma patients, refractory post-traumatic cardiomyopathy predominates in the young and is often associated with severe head injury. Rapid heparin-free ECLS can improve therapy and outcome in the most severe.

Table 1. Left Ventricular Global Strain.

		Before-ECLS (1)	Before-ECLS explant (2)	At discharge	P value (1 vs 2)
GLOBAL	Radial Strain	20.72 ± 8.7	34.27 ± 17.51	40.71 ± 16.82	0.013
	Circumferential Strain	-6.84 ± 3.4	-11.91 ± 2.52	-13.43 ± 3.25	0.003
	Longitudinal Strain	-7.4 ± 4.7	-17.6 ± 3.1	-18.43 ± 2.4	

ECLS= Extracorporeal Life Support.

P408

C282Y and H63D mutations in the HFE gene and iron overload in the genesis of chronic heart failure in patients from Northwestern region of Russia

A Goodkova,¹ E Semernin,¹ M Sitnikova,¹

O Antimonova,² M Shavlovsky² and E Shlyakhto¹

¹V. A. Almazov Federal Heart, Blood & Endocrinology Center, I. P. Pavlov Federal Medical University, Saint Petersburg, Russian Federation ²FSBSI Institute of Experimental Medicine, genetic department, Saint-Petersburg, Russian Federation

Introduction: Among all hereditary defects homozygous carriage of mutations C282Y and H63D in the HFE gene is one of the most common in the world. At the same time, the role of HFE-hemochromatosis and iron overload in the development of chronic heart failure is poorly understood in Russia.

Aim of the study: The investigation of frequency of C282Y and H63D mutations in a cohort of patients with chronic heart failure and iron overload.

Materials and methods: 98 patients with refractory chronic heart failure were included in the study. In all patients the percentage of transferrin iron saturation was determined by formula [PTIS = (serum iron/total iron binding capacity of serum (TIBC) * 100%)] (the normal level for adults is 20-45%). In case when biochemical signs of iron overload were present, we screened the HFE gene for C282Y and H63D mutations by means of allele-specific PCR.

Results: 11 of 98 heart failure patients (11.2%) were diagnosed with iron overload (PTIS greater than 60% for men and 50% for women). All patients with chronic heart failure and iron overload demonstrated the dilatation phenotype, heart failure FC III-IV NYHA, diastolic dysfunction and ejection fraction <40%.

Genetic studies of patients with evidence of iron overload revealed no homozygous carriers of C282Y and H63D mutations in the HFE gene. Five patients with evidence of iron overload were double heterozygotes (compounds), four - simple heterozygotes and two had the normal genotype.

Conclusion: We observed a relatively high frequency of iron overload in patients with severe heart failure.

However, we did not find the homozygous carriers of C282Y and H63D mutations of the HFE gene during the current study. Thus, the combination of genetic (for double heterozygotes) and non-genetic factors responsible for the excessive accumulation of iron may play a role in the genesis of some cases of the chronic heart failure.

P409

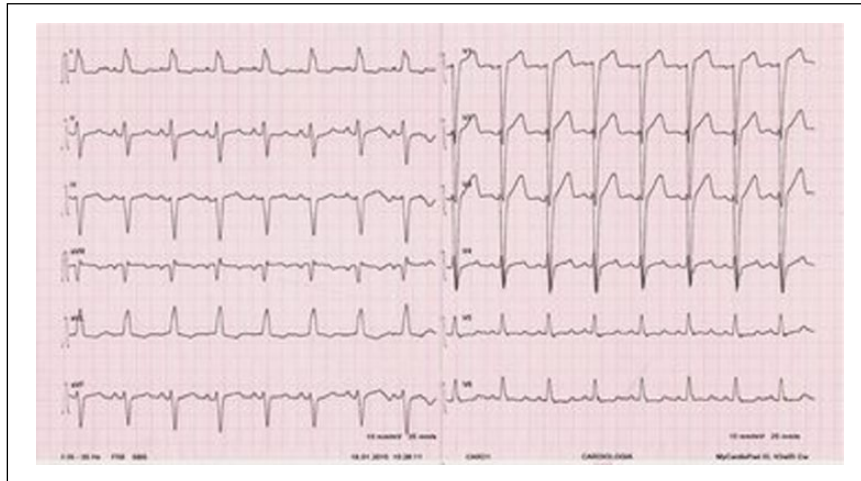
Takotsubo cardiomyopathy and cystic fibrosis

G Piovaccari,¹ M Bartolotti,¹ CM Iannettone¹ and R Mantovan¹

¹Ospedale M. Bufalini, Cardiology, Cesena, Italy

F.M. Woman. 53 years. Cardiovascular risk factors: coronary heart disease family history, hypertension, type 2 diabetes mellitus. Patient with cystic fibrosis in complete form with *Pseudomonas Aeruginosa* chronic lung infection. Negative remote cardiac anamnesis. Admitted to Cardiology ward with cardiac failure, severe left ventricular dysfunction (EF 35%) with global hypokinesia and LBBB that had not been present on previous ECG. During the days prior to hospitalization, the patient had reinforced the therapy with beta-agonist bronchodilators for the chronic lung disease. During hospitalization quick recovery in the cardiovascular compensation with diuretic therapy. ECG shows LBBB resolved with tight QRS and negative anterior T waves. Negative troponin levels. Coronary catheterization shows unscathed coronaries. Echo prior to hospital discharge shows recovery in systolic function (EF 44%). After a week from the discharge, control echo shows EF 50%.

Conclusions: takotsubo cardiomyopathy can also appear with an LBBB ECG pattern (and not only with the most typical ST elevation); takotsubo cardiomyopathy can also appear on the echo with a global hypokinesia and not only with the typical apical akinesia; beta-agonist bronchodilators favoured the onset of a left ventricular dysfunction



ECG1.

P410

Takotsubo cardiomyopathy complicated by multiple acute embolic events

G Piovaccari,¹ CM Iannettone,¹ M Bartolotti¹ and R Mantovan¹

¹Ospedale M. Bufalini, Cardiology, Cesena, Italy

Female 48 y.o. in HRT and no other RF was admitted to E.D. with acute lower limb ischemia. Acute emotional stress followed by chest pain had occurred some days before. Mild alterations of ST/T wave on ECG & typical Takotsubo shape with moderate LV systolic dysfunction (EF 40%) on echo were seen. Moreover, 2 mayor (2 cm) & 3 minor (< 1cm) multiple thrombi (see fig.) were identified all over in the LV cavity. The day after AC treatment had begun she experienced multiple strokes. Despite the severity of clinical status at onset, in the progress almost complete neurological & cardiac recovery occurred. No coronary angiography was performed. 1 mo. later she



thrombus.

underwent successfully procedure of thrombectomy & surgical revascularization of the lower limb at femoropopliteal level. The case stresses: 1) the need to start AC soon at the diagnosis; 2) coronary angiography can be overlooked in event of quickly recovery of LV function and lack of RF; 3) despite a favourable course, T.C. may present at onset as severe cardiac disease with severe complications.

P411

The usefulness of repeated hemodynamic monitoring in patients with decompensated heart failure preliminary report

A Galas,¹ R Ryczek,¹ P Krzesinski,¹ G Gielerak¹ and A Skrobowski¹

¹Institute of Military Medicine, Department of Cardiology and Internal Diseases, Warsaw, Poland

Background: Heart failure (HF) deterioration is one of the most challenging problems of acute cardiovascular care demanding detailed and objective monitoring of treatment effects. Impedance cardiography (ICG) revealed to be useful noninvasive method of the assessment of HF patients but little is know about its usefulness in repeated evaluation of hemodynamic response to the treatment in HF deterioration.

Aim: We aimed to evaluate the change of hemodynamic parameters measured by ICG in the course of hospitalization and its relation to the amino-terminal pro-B-type natriuretic peptide (NT-proBNP) concentration and clinical status of patients with HF deterioration.

Methods: The study was performed in a group of 20 men with systolic HF (mean age 71.6 years, mean LVEF 32.7%) admitted to the cardiology ward because of HF deterioration (NYHA class 4: m=6, NYHA class 3: n=14). The clinical evaluation included everyday weight measurement, NT-proBNP concentration (at admission and at discharge) and hemodynamic assessment of i.e heart rate (HR), systolic and diastolic blood pressure (SBP, DBP), stroke index (SI), cardiac index (CI) and thoracic fluid content (TFC) by ICG (at admission, every second day and at discharge). The analysis focused on changes of the above mentioned parameters between admission and discharge day.

Results: All patients improved in NYHA class and left the hospital without rest symptoms of HF (NYHA class 3: n=2, NYHA class 2: n=18). the most significant change was observed for NT-proBNP concentration (4530.3 vs 2161.3 pg/ml, $p<0.01$) and TFC (36.4 vs 29.3 l/kOhm, $p<0.05$). Weight loss was also significant, although no so clinically relevant (91.8 vs 88.4 kg, $p<0.05$). The significant correlation between change in NT-proBNP concentration and TFC was observed ($r=0.55$, $p<0.05$), but not with change in weight ($r=0.16$, ns). No significant changes in HR, SBP, DBP, SI and CI were noted (the different trends of those variables were observed in particular individuals).

Conclusions: In patients with HF deterioration the change of TFC from admission to discharge corresponded with reduction of NT-proBNP concentration and functional improvement, significantly better than weight loss. The change of other hemodynamic parameters in the course of therapy was differentiated. the usefulness of ICG in hemodynamic monitoring of subjects with HF deterioration should be further investigated.

P412

Rapid improvement of symptoms, filling pressures and pulmonary congestion estimated by combined echo and lung ultrasound protocol during early course of AHF treatment

J Oehman,¹ VP Harjola,² J Lassus³ and P Karjalainen¹

¹Satakunta Central Hospital, Cardiology, Pori, Finland ²Helsinki University Central Hospital, Emergency care, Helsinki, Finland ³Helsinki University Central Hospital, Helsinki, Finland

Introduction: Concern has been raised regarding poor treatment results and long hospitalizations in acute heart failure (AHF) -Rapid decline in left side filling pressures (LSFP) during early course of AHF treatment could result in rapid improvement of symptoms and pulmonary congestion in these patients

Objectives: To examine the time course of treatment response in pulmonary congestive AHF patients

Methods: We included 70 adult dyspneic patients with a positive thoracic FAST protocol for AHF who were followed up with our FAST protocol and symptomatic VAS scores simultaneously

- The FAST protocol was positive for AHF if medial E/e' was >15 and congestive LUS (bilateral B-lines (BL) or pleural fluid (PF) right sided or bilaterally) were present
- Patients were classified as "responders" if they became asymptomatic at rest and capable of walking > 20 meters during hospital stay
- LUS was considered normalized when absent of PF and bilateral BL

Results: Normalization of LUS correlated strongly with patients being "responders" (positive predictive value 80 %, negative predictive value 79 %)

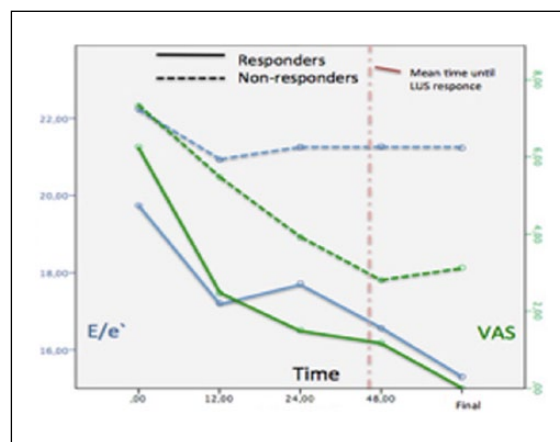
- Responders had a bigger change of mean E/e' (4,44 vs. 1,10, $p = 0,004$) and

VAS scores (6,26 vs. 4,19, $p = 0,002$) than non-responders during treatment course

- The fastest change among responders occurred during the first 12 hours of treatment (Δ mean E/e' 2,34 and Δ mean VAS 3,74) compared with Δ mean E/e' 1,77 and Δ mean VAS 2,47 for the rest of hospital stay ($P < 0,001$ for Δ mean U/ hour).
- Among non-responders, VAS scores changed slowly and linearly, and E/e' very little at all during hospital stay

Conclusions: Both symptoms and echo derived LSFP improve rapidly among treatment-responsive AHF patients

- These changes foresee decongestion as measured by normalization of LUS



E/e' vs VAS response.

P413

Impedance cardiography derived VV delay optimization of CRT in ischemic vs. nonischemic heart failure patients. follow up three months.

R Soliman,¹ A Wade,¹ H Fawzy,¹ A Abd El-Aziz¹ and SH Mokhtar¹

¹faculty of medicine cairo university, critical care , cairo, Egypt

Introduction: Cardiac resynchronization therapy (CRT) is currently considered an important breakthrough in the treatment of selected patients with drug-refractory heart failure. Recent generations of CRT devices allows sequential timing of activation of the LV and RV pacing leads through a programmable inter-ventricular (VV) delay. No data available whether sequential biventricular pacing provides substantial benefits regarding patients with Ischemic Dilated Cardiomyopathy (IDCM) as compared to patients with NonIschemic Dilated Cardiomyopathy (NIDCM).

Aim: The purpose of this study was to evaluate the effect of VV delay optimization at three months follow up in Ischemic vs. Non-Ischemic patients.

Methods: 31 patients with implanted CRT were enrolled. 17 IDCM patients (54.8%) and 14 NIDCM patients (45.2%). 10 patients (32%) had NYHA class IV and 21 patients (67.7%) had NYHA class III. Within 24 hours post implantation, patients had impedance cardiography (ICG) optimization of the VV delay defined according to the highest cardiac index (CI) among the 7 VV delays (LV - 20, LV - 30, LV - 40, RV + 20, RV +30, RV + 40, L+ R 0). Follow up after 3 months evaluation of: noninvasive hemodynamics: stroke volume (SV), stroke index (SI), cardiac output (CO), cardiac index (CI), velocity index (VI), systolic time ratio (STR) and tissue fluid index (TFI) were recorded by ICG, clinical data: NYHA class, 6 minute walk test (6MWT) and quality of life (QOL) were assessed with measurement of echocardiographic ejection fraction (EF%), left ventricular end diastolic diameter (LVEDD) and left ventricular end systolic diameter (LVESD).

Results: No significant difference was found between NIDCM and IDCM in any of the studied parameters except for higher EF% (35.1+3.4 vs. 31.7+4.9, p < 0.05) and lower

QOL (20.6+6.7 vs. 46.8+27.4, p < 0.05) in NIDCM vs. IDCM respectively.

Conclusion: ICG Optimized VVD further increased LV systolic performance particularly in NIDCM compared to IDCM patients.

P414

Beneficial hemodynamic effects of continuous positive airway pressure in acute heart failure

M Shkoza,¹ F Guerra,¹ M Marini,² A Gili,² M Francioni,² I Battistoni,² L Scappini,¹ MV Matassini,¹ GP Perna² and A Capucci¹

¹Marche Polytechnic University, Cardiology Clinic, Ancona, Italy ²University Hospital Riuniti of Ancona, Department of Cardiology, Ancona, Italy

Purpose: Continuous positive airway pressure (CPAP) is an useful tool in the treatment of acute respiratory failure, including acute pulmonary edema (APE). Previous data has shown that CPAP reduces mortality and the need for invasive mechanical ventilation in patients with APE. Indeed the last ESC guidelines recommend the use of CPAP in patients with APE unless systemic hypotension is also present (SBP <85 mmHg). In real-world clinical practice, the rate of CPAP utilization is really low, varying from 2.3% up to 13.9%, probably due to the fear of CPAP-induced hypotension and negative hemodynamic effects. The purpose of our study is to assess the acute hemodynamic effects of CPAP, measured by echocardiography in patients with acute heart failure (HF) and if an early utilization of CPAP (PaO₂/FiO₂ ratio 250-350) reduces ICU length of stay, diuretic dose and duration of inotropic therapy.

Methods: Twenty-three patients (mean age 71±11 years, 60% males) with acute HF referring to our ICU have been enrolled. Of those, 82% had a first diagnosis of HF, while 18% presented an acute HF decompensation. Acute HF was defined as a left ventricular ejection fraction <0.45 associated with at least one criteria between dyspnea at rest, pulmonary rales, or radiological signs of pulmonary congestion. Three patients (13.0%) presented with cardiogenic APE, 12 (52.1%) with acute HF with normal blood pressure, 7 (30.5 %) with acute HF with low blood pressure (SBP<90 mmHg) and 1 (4.4%) with cardiogenic shock. Ninety-two percent of patients had an acute coronary syndrome. Echocardiographic hemodynamic assessment was made at presentation, 30 minutes after CPAP start, and at 24, 48 and 72 hours.

Results: Mean cardiac output (CO) significantly increased by 258 ml during CPAP therapy (3.79 l/min vs. 4.05 l/min at 72 hours; p=0.013). Mean cardiac index (CI) significantly

Table 1. NIDCM vs. IDCM ICG optimized VVD FUP.

Variable	NIDCM Mean ± SD	IDCM Mean ± SD	P value
EF %	35.1 ± 3.4	31.7 ± 4.9	0.035
QOL	20.6 ± 6.7	46.8 ± 27.4	0.004

EF=ejection fraction; QOL=quality of life score; NIDCM=non-ischemic dilated cardiomyopathy; IDCM=ischemic dilated cardiomyopathy

increased by 140 ml during CPAP therapy (2.06 l/min/m² vs. 2.20 l/min/m² at 72 hours; p=0.019). There were no significant association between CPAP and systolic, diastolic and mean systemic blood pressure variations during the three days considered. CO and CI increased during CPAP even in patients with right ventricle dysfunction, although these variations were non significant. Early utilization of CPAP did not provide additional benefits regarding ICU length-of-stay, diuretic doses and inotropic therapy duration.

Conclusion: CPAP is safe and provides significant hemodynamic support in patients with acute HF. This is probably due to the reduced left ventricle afterload which in turn can increase stroke volume and increase systemic perfusion.

P415

Acute heart failure: can district general hospitals in the UK comply with new NICE guidance?

T Heseltine,¹ N Denham,¹ D Garner¹ and S Osula¹

¹Warrington and Halton Hospitals NHS Foundation Trust, Cardiology, Warrington, United Kingdom

Purpose: In October 2014 NICE published updated guidelines on the diagnosis and management of acute heart failure. The key changes to these guidelines were the use of serum brain natriuretic peptide (BNP) as a diagnostic tool for suspected heart failure, transthoracic echocardiography (TTE) within 48 hours of admission and follow up within two weeks of discharge. This would potentially require a significant expansion in service provision in order to comply with the updated guidance. We audited our current practice using the NICE guidelines as a benchmark.

Methods: A retrospective analysis of patients coded for acute heart failure as an admission diagnosis over 24 month period (ICD 10 code I50.) was collected in a large district general hospital serving a population of 350,000. Data on basic demographics, how heart failure was investigated and how we are following up our patients was collected.

Results: We analysed 294 cases of acute heart failure. The mean age was 76 years and 57% were male. The median length of stay was seven days (range 1 to 149 days).

Only four cases (1.4%) had BNP estimations but these were all after a TTE had been performed due to diagnostic uncertainty. 159 cases had inpatient TTE (54%) of which 48 were within two days (30%). The median time to TTE was 4 days.

The number of people seen within two weeks post discharge was 22 (15%) with a mean time to follow up of 48 days. The mean was significantly lower in patients followed up

by our specialist nurses compared with our cardiologists (mean 38 days versus 62 days).

Conclusions: We found that our hospital is a long way off targets outlined by NICE's updated acute heart failure guidelines. Implementing these changes would require significant service expansion and investment. The use of BNP is currently unfunded for routine inpatient diagnostic use with no current funding available to implement. Expansion in our echocardiography and outpatient provision would be required to become compliant without impacting on other services. Our audit would recommend one additional echocardiographic session and one additional cardiology clinic per week.

District General Hospitals across the UK are likely to require similar increases in service to be compliant. This will incur a significant cost burden to Trusts in times of decreasing budgets.

Arrhythmias, general

P416

Myoglobin concentration, leucocyte count and value of haemoglobin in patients with different form of acute coronary syndrome and several ventricular arrhythmias

M Isailovic-Kekovic,¹ P Kekovic,¹ T Kostic,² P Cvetkovic,² I Aleksic³ and M Rihter³

¹Hospital Dr Aleksa Savic, Prokuplje, Serbia ²Clinical Center of Nis, Nis, Serbia ³Institute of Cardiology Niska Banja, Nis, Serbia

Purpose: To study myoglobin concentration, leucocyte count and value of haemoglobin in patients with different form of acute coronary syndrome and several ventricular arrhythmias.

Methods: A total of 116 patients with acute coronary syndrome (ACS) were considered for entry into the study. Myoglobin concentration was measured using a Triage meter pro biosite. Leukocyte count and value of haemoglobin were measured on Sysmex kx21n.

Results: 116 patients were entered into the study (75 male, 41 female). In this group were 38 patients with ventricular arrhythmias-arrhythmic patients (32.76%) and 78 patients without ventricular arrhythmias-nonarrhythmic patients (67.24%). In group with arrhythmic patients were 27 male (71.05%) and 11 female (28.95%). Mean age of arrhythmic patients was 72.21±9.73, while in nonarrhythmic patients was 64.67±10.62. (P<0.01). Mean leucocyte count in arrhythmic patients was 9.65±4.27 x10⁹/l, in nonarrhythmic patients was 8.10±2.60 x10⁹/l. (P<0.05). Mean myoglobin

concentration in arrhythmic patients was 321.16 ± 153.91 ng/ml, while in nonarrhythmic patients was 221.67 ± 153.81 ng/ml. ($P < 0.01$). Mean value of haemoglobin in arrhythmic patients was 126.0 ± 21.9 g/l, while in nonarrhythmic patients was 137.9 ± 15.0 g/l. ($P < 0.05$).

Conclusion: Patients with ACS and several ventricular arrhythmias were older than patients with ACS without ventricular arrhythmias. Arrhythmic patients had higher value of myoglobin than nonarrhythmic patients, they had higher value of leucocyte count and lower value of haemoglobin than nonarrhythmic patients

P417

The Conundrum of Temporary Trans-venous Pacing Practice

J Graby¹ and NM Nadim Malik¹

¹Stockport NHS Foundation Trust, Cardiology, Manchester, United Kingdom

Purpose: Temporary cardiac pacing is a potentially life-saving emergency procedure when bradycardic rhythms are associated with haemodynamic instability but is not without its risks. Many UK hospitals lack 24-hour on-call cardiology services with temporary pacing performed by acute physicians. The present study of temporary pacing wire (TPW) insertion was aimed at assessing the practices of TPW insertion in a busy secondary care hospital (DGH) without a 24-hour cardiology service, with focus on the complication rates associated with the procedure, and identifying the correlation with operator speciality and training.

Methods: A retrospective study at a secondary care hospital without a dedicated 24-hour cardiology service over a 12-month period assessed temporary pacing wire procedures, identified using the OPCS-4 standard codes.

Results: The 20 patients that underwent the procedure had an average age of 76, ranging from 51 to 90 years, with 10 females and 10 males. The overall complication rate was 65%, the most common being loss of capture requiring wire repositioning, and the most significant being mortality secondary to peri-procedural complications. Lower complication rates were associated with procedures performed by senior cardiologists and use of ultrasound guidance for central venous access – but utilisation of this was low.

Conclusions: The lower complication rate with senior specialists indicates the need to provide this level of cover 24/7, as well to increase availability and use of ultrasound guidance. This study highlights the absence of national guidelines for inserting temporary pacing wires that would encourage improved service provision at a local/regional level.

P418

Characteristics of fragmented QRS in patients with previous myocardial infarction of different ventricular walls and its correlation with ventricular arrhythmia

T Liang,¹ YL Wang,² YH Zhang,¹ SJ Yin,¹ NN Liu¹ and J Zhang¹

¹Fuwai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Heart Failure Department, Beijing, China, People's Republic of ²Shandong University School of Medicine, Jinan, China, People's Republic of

Objective: To investigate the characteristic of QRS waves in patients with previous myocardial infarction refer to different ventricular walls and the relationship between the incidence, duration of fragmented QRS and ventricular arrhythmia.

Method: (1) 335 patients with PMI were investigated. Subjects were divided into 4 groups on the basis of the morphologies of QRS wave: pathological Q wave group (96 patients), fQRS group (158 patients), both group (42 patients), and neither group (123 patients); according to their myocardial infarction site they were divided into three groups: anterior wall group (61 patients), inferior wall group (40 patients), lateral wall group (15 patients); furthermore, they were divided into two groups by their fQRS duration: fQRS duration ≥ 110 ms group and fQRS duration < 110 ms group. The statistics of each group were collected and analyzed. (2) Each patient underwent 24 hours dynamic ECG examination to analyze the incidence of ventricular arrhythmia.

Results: (1) Based on the ECG in 335 patients with PMI, the frequency of fQRS was higher than pathological Q wave ($P < 0.01$). However, the frequency of fQRS in different ventricular walls showed no difference ($P > 0.05$); (2) In fQRS group, the incidence of ventricular arrhythmia caused by different ventricular walls had no significant difference ($P > 0.05$); (3) Compared with fQRS duration < 110 ms group, the incidence of ventricular arrhythmia in the ≥ 110 ms group was significantly higher.

Conclusion: In patients with PMI, fQRS is much more frequent than pathological Q wave, however, the frequency of fQRS showed no direct relationship with the previous site of myocardial infarction. But the prolonged QRS duration may be an indicator for increased occurrence of ventricular arrhythmia. Thus fQRS might be a useful supplement in the diagnosis of PMI, and PMI patients with prolonged fQRS (≥ 110 ms) should be aware of the higher incidence of ventricular arrhythmia.

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Symptomatic ventricular tachyarrhythmia is associated with miR-1 downregulation in patients with ischaemic heart failure exacerbation

MT Tomaniak,¹ G Sygitowicz,² KJ Filipiak,¹ O Blaszczyk,³ L Koltowski¹ and D Sitkiewicz²

¹Medical University of Warsaw, 1st Department of Cardiology, Warsaw, Poland ²Medical University of Warsaw, Department of Medical Laboratory Diagnostics, Warsaw, Poland ³Medical University of Warsaw, Department of Pharmacogenomics, Warsaw, Poland

Purpose: The results of preclinical studies investigating the role of microRNA 1 (miR-1) in arrhythmogenesis are conflicting. Some trials conducted in a rodent model suggest that miR-1 dysregulation may induce ventricular tachyarrhythmias by alteration in expression and function of connexin 43 located in gap junctions. The impact of this muscle-specific molecule on the development of life-threatening arrhythmias in humans has not been evaluated so far.

The aim of this study was to compare the expression of miR-1 in ischaemic heart failure (HF) patients with and without symptomatic ventricular tachycardia (VT).

Methods: 48 consecutive patients hospitalised at the Intensive Coronary Care Unit due to HF exacerbation underwent the research. The expression of miR-1 was evaluated by qRT-PCR. The serum concentrations of gal-3 and NT-proBNP were determined with the use of available diagnostic tests. A history of symptomatic non-sustained or sustained VT confirmed in ECG or Holter ECG monitoring was collected. In addition, all patients underwent a transthoracic echocardiographic examination. Subjects with acute coronary syndrome in the past 30 days were excluded from this analysis.

Results: In the analyzed population there were 8 patients aged 70.4±9.7yrs that experienced symptomatic VT and 40 patients aged 71.7±0.9yrs without such arrhythmias in a medical history. The groups did not differ in terms of age, NYHA class, HF etiology and NT-proBNP levels. No significant differences between the groups were found for left ventricle ejection fraction, left ventricle end diastolic diameter, left atrium and right ventricle diameter or inter-ventricular septum (IVS) and posterior wall thickness as well.

The expression of miR-1 was decreased in patients with symptomatic VT (0.284 (0.189-1.74) change fold vs. 0.346 (0.163-0.69) change fold, p=0.045). Noteworthy, there was a significant negative correlation between the IVS diameter and miR-1 expression (Rs= -0,815, p<0.05) and positive correlation between the RVd and NT-pro-BNP

concentration (Rs=0.829, p<0.05) in this group. There were no significant differences in miR-21 expression and galectin-3 concentration between HF patients with and without VT.

Conclusions: miR-1 downregulation might be associated with symptomatic VT in patients with post-myocardial infarction HF. Further prospective studies are needed to confirm its role in the pathogenesis of arrhythmias.

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QTc interval, QT turbulence and microvolt T wave alternans in patients with and without heart failure and ventricular premature beats

GS Gheorghe,¹ AS Hodorogea,¹ ACD Gheorghe² and IT Nanea¹

¹"Th. Burghel" Hospital, University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania ²University of Medicine and Pharmacy Carol Davila, Bucharest, Romania

Purpose: To assess the relationship between QTc interval duration, QT interval turbulence (QTt) and microvolt T wave alternans (mTWA) as risk factors for severe ventricular premature beats (VPB) in patients (pts) with and without heart failure (HeF).

Method: We performed 24 hour Holter ECG monitoring for palpitations in 150 pts in sinus rhythm classified in 2 groups: G1-with and G2-without HeF. We noted demographic data, history of stable ischemic heart disease (IHD), old myocardial infarction (OMI), type 2 diabetes mellitus (DM), Lown class III and IV ventricular premature beats (VPB), left ventricular ejection fraction (LVEF) and in G1 NYHA class. We evaluated QTc using Bazett formula (prolonged if more than 500 ms); QTt -calculated as the relative difference between QT interval of the first sinus cycle after the VPB and the average QT interval of the two sinus cycles preceding the VPB; mTWA - occurrence of >1.9µV alternans starting at a heart rate < 110 beats per min. Statistical analysis was performed using EpiInfo 3.5.3.

Results: There were 74 pts in G1, 59.45% NYHA II, 37.8 % NYHA III and 2.7% NYHA IV; 48.64% men. G1 were older than G2 (69.8±10.2 years vs 57.9±15.8 years, p=0.01). In G1 vs G2 there were more pts with IHD (52.7% vs 23.68%, p=0.002), OMI (16.4% vs 3.9%, p=0.006) and DM (27.02% vs 11.8%, p=0.01). LVEF was 38±/-10 % in G1 and 51±/-5% in G2 (p=0.01). Lown III VPB were equally distributed in G1 and G2 (23% vs 20%, p=0.83). Lown IV VPB were more frequent in G1 than in G2 (37.7%

vs 18.4%, $p=0.001$). In G1 QTt was significantly reduced in pts with Lown III and IV VPB ($1.3 \pm 0.3\%$) vs pts without VPB ($3.1 \pm 1.2\%$) ($p=0.03$). In G2 there were no differences regarding QTt between pts with ($2.9 \pm 1.3\%$) and without VPB ($3.2 \pm 0.9\%$) ($p=0.1$). G1 but no G2 pts with Lown III and IV VPB had prolonged QTc and mTWA ($p = 0.01$). Multiple logistic regression showed that the association between mTWA, QTt, and prolonged QTc is correlated with low LVEF and increases the probability of Lown III and IV VPB ($p=0.002$).

Conclusions: QTt, prolonged QTc, mTWA were associated with Lown III and IV VPB only in pts with heart failure and low LVEF.

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Compared to healthy adults people with atrial fibrillation have higher anxiety, lower quality of life and lower cognitive scores

R Serpytis,¹ A Navickaite,² E Navickaite,² J Barysiene,¹ G Marinskis¹ and P Serpytis¹

¹University Hospital Santariskiu Klinikos, Vilnius, Lithuania

²Vilnius University, Vilnius, Lithuania

Aim: Atrial fibrillation (AF) is the most common cardiac arrhythmia and a known risk factor for cerebrovascular stroke. AF and long standing hypertension may produce ischemic lesions leading to a progressive cognitive impairment. The impact of sole AF on cognitive impairment has not been evaluated. Our objective was to compare cognitive functions, quality of life, psychological distress and impulsiveness in people with AF and matched control group.

Methods: The study included 30 patients aged ≥ 55 years, with ≥ 5 years history of AF, without hypertension (or with well-controlled hypertension), without previous dementia and compared them with a matched group of 30 healthy control participants. Demographic and clinical characteristics were recorded. Subjects underwent the following rating scales: Mini Mental State Examination (MMSE), Hospital Anxiety and Depression Scale (HAD), HeartQoL, Barratt Impulsiveness Scale (BIS-11).

Results: In AF group there were 63.4% male ($n=19$) and 36.6% female ($n=11$) patients, control group – 33.3% male ($n=10$) and 66.7% female ($n=20$) respectively. Age range was from 55 to 81 years in both groups, mean – 63.87 years (± 6.43) in the AF group and 66.13 years (± 8.00) in control.

In AF group 23,33% had primary or general education, college – 23,33% and university – 53,33%; in control group – 20%, 23,33% and 56,67% respectively. Different score results are listed in the table.

Conclusion: People with AF are more likely to develop anxiety disorder. Cognitive status is significantly lower in the AF group. In comparison to healthy subjects people with AF have worse quality of life.

Table 1.

Different score results in two observed groups

Score	AF group	Control group	P
MMSE	27.57	29.5	0.0001
HAD, anxiety	8.93	6.13	0.0097
HAD, depression	5.83	5.23	0.4712
HeartQoL global score	1.44	2.64	0.0001
HeartQoL physical subscale	1.42	2.83	0.0001
HeartQoL emotional subscale	1.39	2.18	0.0008
BIS-11	1.91	2.01	0.2896

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Ventricular tachycardia ablation program: experience and results with systematic use of non-fluoroscopic navigation system.

A Rodriguez-Gonzalez,¹ J Ferrer Hita,¹ RA Juarez-Prera,¹ P Jorge-Perez,¹ MJ Garcia-Gonzalez,¹ E Gonzalez-Cabeza,¹ C Mendez-Vargas,¹ M Padilla,¹ F Bosa-Ojeda¹ and I Lainez-Cerdena¹

¹University Hospital of the Canaries, Cardiology Department, Santa Cruz de Tenerife, Spain

Purpose: ablation of ventricular tachycardia (VT) has been standardized as an usual technique in the electrophysiology laboratory since the introduction of non-fluoroscopic navigation systems (NFNS). Our objective was to analyze our experience with VT ablation.

Methods: prospective analysis of 47 patients undergoing VT ablation in the last three years. We collected clinical characteristics, existence of structural heart disease (SHD), presence of ICD and patients treatment. All VT ablations were performed with NFNS. We analyzed the effectiveness of the procedure, complications and the mean fluoroscopy time.

Results: the patients mean age was 50 ± 18 years with a male percentage of 62%. VT ablation accounted for 14%

of all electrophysiological procedures during the study period. In 89% the VT was documented while in 11% of patients substrate ablation was performed without inducing VT. 55% of patients had idiopathic VT or not associated with SHD (26 cases). The other 45% (21 cases) had a VT associated with SHD, specially VT associated with chronic myocardial scar (14 cases -67% -). In relation to ablation results, 77% of cases (36) was effective, 6% (3) partially effective and 17% (8) ineffective. There were no fatal complications, although

a case of cardiac tamponade requiring pericardiocentesis and one ischemic stroke. The results of the different groups are shown in the table.

Conclusions: in our experience, VT ablation procedure showed a success and complication rates similar to other series with slightly lower effectiveness in the VT associated with chronic myocardial infarction. The experience and joint work with the Coronary Care Unit are critical to improve the success of this increasingly popular technique.

Table 1. Ablation results in different groups.

Etiology	VT not associated with SHD			VT associated with SHD	
	R-LVOT	Fascicular	Perimitral	Ischemic	Non ischemic
Incidence	20 (42%)	3 (6%)	5 (11%)	14 (30%)	5 (11%)
ICD	0%	0%	0%	7 (50%)	2 (40)
Several VTs	1 (5%)	0%	1 (20%)	2 (15%)	4 (67%)
Fluoroscopy time	65 ± 25	39 ± 9	98 ± 5	118 ± 37	113 ± 36
Effectiveness	90% (18)	100% (3)	40% (2)	71% (10)	60% (3)

VT: ventricular tachycardia. SHD: structural heart disease. R-LVOT: right-left ventricular output tract. ICD: implantable cardiac defibrillator. Fluoroscopy time (minutes).

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Sustained monomorphic ventricular tachycardia: can we predict the ischemic base substrate on admission?

F Rueda Sobella,¹ C Garcia Garcia,¹ T Oliveras Vila,¹ C Labata Salvador,¹ J Serra Flores,¹ O De Diego Soler,¹ X Armario Bel¹ and A Bayes Genis¹

¹Germans Trias i Pujol Hospital, Cardiology, Badalona (Barcelona), Spain

Purpose: Sustained monomorphic ventricular tachycardia (VT) is a complication of chronic coronary artery disease (CAD) but also can appear in other clinical settings with different management implications. The aim of this study is to analyze the clinical features that could predict the presence of an ischemic substrate in the initial evaluation of patients admitted with VT in the absence of an acute coronary syndrome.

Methods: Between 2000 and 2015, 111 patients were admitted with the diagnosis of VT and without evidence of an ongoing acute coronary syndrome. Patients were classified in two groups depending on the associated diagnosis at discharge: ischemic VT (n=73) and non-ischemic VT (n=38). Baseline characteristics, symptoms at presentation, in-hospital mortality and long-term prognosis (median follow-up of 3.45 years) were analyzed.

Results: Patients with ischemic VT were older (mean 67.9 vs 57.6 years, $p < 0.001$), had higher prevalence of hypertension (71.2% vs 44.7%, $p = 0.006$), dyslipidemia (74.0% vs 50.0%, $p = 0.012$), peripheral artery disease (31.5% vs 5.3%, $p = 0.02$), and slightly more diabetes (31.5% vs 18.4%, $p = 0.141$) and stroke (11.0% vs 2.6%, $p = 0.127$). Ischemic VT patients had higher degree of systolic dysfunction (ejection fraction 35.1% vs 45.8% in the non-ischemic, $p < 0.001$). Presentation was similar between the two groups, although ischemic patients had a non-significant trend to more angina (43.8% vs 31.6%) and less syncope (16.4% vs 23.7%) and palpitations (15.1% vs 28.9%), all $p = 0.18$. In ischemic VT patients more electrical cardioversion (68.5% vs 42.1%, $p = 0.007$) and implantable cardioverter defibrillator implantation (52.1% vs 34.2%, $p = 0.073$) were performed. No differences in the electrocardiographic pattern in sinus rhythm were found. In-hospital mortality trended to be higher in patients with CAD (9.6% vs 2.6%, $p = 0.18$). Although there were no differences in the rate of readmission due to VT during follow-up (20.5% in ischemic VT vs 23.7%, $p = 0.70$), a trend to higher long-term mortality was observed in ischemic VT patients (37.0% vs 23.7%, $p = 0.15$).

Conclusions: In our series, sustained monomorphic VT patients without an ischemic substrate were younger and

had less prevalence of cardiovascular risk factors. These patients had a higher ejection fraction than those with an ischemic substrate. No differences were found in in-hospital mortality, although there was a trend to a higher long-term mortality in ischemic VT patients.

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Chaotic states in electrocardiographically identified ventricular tachycardia.

M Kobusiak-Prokopowicz,¹ K Kaaz,¹ K Jarczewska,² W Glabisz² and A Mysiak¹

¹Wroclaw Medical University, Department of Cardiology, Wroclaw, Poland

²Institute of Civil Engineering University of Technology, Wroclaw, Poland

Chaos theory suggests that there is a deterministic force for inducing numerous complex processes previously recognized as inherently random. Due to the need to develop an effective pharmacological therapy for ventricular fibrillation (VF), many attempts are made to determine the origin and electrophysiological characteristics of the transition from tachycardia to fibrillation. The aim of this study was to verify the hypothesis about chaotic characteristics of electrical phenomena in myocardium during ventricular tachycardia (VT) and VF.

Material and methods: ECG result was consolidated with the measuring equipment which was specifically designed for this purpose (M2TT). It allows recording of 3 limb leads (I, II, III) and 2 precordial ones (Va and Vb). The available ECG signal was retrospectively analyzed - excerpts showing the characteristics of VT and VF were prepared. An IT program, which allows to extract digital ECG data collected on-line with the ability to automatically and manually isolate and classify arrhythmias, has been developed. From the VT and VF input signals, using wavelet analysis, the signals which are carriers of different frequencies were isolated and each one of them was Fourier transformed. The phenomenon under concern was analyzed on the basis of phase portraits and Poincaré maps.

Results: For the final analysis there were 16 subjects presenting either with ventricular arrhythmias or to evaluate the functionality of cardioverter-defibrillator (ICD). 120 digital sequences of sinus rhythm (SR), 450 ECG fragments composed of 4-8 beats of non-sustained VT (nsVT) were obtained. During a routine defibrillation threshold testing of implantable cardioverter-defibrillators (ICDs) 12 pieces of digital recording with VF and 12 fragments with VT were recorded in 9 pts. Based on the conducted analysis, it has been found that

the most distinct differences among SR, VF, VT and VT/VF signals appear in the distribution of the wavelet coefficients, wherein significant wavelet coefficients occur not only in high frequency bands but also in the lower ones.

Conclusions: 1. VT comply with the criteria of chaotic process, while SR signals and VF are not characterized by its properties. 2. ECG does not allow to differentiate between an advanced chaotic state and linear process within the area of electrical stimulation of the heart muscle. 3. Electrophysiological study defining the nature of VF requires advanced methods of collecting cardiac muscle electrical activity's signals, since surface ECG is not sufficiently sensitive to detect the characteristics of a chaotic process in the course of VF.

Biomarkers

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Detection of myocardial injury during insulin-induced hypoglycemia using an ultrasensitive troponin assay

J X Quah,¹ ED Carlton,² O Rana,³ C Byrne,⁴ R Senior,⁵ C Anstey⁶ and K Greaves¹

¹Sunshine Coast Hospital and Health Services, Department of Cardiology, Nambour, Australia ²Poole Hospital NHS Foundation Trust, Department of Cardiology, Dorset, United Kingdom ³Omar Hospital and Cardiac Centre, Lahore, Pakistan ⁴University Hospital Southampton NHS Foundation Trust, University of Southampton and National Institute for Health Research Biomedical Research Centre, Southampton, United Kingdom ⁵Royal Brompton Hospital, Biomedical Research Unit, National Heart and Lung Institute, Imperial College, London, United Kingdom ⁶Sunshine Coast Hospital and Health Services, Department of Intensive Care, Nambour, Australia

Introduction: Hypoglycemia is associated with increased cardiovascular mortality in patients with and without established coronary artery disease. We have previously demonstrated that insulin induced hypoglycemia is associated with a significant reduction in myocardial blood flow reserve (MBFR). Using an ultrasensitive cardiac troponin I (us-cTnI) assay that has a limit of detection at least one order magnitude below that of current commercial assays, we investigated whether myocardial injury occurred as determined by a change in us-cTnI following a period of symptomatic insulin induced hypoglycemia and the associated reduction in MBFR.

Methods: Twenty-three subjects without obstructive coronary artery disease underwent hyperinsulinemic clamps beginning with hyperinsulinemic euglycemia (HE) followed by hyperinsulinemic hypoglycemia (HH), each for

60 minutes. Serum samples for us-cTnI, (limit of detection: 0.2 pg/ml), were taken at baseline, after 60 minutes of HE and then 60 minutes of HH with concurrent measurements of MBFR. MBFR was measured using low-power, real-time myocardial contrast echocardiography and low dose dipyridamole.

Results: Plasma glucose was 4.9 ± 0.4 mmol/L at baseline, 4.9 ± 0.2 mmol/L during HE and 2.8 ± 0.1 mmol/L during HH. Mean MBFR was 2.48 ± 0.33 at baseline, increasing during HE to 2.92 ± 0.59 ($p=0.003$) and decreasing to 2.20 ± 0.26 during HH - a fall of 11.3% and 24.7% with respect to baseline ($p=0.003$) and HE ($p<0.001$), respectively. Us-cTnI levels at baseline, HE and HH were 1.82 ± 1.9 pg/ml, 1.71 ± 1.7 pg/ml and 1.83 ± 1.8 pg/ml, respectively. No significant differences in us-cTnI between different stages were detected ($p=0.28$).

Conclusion: In subjects without obstructive CAD, a 60 minute period of insulin induced hypoglycemia and reduction in MBFR was not associated with an increase in us-cTnI levels.

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Association between the probability of acute coronary syndrome and the accuracy of serial measurements of troponin

MB Rivas,¹ A Volschan,¹ ET Mesquita,¹ MI Garcia,¹ MV Martins,¹ AV Meireles,¹ I Starling,¹ AA Ferreira,¹ IC Pinheiro¹ and R Lobo¹

¹Hospital Pro Cardiaco, Rio de Janeiro, Brazil

Background: Although serial measurements of cardiac biomarkers are an important resource for acute coronary syndromes (ACS) recognition in the emergency room, they require longer hospital stays. The use of this strategy in patients with low probability of ACS and a prolonged onset of symptoms (delta T) has been questioned.

Purpose: To evaluate the association between probability and ACS occurrence in a protocol with serial measurements of troponin (TPN) in groups with variable delta T.

Methods: This prospective study included 1,360 patients consecutively admitted to the emergency room with the clinical suspicion of ACS. The probability of ACS was divided according to the type of chest pain (CP) in 2 categories: low (atypical CP; type C or D) or high (typical CP; type A or B) according to clinical criteria obtained at admission. Patients underwent serial assessment of EKG

and TPN on admission and 6 hours later. The diagnosis of ACS was performed by ischemia detection in stress tests or the presence of a significant obstruction in a coronary angiography. Statistical analysis was performed using student t-test and chi square.

Results: The mean age of patients was $63.5 + 16,3y$ with male predominance (58.5%). The majority had low probability (58.4%) with ACS diagnosis in 3.9%; high probability group showed 31% of ACS. The second measurement of TPN was required to identify ACS in only 2.3% of patients, being more prevalent in the high probability group (5.3% vs 0.2%; $p < 0.0001$). For the patients with delta T > 180 min, this occurrence was also greater in the high probability group (4% vs 0%; $p < 0.0001$).

Conclusions: Stratifying the probability of ACS using type of CP allows recognition of groups with distinct prognostics. Reduced need for serial measurements of TPN to confirm ACS, mainly in patients with low probability and prolonged delta T represents an opportunity for the development of faster CP protocols.

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Study of conventional risk factors of coronary artery disease between males and females.

MT Rahman¹

¹NATIONAL INSTITUTE OF CARDIOVASCULAR DISEASES, DHAKA, Bangladesh

Introduction: Coronary artery disease (CAD) is leading cause of death and account for approximately 12 million deaths annually worldwide. Prevalence of CAD is considered to be higher in males than in females. The prognosis for women with CHD was worse than for men. The influence of the menopause on both cardiovascular risk factors and CHD is unique for women. Hence, women form a distinct subpopulation within patients with CHD. This should be acknowledged in the management and assessment of CHD.

Aims and objective: To study association of conventional risk factors of CAD among males and females.

Methods: Three heterogeneous groups of subjects were taken; 1. Documented CAD; 2. CAD risk and 3. Healthy controls. Documented CAD patients were those who has diagnosed and received prior treatment for CAD. CAD risk group were those with Metabolic Syndrome (NCEP-ATP III criteria) or with Framingham 10 yr risk >10%. History of hypertension, smoking and family history of ischemic

heart diseases were taken. We measured body mass index (BMI), blood sugar, complete lipid profile including triglycerides (TG), total cholesterol (TC), low and high density lipoprotein (LDL, HDL) in all subjects.

Results: There were 750 subjects including 300 (40%) documented CAD patients, 225 (30%) at CAD risk and 225 (30%) healthy people. Groups were compared by multifactorial ANOVA.

Conclusion: There was no significant difference between the lipid profile of males and females. However, BMI was significantly higher in females including in females of CAD patients and CAD risk group. Therefore, BMI might be important risk factors among females.

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Neutrophils/lymphocytes ratio in patients presenting with ST-segment elevation acute coronary syndrome undergoing primary angioplasty

M Ascencio Lemus,¹ N Rojo Prieto,¹ C Hernandez Diez,¹ R Gutierrez Caro,¹ T Benito Gonzalez,¹ I Iglesias Garriz,¹ F Fernandez-Vazquez,¹ M Rodriguez Santamarta,¹ L Alvarez Roy¹ and C Lezcano Pertej¹

¹Hospital of Leon, Cardiology department, Leon, Spain

Purpose: Neutrophil granulocytes/lymphocytes ratio (N/L) has been recently proposed as a new marker for measuring systemic inflammation. This ratio is easy to obtain, and has prognostic value for different cardiovascular diseases. In this study we assessed the connection between this new marker and some of the main prognostic parameters on ST-segment elevation myocardial infarction.

Methods: Consecutive patients who were admitted to our institution with a ST-segment elevation myocardial infarction with less than 12 hours from chest pain onset were recruited. N/L ratio was obtained from the first cell blood count performed after symptom onset, generally soon after admission.

Results: A total of 59 patients were included; among them, 73% were male, 29% were regular smokers, 48% had hypertension, 44% had dyslipidemia, and 20% suffered diabetes mellitus. Twelve percent of them had had a previous myocardial infarction. In the whole group, 42% had a myocardial infarction involving the anterior wall. All of them underwent urgent coronary angiogram, and 88% of the patients were intended for a primary angioplasty. After stratification according to the major cardiovascular risk factors, none of them was

associated with an increase in N/L ratio. A statistically significant inverse correlation between time from symptom-onset to intracoronary guidewire insertion and plasma lymphocytes (rho-Spearman of -0,48; p=0,002) and N/L ratio (rho 0,45 p=0,004) was demonstrated. No correlation was observed when plasma neutrophils were analyzed. TIMI RISK score showed correlation with lymphocytes (rho -0,318, p=0,021), but no correlation was proved with neutrophils and N/L ratio. Troponin levels were inversely correlated with lymphocytes (rho -0,391, p=0,006) and positively correlated with N/L ratio (rho 0,343, p=0,017).

Conclusions: N/L ratio is slightly correlated with the time of evolution of myocardial infarction. This occurs mainly due to a reduction of the lymphocytes count in peripheral blood.

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B-type natriuretic peptide levels in patients with pericardial effusion undergoing pericardiocentesis.

J Campodonico,¹ M Moltrasio,¹ N Cosentino,¹ C Rossi,² V Milazzo,¹ M Rubino,¹ A Cabiati,¹ G Lauri,¹ M De Metrio¹ and G Marenzi¹

¹Cardiology Center Monzino IRCCS, Milan, Italy ²Sant' Andrea Hospital, Rome, Italy

Purpose: Pericardial effusion is characterized by progressive accumulation of fluid within the pericardial space, resulting in increased intra-pericardial pressure and compression of the heart. As B-type natriuretic peptide (BNP) is secreted by the ventricles in response to increased myocardial stretch, we hypothesized that pericardial effusion, as well as its resolution, might influence BNP plasma levels.

Methods: We prospectively measured, in 146 consecutive patients with pericardial effusion, BNP plasma levels at baseline, soon after, and 24 hours after pericardiocentesis. A scoring system based on 7 clinical and echocardiographic parameters was developed, and patients were classified according to the number of variables as having low (0-2), intermediate (3-4), or high (5-7) severity score.

Results: Out of the 146 patients, 42 (29%) had normal values (<100 pg/ml), whereas 104 (71%) had high BNP values at baseline. In the whole population, baseline BNP levels significantly decreased as the severity score increased (r=-0.21; P=0.01). Twenty-four hours after pericardiocentesis, a significant increase in BNP was observed in patients with intermediate (P=0.004) and with high (P<0.001) severity score; no increase occurred in low

score patients ($P=0.56$). The higher was the severity score, the steeper was the increase in BNP through the three time-points considered ($P=0.04$).

Conclusions: The results of the present study show that BNP plasma levels are suppressed in the presence of relevant pericardial effusion, and that they rise after pericardiocentesis. Future studies should confirm the role of BNP in assisting clinicians in the decision-making process of pericardial fluid drainage.

P431

Serial changes of adipocyte binding protein and its clinical implication in acute myocardial infarction

S Muto,¹ M Kurobe,¹ K Minami,¹ S Furudono,¹ H Suenaga,¹ T Nunohiro,¹ S Takeshita,¹ H Nakashima¹ and K Maemura²

¹Nagasaki Harbor Medical Center City Hospital, cardiology, Nagasaki, Japan

²Nagasaki University Hospital, Cardiology, Nagasaki, Japan

Background: Elevation of adipocyte fatty-acid binding protein (A-FABP) level has increased the risk of advanced coronary atherosclerosis and plaque vulnerability.

Aims: The aims of this study were to examine time course of A-FABP and the relationship of A-FABP and conventional biomarkers in patients with acute myocardial infarction (MI).

Methods: This study included 50 patients who underwent primary percutaneous coronary intervention. A-FABP, heart type fatty-acid binding protein (h-FABP), high sensitive cardiac troponin T (hs-cTnT), creatinine kinase (CK), adiponectin (APN), and N-terminal pro-brain natriuretic peptide (NT-proBNP) were simultaneously measured on admission. Time course of A-FABP, h-FABP, hs-cTnT and CK levels were also evaluated. A-FABP was also measured in 16 control subjects without cardiovascular disease.

Results: A-FABP levels were significantly elevated in patients with acute MI than in controls (34.0 ± 35.2 ng/ml vs 13.6 ± 6.2 ng/ml, $p=0.0021$). A-FABP, h-FABP and hs-cTnT were comparable in terms of first rise to the upper normal value (4.2 ± 3.3 h vs 4.9 ± 2.5 h, $p=0.6745$; 4.2 ± 3.3 h vs 4.6 ± 2.7 h, $p=0.8192$).

A-FABP showed the most rapid peak time as compared with hs-cTnT and CK (6.3 ± 6.2 h vs 13.9 ± 4.7 h, $p<0.001$; 6.3 ± 6.2 h vs 12.0 ± 7.3 h, $p=0.0073$).

A-FABP on admission showed modest positive correlation with APN and NT-proBNP ($r = 0.55$, $p = 0.0027$; $r = 0.42$,

$p = 0.0327$, respectively). In contrast, relationship of A-FABP and peak CK could not be found.

Conclusion: A-FABP is unique biomarker because it showed the rapid elevation independent of myocardial necrosis and modest relationship with acute heart failure. A-FABP may be useful for the diagnosis and risk stratification in the clinical setting of acute MI.

P432

Relationship between ionized calcium and phosphorus levels and left ventricular systolic function in ST-segment elevation myocardial infarction patients

M Hromadka,¹ E Dragounova,¹ I Bernat,¹ J Seidlerova,² P Ostadal³ and R Rokyta²

¹University Hospital in Pilsen, Department of Cardiology, Pilsen, Czech Republic ²University Hospital Pilsen, Internal Department II, Pilsen, Czech Republic ³Na Homolce Hospital, Cardiology department, Prague, Czech Republic

Purpose: The significance of serum calcium and phosphorus levels in patients with acute myocardial infarction is not entirely clear. To assess the dynamics and the potential predictive value of ionised calcium (iCa) and phosphorus levels in acute ST-segment elevation myocardial infarction (STEMI) patients treated by primary PCI.

Methods: A total of 256 patients with STEMI included in the STEMI-RADIAL study were evaluated. Calcium and phosphorus levels were measured on admission, and after 6 h and 12 h. The correlation of these values with laboratory and clinical parameters was assessed.

Results: Within the first 12 h of admission, there was a statistically significant increase in iCa and phosphorus levels without substitution therapy. Hypocalcaemia was present in 14% of patients at baseline, and was associated with increased troponin I levels ($P<0.0018$). After adjustment for confounders, the left ventricular ejection fraction was positively associated with iCa levels after 12 h ($P=0.010$), and negatively associated with peak troponin I ($P<0.0001$) and C-reactive protein (CRP; $P<0.006$) levels. Hypophosphataemia was present in 30% of patients at baseline and correlated with the duration of chest pain ($P=0.044$) and CRP level after 24 h ($P=0.040$). The mortality rate of the group after one month and one year was 1.32% and 3.08%, respectively. Of the biochemical parameters studied, only the CRP level was associated with higher one-month mortality (odds ratio

[OR] 4.01 [95% confidence interval (CI) 1.16 to 13.9]; P=0.029). Twelve-month mortality was associated with CRP level (OR 2.21 [95% CI 1.00 to 4.89]; P=0.049) and patient age (OR 1.08 [95% CI 1.00 to 1.17]; P=0.045).

Conclusion: Left ventricular systolic dysfunction in STEMI patients treated by primary percutaneous coronary intervention is independently associated with iCa levels after 12 h. Patients with a longer duration of chest pain had lower baseline phosphorus levels.

P433

Intermediate levels of BNP were related with cardiogenic shock in acute coronary syndromes

A Soeiro,¹ EAC Roque,² FCM Pedroti,² TCAT Leal,¹ AS Bossa,¹ MCFA Soeiro,¹ CV Serrano Jr¹ and MT Oliveira Jr¹

¹Emergency Unit - Heart Institute (InCor) - University of Sao Paulo Faculty of Medicine, Sao Paulo, Brazil ²Hospital Metropolitano, Unidade Coronariana, Serra, Brazil

Purpose: To analyze the outcomes of patients with acute coronary syndromes related with intermediate levels of brain natriuretic peptide (BNP) at admission.

Methods: This was a observational and prospective study with 405 patients (235 in the group I [BNP < 100 pg/mL] and 170 in the group II [100 < BNP < 400 pg/mL]) with acute coronary syndromes included between May 2,010 and May 2,014. The following data were obtained: age, sex, diabetes, systemic arterial hypertension, smoke, dyslipidemia, familial history of precoces coronary artery disease, previous coronary artery disease (percutaneous coronary intervention or coronary artery bypass graft), hemoglobin, creatinine, higher troponin, left ventricle ejection fraction, medication used at hospital and coronary definitive treatment. The primary endpoint was all cause of in-hospital death. The secondary end point was combined events (death, non-fatal unstable angina or myocardial infarction, Killip IV, bleeding and stroke). Comparison between groups was made by Anova and Q-square. Multivariate analysis were determined by logistic regression and was considered significative when p < 0.05.

Results: Were observed significant differences in prevalence of diabetes mellitus (34.80% x 48.82%, p=0.005), previous percutaneous coronary intervention (27.66% x 18.24%, p=0.028) and ejection fraction (42.19% x 41.21%, p=0.001), respectively between groups I and II. Significant difference was observed between groups I and II in cardiogenic shock (2.55% x 10.59%, OR=4.09, p=0.01).

Conclusions: In patients with acute coronary syndromes and intermediate levels of BNP at admission were observed worse prognosis with higher in-hospital cardiogenic shock.

Diabetic heart disease

P434

Left ventricular dysfunction in Egyptian ischemic patients with type 2 diabetes mellitus using speckle tracking echocardiography

A M Moustafa Abdou Aboualia¹ and S M Abdelaliem²

¹Al-Azhar University, cardiology department, cairo, Egypt ²Al-Azhar University, internal medicine, Cairo, Egypt

Objective: To evaluate subclinical left ventricular dysfunction in Egyptian ischemic patients with Type 2 Diabetes Mellitus by Speckle Tracking Echocardiography (2D STE).

Design and method: The study included 80 known chronic stable angina patients and subdivided into DM group (40 patients with Type 2 Diabetes Mellitus) and non-DM group (40 patients without Diabetes Mellitus) and we used 20 cases of apparently healthy volunteers as a control group. LV regional longitudinal and circumferential peak systolic strain were measured respectively using Philip iE33 vendor beside modified Simpson method for assessment of EF.

Results: Although assessment of EF by Simpson method showed no statistically significant difference between all the three groups, the peak systolic longitudinal strain in LV basal segments, middle segments and apical segments were significant lower in diabetic ischemic group than non diabetic ischemic group (P<0.05) and lower in non diabetic ischemic group than control group (P<0.05). The peak systolic circumferential strain parameters showed no significant difference between all the three groups.

Conclusions: The systolic longitudinal myocardial function of LV evaluated by 2D STE has been reduced before the reduction of left ventricular global systolic function in ischemic patients with Type 2 Diabetes Mellitus.

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Peculiarities of diagnosis myocardial hibernation in patients with unstable angina and diabetes mellitus

T Solomenchuk,¹ NA Slaba,¹ VV Protsko,¹ AS Besedina¹ and GV Tshngryan¹

¹Danylo Halytsky Lviv National Medical University, Lviv, Ukraine

Acute myocardial ischemia that occurs on a background of diabetes mellitus (DM), leads to a significant depletion of energy and reduce myocardial contractility ability of cardiomyocytes. Possibilities of the systolic myocardial

function recovery depends on the presence viable (hibernation) of myocardial.

Purpose: Establish criteria for myocardial viability in patients with unstable angina (UA), by determining the echocardiographic parameters: left ventricular (LV) ejection fraction (EF), wall motion score index (WMSI) - total score segments divided by 16 and the degree of local contractility (DLC) - total score segments, minus 16, divided by the number of segments with impaired contractility.

Materials and methods: The study involved 27 patients with DM. Patients were divided into 2 groups: I group - 8 (29.63%) patients with myocardial viability (hibernating) and II group - 19 (70.37%) patients with non-viability (non-hibernating). Myocardial viability was improved. LVEF improvement of $\geq 5\%$ between the first observation and 14 day was observed. For a more detailed assessment of LV contractile ability, we calculated WMSI and DLC on the first day of hospitalization and in the dynamics.

The results: In assessing the standard data LV EF were found increase in two groups of patients: the 1st group - 23% (from $32,87 \pm 2,52$ to $43,00 \pm 3,60$, $p < 0,001$) in the 2nd group - 6.7% (from $34,31 \pm 1,58$ to $36,78 \pm 1,46$, $p < 0,001$). However, the analysis of DLC and WMSI in the two groups of patients were found to be completely opposite to this trend. In particular, DLC in 1st group patients decreased from $1,52 \pm 0,20$ to $1,20 \pm 0,11$, $p < 0,001$, indicating improvements in myocardial contractility by 21%. In the 2nd group, the opposite affect was observed: DLC increase of $1,56 \pm 0,13$ to $1,75 \pm 0,13$, $p < 0,001$, which is a sign of worsening myocardial contractility disorders by 10.0%. WMSI in the 1st group patients decreased from $1,88 \pm 0,16$ to $1,42 \pm 0,13$, $p < 0,001$, indicating a decrease in the total area hibernating segments by 24.0%. In the second group it increased from $1,97 \pm 0,11$ to $2,15 \pm 0,11$, $p < 0,001$, which indicates that the increase in the area of myocardial non-viability by 8.0% due to acute ischemia, probably against the background of UA and DM type 2.

Conclusions: Therefore in a real medical practice, a full assessment of myocardial viability in patients with acute coronary syndroms and a background of DM type 2 must include not only the definition of LVEF, but must be measured in conjunction with DLC and WMSI.

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Severe obstructive coronary artery disease in young female affected by diabetes mellitus type-I. Clinical-angiographic features and literature review.

D Tavella,¹ F Beltrame,¹ FL Ribichini¹ and C Vassanelli¹

¹Ospedale Universita Integrata, Cardiology Department, verona, Italy

It is well known that Diabetes Mellitus (DM) is the most powerful risk factor for Coronary Artery Disease (CAD). More than half the mortality and a vast amount of morbidity in people with DM is related to CAD. A quarter of myocardial revascularization procedures are performed in patients with DM.

There are wide differences in the prevalence of CAD in patients with type 1 or 2 diabetes, being more represented in the second both in terms of incidence and severity of coronary involvement and worse intra/extra-hospital prognosis.

38yo-female, type1-diabetic in insulinic-therapy since the age of 8 years was admitted to our institution for a recurrent chest pain.

Poor glycaemic control (fasting glucose 158 mg/dL; HbA1c 9.8%), extensive organ damage (already known peripheral vascular disease 5 years ago, severe hypertensive retinopathy 10 years ago treated by Laser-Therapy with current proliferative evolution, EPH-Gestosis), normal kidney function (Creatinin 1,07 mg/dL; GFR 56 ml/min/1.73m²) was evident.

Treadmill Test was negative at 90%. CA-MSCT "unexpectedly" showed severe and extensive multifocal coronary disease on both very small LAD and RCA, confirmed by coronary angiography (CA) with successive PCI/DES on LAD and RCA, starting long ASA/Clopidogrel therapy.

3-months CA showed excellent result on LAD and tight intrastent re-stenosis on RCA with distal disease progression, treated by DEB intrastent and DES on distal. The therapy was shifted from ASA/Clopidogrel to ASA/Prasugrel.

While i'm writing, after 14 months since last procedure, the patient, asymptomatic and cardiac event-free, is admitted for temporal stroke and severe kidney failure bringing to dialysis.

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Effect of hypertension in diabetic patients admitted for non-st elevation acute coronary syndrome

R Costa Rodrigues,¹ A Correia,¹ M Neto,¹ MG Serrao,¹ S Gomes,¹ N Santos,¹ B Silva,¹ A Pereira,¹ AC Alves¹ and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Purpose: Hypertension (HTN) and Diabetes Mellitus (DM) are known risk factors for acute coronary syndromes (ACS). We intended to evaluate this association in non-ST elevation acute myocardial syndromes (NSTEMI-ACS) at one year follow-up.

Methods: Retrospective study of prospective collected data of 1058 consecutive patients admitted for ACS between

October 2009 and October 2014 for a tertiary hospital intensive cardiac unit. We included patients with NSTEMI-ACS and DM (n=197) and divided them in 2 groups: patients with DM and HTN (group D: n=175, 88.8%; 56.6% men) and patients with DM but not HTN (group ND: n=22; 11.2%; 72.7% men). We compared them in relation to a compound primary endpoint (re-infarction, stroke and cardiovascular mortality) and secondary objectives (re-infarction, stroke and mortality isolated) at 1 year follow-up.

Results: The prevalence of DM and HTN was 88.8%. During in-hospital stay there were no differences in the primary compound objective (D=12.6% vs ND=22.7%; p=ns) or mortality (D=6.9% vs ND=18.5%; p=ns), and the same happened at 1 year follow-up for the primary objective (D=30.3% vs ND=31.8%; p=ns) and mortality (D=24.6% vs ND=22.7%; p=ns). There were no differences in baseline characteristics in terms of age, gender or previous cardiovascular history except for stroke (D=15.4% vs ND=0.0%; p<0.05). Group D presented also a bigger association to other cardiovascular risk factors as body mass index [D=27.9 (iq=6.82) vs ND=25.6 (iq=5.6); p<0.05] and dyslipidemia (D=70.3% vs ND=45.5%; p<0.05). No differences in in-hospital variables as Killip class, need for invasive respiratory support or cardiac arrest. No differences in revascularization strategy or in-hospital medication except for ACEi/ARBs that were used more frequently in group D (D=83.0% vs ND=63.0%; p<0.05). At discharge group D were more frequently medicated with beta-blocker (D=64.4% vs ND=38.9%; p<0.05) and ACEi/ARBs (D=60.1% vs ND=33.3%; p<0.05).

Conclusions: Association between DM and HTN in NSTEMI-ACS is highly prevalent. In diabetic patients with NSTEMI-ACS the coexistence of HTN does not appear to affect 1 year prognosis.

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Influence of arterial hypertension on diabetic patients with non-ST elevation acute coronary syndrome: in-hospital morbidity and mortality

M Rodrigues Neto,¹ R Rodrigues,¹ A Correia,¹ M Gomes Serrao,¹ N Santos,¹ G Caires,¹ B Silva,¹ S Gomes,¹ A Drumond Freitas¹ and D Pereira¹

¹Hospital Dr. Nélio Mendonça, Cardiology, Funchal, Portugal

Objective: High blood pressure (HTA) and diabetes mellitus (DM) confer a greater risk of developing coronary heart disease. It is intended to assess the impact of HTA on the in-hospital morbidity and mortality of diabetic patients diagnosed with acute coronary syndrome without ST segment elevation (ACS NSTEMI).

Design and method: Prospective study of 240 diabetic patients (pts) diagnosed with ACS NSTEMI, between October 2009 and September 2014. They were divided into two groups- diabetic pts with a history of hypertension (Group I: n = 214, 89.17%, 55.1% men) and diabetic pts without a history of hypertension (Group II: n = 26, 10.83%, 76.9% men) - and compared for in-hospital mortality and for the primary composite endpoint (PCE) –nonfatal myocardial reinfarction, stroke and total mortality.

Results: Group I was older [I: 71.35 (interq (iq) = 13.75) vs II: 66.57 (IQ = 14.74), p <0.05], had higher body mass index [I: 28.32 (IQ = 6.75) vs II: 26.04 (iq = 5.76), p <0.05] and a higher prevalence of previous stroke [I: 14.5% vs II: 0.0%, p <0.05]. No statistical difference in relation to other previous cardiovascular history. On admission, there was no difference in the Killip classes, nor in the analytical parameters (blood glucose, creatinine, BNP). During hospitalization, there was no difference in regard with the adopted risk stratification strategy, or the in-hospital medication, except for ACE inhibitors [I: 68.7% vs II: 4.6%, p <0.01%] and diuretics [I: 47.2% vs II: 23.1%, p <0.05] that were most frequently used in group I. There was also no difference for in-hospital complications, nor mortality [I: 6.1% vs II: 15.4%, p = ns] nor PCE [I: 10.7% vs II: 19.2%, p = NS] between the two groups. No difference in the secondary prevention strategy between the two groups.

Conclusions: Although there was a high prevalence of hypertension in diabetic patients with ACS NSTEMI, this was not associated with increased in-hospital morbidity and mortality in this population.

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Diabetes in acute coronary syndrome patients: do we see only the tip of the iceberg?

M Vavlukis,¹ G Kamceva,² D Kitanovski,¹ I Kotlar,¹ F Taneski,¹ F Januseski,¹ I Bojovski,¹ E Shehu,¹ H Taravari¹ and S Kedev¹

¹University Clinic for Cardiology, Skopje, Macedonia, The Former Yugoslav Republic of ²University Goce Delcev, Clinical Hospital, Stip, Macedonia, The Former Yugoslav Republic of

Aim of the study: To analyse the influence of glycoregulation in pts. with known or newly detected diabetes, on in-hospital morbidity/mortality in patients with acute coronary syndrome.

Methods: randomly selected ACS patients were analysed for: stress glycaemia, HgbA1c, risk profile, lipid profile, SINTAX score, TIMI flow, LV function and in-hospital morbidity/mortality. We comparatively analysed pts. based on the level of HgbA1c ($\geq 6,5\%$ vs $<6,5\%$), and

subdivided in five groups: without known diabetes: non-diabetic (NonD), pre-diabetic (PD), new diabetic (ND), and known diabetes: controlled (CD) and uncontrolled (UD).

Results: 116 patients were included, 64.7% m. and 35.3% f., mean age 62 ± 12 y. HTA was present in 51%, HLP in 6.3%, Positive family history in 36.3%, and 61.4% were smokers. 33.6% patients had known diabetes, 28 (24.1%) had newly detected pre-diabetes (HgbA1c 5.6-6.5%), and 16 (13.8%) had diabetes (HgbA1c $>6.5\%$). Mean values of HgbA1c and stress glycaemia were as follows: NonD - 5.19 ± 0.56 and 6.82 ± 1.87 ; PD - 5.99 ± 0.19 and 8.32 ± 3.17 ; ND - 8.19 ± 1.15 and $17.68.19 \pm 1.15$; CD - 5.79 ± 0.55 and 8.89 ± 4.38 ; and UD - 9.36 ± 1.33 and 16.23 ± 6.24 ; (ANOVA $p > 0.000$). No significant difference was found between NonD and CD pts., and between ND and UD (high in the last two), but there was significant difference in HgbA1c ($p < 0.000$). We found high positive correlation between stress glycaemia and HgbA1c: $r = 0.636$, $p > 0.000$, Kappa agreement (0.516; sig $p > 0.000$). TG levels were increased only in UD, and ND groups: 1.93 ± 1.06 , and 2.36 ± 1.22 , (ANOVA $p = 0.026$, Tukey test ND vs NonD $p = 0.050$; and vs PD $p = 0.016$), without significant difference in other lipid fractions. Mean SINTAX score was 15.45 ± 8.2 , without significant inter-group differences. TIMI flow before PCI significantly differed across the groups, the lowest being in ND - 0.14 ± 0.36 and PD - 1.13 ± 1.42 pts. (group value 1.37 ± 1.42 ; ANOVA $p = 0.001$; Tukey test: NonD vs ND 0.000; and 0.043 vs CD). Mean EF was 51.51 ± 8.5 , without significant inter-group difference. 29 in-hospital events in 22 (19%) patients were registered: 7.7% arrhythmias, 6.9% heart failure, 3.4% GIT bleedings, and 2.6% CVI. In-hospital mortality was 4.3%. In multivariate logistic regression analysis, ejection fraction, stress glycaemia, and HgbA1c were identified as independent predictors of in-hospital outcome.

Conclusion: High prevalence of unknown diabetes in ACS patients exists, leading to worse CAD, even in comparison with pts with known, well controlled diabetes. Stress glycaemia, HgbA1c and ejection fraction are independent predictors of in-hospital morbidity/mortality.

Invasive Imaging - Cardiac catheterisation and angiography

P440

Incidence and predictors of contrast induced nephropathy after coronary intervention

A Ramirez Moreno,¹ JR Siles Rubio,¹ L Inigo-Garcia,² M Noureddine,³ JC Salas,¹ J Munoz-Bellido,² A Valle-Alberca,² R Bravo-Marques,² A Milan-Pinilla² and E Zambrano-Medina²

¹Cardiology Department. Hospiten,, Estepona, Spain ²Hospital Costa del Sol, Marbella, Spain ³Servicio de Medicina Interna. Hospiten, Estepona, Spain

Background and Aims: The implications of radio-contrast induced nephropathy are disastrous. In Nepal there is scarcity of data on contrast induced nephropathy. This observational descriptive study was undertaken to study the incidence of contrast induced nephropathy and to identify risk factors (predictors) for the development of contrast induced nephropathy in patients undergoing coronary angiography and angioplasty.

Methods: The subject consists of 540 patients undergoing coronary intervention from 2011 to 2014 were enrolled by convenient sampling technique. Two hundred ten patients were excluded from the study. Therefore, a total of 330 patients were studied and analyzed. Contrast induced nephropathy was defined as an increase of $>25\%$ or >0.5 mg/dl in pre-catheterization serum creatinine at or after 48 h after percutaneous coronary intervention. Estimated glomerular filtration rate as calculated by applying the 4 variables Modification of Diet in Renal Disease Study equation. Standard definitions were used to define the variables.

Results: Twenty seven (8.18%) patients experienced contrast induced nephropathy. The incidence of contrast induced nephropathy in patients with baseline creatinine clearance <60 ml/min was 45.9%. Contrast induced nephropathy developed in 10% of anemic and 12.5% diabetic patients. The amount of the contrast agent administered was similar for both groups of patients (138.20 ± 91.34 ml vs. 175.56 ± 118.86 ml; $p = 0.254$). No correlation was found between the amount of contrast agent administered and the change of serum creatinine concentration. Multivariate logistic regression analysis found that baseline e-GFR and baseline hemoglobin were independent predictors for Contrast induced nephropathy.

Conclusion: The overall incidence of Contrast induced nephropathy after coronary intervention in this study is high. Patients with both preexisting renal insufficiency and anemia were at high risk of Contrast induced nephropathy.

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Angiography findings among different age and gender patients with myocardial infarction

I A Leonova,¹ N Tretyakova,¹ N Trostyanetskaya¹ and S Boldueva¹

¹North-Western State Medical University named I.I. Mechnikov, St-Petersburg, Russian Federation

The purpose of the study - to examine the state of the coronary arteries in different sex and age patients with myocardial infarction.

Research included patients with a acute myocardial infarction (MI) (1201 persons, 816 men and 385 women).

During hospitalization coronarography (CAG) was carried out at 55,22% of men and 36,21% of women ($p < 0,001$). In group of patients till 60 years (CAG) was carried out more often, but to men is authentically more frequent, than to women – 61,06% of men and 50,76% of women ($p < 0,01$). MI proceeded with not changed coronary arteries (CA) at 0,95% of men and 6,4% of women ($p < 0,01$), insignificant damage of CA was observed at 1,66 men, 4,8% of women ($p < 0,01$). Damage of one CA is noted at 38,86% of men and 28,8% of women with MI ($p < 0,01$), two arteries – at 28,67% of men, 22,4% of women ($p > 0,05$), three arteries – at 22,27 men, 24,8 women ($p > 0,05$). Damage of a main left coronary artery $> 50\%$ is noted at 7,58% of men and 12,8% of women ($p < 0,01$). Further we estimated CAG data at women with MI depending on age (< 44 years, 45-59 years, > 60). Among the surveyed patients with MI weight of atherosclerotic process in CA ($p < 0,001$) increased with age, but also at young women already in 45% of cases multivascular defeat of CA came to light. MI with not changed CA arises at patients of young age slightly more often, however, distinctions between age groups were doubtful. Defeat of the main left CA was observed at 22 (17,6%) the surveyed patients, and is reliable ($p < 0,05$) more often at women of middle age – 13 (59,1%) patients in comparison with persons young – 2 (9,1%) and advanced age 7 (31,8%). According to the results of coronary angiography in women is more common non-significant coronary artery disease and stenosis of the left main coronary artery, whereas men often suffer in-infarction on a background of single-vessel coronary artery disease.

When carrying out the statistical analysis reliable connection ($p < 0,001$) between level of damage of CA and smoking is found: at women with the smoking anamnesis defeat of CA was more proximal. More distal diffusion defeat of CA is reliable more often ($p < 0,005$) was observed at women with early approach of a menopause and persons with SD anamnesis, and also at patients with higher level of total cholesterol and LDLP.

According to the results of coronary angiography in women is more common non-significant coronary artery disease and stenosis of the left main coronary artery, whereas men often suffer in-infarction on a background of single-vessel coronary artery disease.

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Angio-Seal vascular closure device: predicting complications

J Lagan,¹ A Yeoh,¹ M El-Kadri,² J Jones,³ K Milinis,¹ P Reid,¹ K George⁴ and J Somauroo¹

¹Countess of Chester Hospital, Cardiology, Chester, United Kingdom ²Wirral University Teaching Hospital NHS Trust, Cardiology, Wirral, United Kingdom ³Royal Liverpool University Hospital, Liverpool, United Kingdom ⁴Liverpool John Moores University, Liverpool, United Kingdom

Purpose: Angio-Seal is used as a vascular closure device after cardiac catheterisation via the femoral route. Reported rates of complications are 0.4% for major (e.g. vascular injury requiring repair, retroperitoneal bleeding or bleeding requiring transfusion) and 2.4% for minor events (e.g. bleeding requiring prolonged manual compression, haematoma). We set out to explore whether certain groups of patients were at a higher risk for complications.

Methods: We retrospectively reviewed procedure, nursing and discharge notes and access site fluoroscopy of 192 consecutive patients. We analysed admission and nursing notes over the following 4 months. Minor complications were divided into early, occurring before patient left the catheter suite, and late, occurring afterwards. Twelve patients were removed due to missing data.

Gender, height, weight, drugs (warfarin, antiplatelets), presence of hypertension, peripheral vascular disease (PVD), estimated puncture site in relation to femoral head, distance from femoral bifurcation to puncture site and vessel diameter were analysed.

Results: 180 patients were analysed (age 63[±11] years, 110 males). There were no major complications. Seventeen patients (9.4%) had early minor complications (bleeding/oozing, haematoma, limb/groin pain) and 12 patients (6.7%) had minor late complications (swelling, excess bruising / haematoma, oozing, abscess, limb/groin pain). Two patients (1.1%) experienced both (excess oozing followed by excess bruising/haematoma; haematoma followed by leg /groin pain).

Patients with both early and/or late complications ($n=27$) were more commonly female (70% versus 30%; $p < 0.001$), shorter (165[±11] cm versus 171[±10] cm; $p = 0.005$) and had a lower weight (74[±15] kg versus 80[±14] kg; $p = 0.043$). If the puncture site was at the level of the middle third of the femoral head, early complications were less frequent ($p=0.015$). There were no significant differences for other analysed variables.

Conclusions: Our study shows that Angio-Seal is a safe device as we observed no major complications with no unplanned admissions following implant. Our minor complication rate of 15% is higher than expected, but this is explained by our strict definition of any minor complications e.g. wound oozing, bruising or groin pain, which are usually underreported in real life practice.

Operators should be vigilant in those patients who are female, shorter and have a lower body weight as they are more likely to experience complications. Early complications are likely to be less frequent if the puncture site is situated within middle third of the femoral head.

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Association between intravascular ultrasound (IVUS) findings and adverse outcomes in patients with ST-elevation myocardial infarction (STEMI) and stable angina pectoris.

N Tagieva,¹ R Shakhnovich,¹ V Mironov,¹ M Yezhov,¹
M Mitroshkin,¹ M Safarova¹ and G Matchin¹

¹Russian Cardiology Research and Production Complex, Acute cardiac care, Moscow, Russian Federation

Purpose: The purpose of this study was to determine whether thin-capped fibroatheromas (TCFA) and signs of vulnerability identified by virtual histology intravascular ultrasound (VH-IVUS) are associated with major adverse cardiac events (MACE) on individual plaque analysis in patients with ST-elevation myocardial infarction (STEMI) and stable angina pectoris (SAP).

Methods: In a prospective study, 40 patients with STEMI underwent three-vessel coronary angiography and gray-scale and radiofrequency intravascular ultrasound imaging after percutaneous coronary intervention (PCI). In the comparing group was enrolled 40 pts with SAP. We studied culprit and non-culprit lesions. MACE consisted of death, myocardial infarction, unplanned revascularization or rehospitalization due to unstable or progressive angina. We measured the 4 basic VH-IVUS coronary plaque components: fibrous, fibrofatty, dense calcium, and necrotic core. TCFA was defined as focal, necrotic core-rich ($\geq 10\%$ of cross-sectional area (CSA)) plaque being in contact with the lumen in a plaque burden $\geq 40\%$ at least 3 consecutive frames. Vulnerability index (VI) was defined as volume of necrotic core/volume of fibrous tissue. Plaque burden (PB) was measured as plaque cross-sectional area (CSA)/external elastic membrane. The median follow-up period was 3 years.

Results: MACE occurred in 21 patients over a median follow-up of 1172 days. A total of 130 plaques were examined: 70 non-culprit plaques in STEMI pts and 60 plaques in SAP pts (culprit and non-culprit). TCFA was more frequent among lesions in pts with STEMI (57.1% versus 25% in SAP, $p=0,01$), especially was more frequent among non-culprit lesions (57,1% versus 17% in SAP, $p=0,01$). Factors associated with nonrestenotic MACE in STEMI included vulnerability index (hazard ratio [HR]: 7.53, $p=0.05$); dense calcium in plaque (HR: 5,109, $p=0.004$). MACE lesions had larger dense calcium (5.75 % vs. 10.65 %, $p=0.05$). MACE lesions had higher VI (HR:3,8, $p=0,05$). Factors associated with nonrestenotic MACE in SAP included PB (HR:7,04, $p=0,006$). ROC curve analysis showed a cut off point for dense calcium – 6.7%; VI - 0,38; PB - 49%. TCFA was not associated with nonrestenotic and total MACE on individual plaque analysis in AMI and SAP groups.

Conclusions: Lesions that were responsible for unanticipated events were frequently angiographically mild, most were characterized by a larger dense calcium, high vulnerability index in STEMI and high PB in SAP determined by radiofrequency intravascular ultrasound.

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Effects of sleep-disordered breathing on plaque characteristics in patients with acute myocardial infarction

S Furudono,¹ S Kaibara,¹ M Kurobe,¹ K Minami,¹
S Muto,¹ H Suenaga,¹ T Nunohiro,¹ S Takeshita,¹
H Nakashima¹ and K Maemura²

¹Nagasaki Harbor Medical Center City Hospital, Department of Cardiology, Nagasaki, Japan ²Nagasaki University Hospital, Department of Cardiology, Nagasaki, Japan

Back ground: Epidemiological study found that sleep-disordered breathing (SDB) was increasingly recognized as an independent risk factor for acute coronary syndrome, stroke, and cardiovascular mortality.

Aim: To examine the hypothesis that plaque morphology showed increased plaque vulnerability in patients with SDB having acute myocardial infarction (AMI).

Methods: This study included 85 patients with AMI who underwent primary percutaneous coronary intervention within 24h of onset. Optical coherence tomography was used to assess plaque features at culprit lesion of the stenosis and non-culprit lesion within the infarct related artery. Plaque characterization was performed by using previously validated criteria. Incidence of thin-cap fibroatheroma, plaque rupture, plaque erosion, calcification, macrophages, microchannels, cholesterol crystals and lipid-rich plaque were compared between the two groups. All patients underwent polysomnography on day 14; SDB was defined as apnea-hypopnea index ≥ 15 events/h.

Results: 39 patients presented with SDB (45.9%). At culprit lesion, the incidence of plaque rupture and the presence of thin-cap fibroatheroma were comparable between the two groups (45% vs. 55%, $P = 0.417$, 38% vs. 36%, $P = 0.809$, respectively). At non-culprit lesion, the presence of microchannels, macrophages and cholesterol crystals at non-culprit lesion were significantly higher in patients with SDB (76% vs 47%, $p = 0.009$, 83% vs 58%, $p = 0.017$, 51% vs 26%, $p = 0.018$, respectively).

Multivariable logistic regression analysis adjusted for SDB, body mass index ≥ 25 kg/m², hypertension, diabetes, dyslipidemia and current smoking identified SDB as an independent predictor of the presence of microchannels, macrophages and cholesterol crystals at non-culprit lesion

(odds ratio = 3.97, 95% confidence interval :1.32 to 13.1, $p = 0.013$, odds ratio = 5.1, 95% confidence interval :1.40 to 22.0, $p = 0.013$, odds ratio = 3.97, 95% confidence interval: 1.32 to 13.1, $p = 0.013$)

Conclusion: The novel findings in this study are that coronary plaque characteristics in patients with SDB having AMI are characterized by inflammation and neovascularization. SDB may increase plaque vulnerability.

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Assessment of high sensitivity c-reactive protein in patients with microvascular dysfunction.

MT Rahman¹

¹NATIONAL INSTITUTE OF CARDIOVASCULAR DISEASES, DHAKA, Bangladesh

Introduction: About 30% of coronary angiographies done for chest discomfort and positive stress cardiac testing are normal. Patients with chest pain with normal coronary arteries have coronary microvascular endothelial dysfunction and myocardial ischemia. Elevated hs-CRP levels have been related to atherogenesis and endothelial dysfunction. Little is known whether low grade chronic inflammation is a pathogenic mechanism.

Aims and Objectives: To assess high sensitive CRP in patients of typical chest pain with normal coronary arteries (cardiac Syndrome X).

Methods: Cardiac Syndrome - X patients were compared to controls to see any difference of markers of inflammation in the form of HS-CRP. 120 patients with 50 number of well matched controls were studied. All the patients underwent baseline investigations, ECG, ETT, Echocardiography and coronary angiographies. The serum levels of hs-CRP were estimated.

Results: Among the study group (Group-1), the mean age was 48.12 (± 7.87) yrs and 47.48 (± 7.48) yrs among control group (Group-2). In Group-1, 96 (80%) were male and 24 (20%) were female. In Group-2, 40 (80%) were male and 10 (20%) were female. In Group-1, 60% had sedentary lifestyle, 60% were hypertensives, and 50% were diabetics or IGT, 70% were smokers, 40% were dyslipidemics, 30% had family history of CAD and 50% were obese. and serum levels of hs-CRP were found to be significantly higher in Group-1 than in Group-2 patients, (4.10 ± 2.74 mg/L vs 1.18 ± 0.9 mg/L, $p < 0.001$).

Conclusion: hs-CRP levels are higher in patients of cardiac Syndrome-X, suggesting a chronic low grade inflammatory process.

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Angio-seal vs exo-seal vascular closure devices in patients undergoing left heart catheterization: a single centre prospective registry

N Pinilla-Echeverri,¹ I Sanchez Perez,²
F Lozano Ruiz-Poveda,² A Jurado Roman,²
M Marina Breyse,² MT Lopez Lluva,² J Piqueras Flores,
² J Benitez Peyrat² and A Moreno Arciniegas²

¹McMaster University, Department of Medicine, Cardiology Division, Interventional Cardiology Service, Hamilton, Canada ²Hospital General de Ciudad Real, Ciudad Real, Spain

Background: Patients undergoing left heart catheterization using femoral access are at higher risk of vascular complications (VC). Femoral vascular closure device (VCDs) use has expanded despite conflicting evidence of benefit. The objective of this registry was to compare the rate of vascular complications in all consecutive patients undergoing cardiac catheterization receiving either Angio-Seal or Exo-Seal closure devices.

Methods: Overall 1.234 consecutive patients underwent left heart catheterization using femoral access were included. In-hospital, 6 and 12 month outpatient outcomes were collected from May 2010 to December 2013. The primary end point was the presence of VC defined as a composite of: hematoma > 6 cm, recurrent bleeding, pseudoaneurysm, arteriovenous fistula, arterial thrombosis or retroperitoneal bleeding.

Results: 665 (53,5%) patients received Angio-Seal® and 569 (46,5%) Exo-Seal®. Overall 79 (6,4%) patients had a VC with comparable rates between both VCDs, 38 (5,7%) Angio-Seal® and 41 (7,2%) Exo-Seal® ($p=0.5$). Risk of VC was significantly associated with peripheral artery disease ($p=0.02$), sheath size ($p=0.03$) and pre-cath hemoglobin ($p=0.03$). There were no fatal VC.

Conclusions: VC using femoral access in patients undergoing left heart catheterization remains high despite the routine use of VCDs. Safety and efficacy of both VCDs is similar with femoral access in patients undergoing cardiac catheterization. The following variables determined by propensity scores trended to identify patients that may benefit from VCDs: peripheral artery disease, sheath size and pre-cath haemoglobin.

P447

IVUS use in primary pci may change your revascularization strategy

A Mowafy,¹ MA Ashraf,¹ H A Ghawaby,¹ A Bary¹
and F Mohamed¹

¹Cairo University, Kasr Al-Ainy Hospital, Critical Care Medicine Department, Cairo, Egypt

M Dallaa,¹ HG El Ghawaby,¹ AB Abd El Bary¹ and YN Nassar¹

¹Cairo University Hospitals, Critical Care Department, Cairo, Egypt

Introduction: Intravascular ultrasound provides a more comprehensive assessment of the atherosclerotic plaques. In addition, it has been used extensively for assessment of intermediate coronary lesions on coronary angiography to demonstrate anatomical significance.

Aim of work: To study the morphology and severity of angiographically intermediate coronary lesions in patients with acute coronary syndromes.

Methodology: 28 patients admitted with the diagnosis of NSTEMI and their coronary Angiography showed intermediate lesions assessed by QCA and IVUS were included in this study. Intervention was done if percent area stenosis \geq 70%, MLA $<$ 4mm² or $<$ 6mm² for left main artery or MLA adjusted to the reference vessel diameter in distal vessels or small caliber vessels. Three to six months clinical follow up regarding MACE and six months mortality.

Results: Mean age was 53.2 ± 9.1 years. Males =20 (71.4%). Risk factors: smoking in 17 (60.7%), hypertension in 16 (57.1%), Dyslipidemia in 12 (42.9%)& DM in 8 (28.6%). Mean body mass index 23.4 ± 2.9 . Twenty-three patients were diagnosed as unstable angina and five patients diagnosed as NSTEMI. Mean TIMI risk score 3.1 ± 1.4 . There was a statistically significant higher TIMI risk score in NSTEMI group (P value = 0.02). Multi-vessel disease in 17 patients (60.8%). Eighty-eight vessels were affected with 38 Culprit vessels and 50 non-culprit vessels. Mean syntax score 17.5 ± 8.0 . 61 intermediate lesions were detected with higher fibro fatty structure. Negative remodeling in 51% of lesions. 27 lesions were subjected to revascularization based on IVUS measures. QCA Minimum lumen diameter was significantly lower (P=0.002) and percent diameter stenosis was significantly higher in revascularization group (P=0.02). MLA was significantly lower (P<0.001) and Percent area stenosis was significantly higher in revascularization group (P<0.001). MLA & plaque burden are the main predictors for lesion anatomical significance with (P <0.001, odds ratio=0.25, 95% CI = 0.12-0.55) and (P=0.011 , odds ratio=2.0 , 95% CI = 1.2-3.3) respectively.

Conclusion: IVUS may be helpful in planning the management of intermediate lesions. Intermediate lesions in culprit vessels showed high lipid content and less calcific content indicating high vulnerability for plaque rupture. QCA may be a reliable tool for detecting severity of coronary artery disease.

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Egyptian experience in antegrade approach in trial PCI of the CTO lesions over the last 8 years at critical care center-cairo university

Design: Retrospective analysis of data, retrieved through reviewing written paper and electronic database. A total number of 3517(30.85%) patients were diagnosed with coronary chronic total occlusion out of 11400 case were admitted to the critical department for coronary angiogram, out of which 3091 cases were recommended to optimize medical therapy and 1486 cases were sent for CABG without a trial of PCI. The material of the study included 426 patients (330 male and 96 females) who proceeded to PCI for CTO.

Main outcome measures: Clinical events including myocardial infarction (MI), haemodynamic instability, during the in-hospital stay.

Results: The vessel distribution in our registry showed 51.4% LAD, 30.8% RCA, 17.4% LCX, 0.2% Left main, and 0.2% SVG. The most prevalent segment was mid LAD (25.6%), followed by proximal LAD (24.4%) & proximal RCA (18.3%). Patients with lesions longer than 20mm represented 51.5% of all cases. Patients with lesions longer than 20mm: They constituted 44% in the successful PCI subgroup, 0.8% of patients in PTCA subgroup, 6.6% of patients in failed PCI subgroup (p value <0.001). Presence of calcification was been noted in 60.5% of cases. Presence of calcification was been noted in 60.5% of cases, the failure of PCI cases with calcification is 16.2% and dropped to 2.2% in lesions that didn't contain calcification (p value < 0.001). The prevalence of eccentric proximal stump is 54% of cases, central proximal stump is 19% of cases, and blunt proximal stump is 25% of cases. It was note worthy that the percentage of the percentage of PCI cases with blunt stump was 50% of all failed cases, and the of percentage PCI cases with eccentric stump was 60% of all successful cases (p value < 0.001). Successful PCI contributed 75.4% successful PTCA 2.8%, while failed PCI contributed 21.8%. Angiographic complications, irrelevant to post-PCI TIMI flow pattern, occurred in 8.2% of cases in our registry. Biotronik Galeo wire was the most prevalent type used (74% of hydrophobic wires) with a hydrophilic (PT2 [29%] and pilot 50 [17.4%] were the most prevalent types) wire in the parallel wire technique. Stents used in our registry came from different suppliers with different frequencies, Boston scientific, Liberte was the most prevalent type (44%), followed by Abbott Vascular, Zeta (23%), Cordis, Cypher (16%), followed by Boston scientific, Taxus (10%).

Conclusion: This confirmed our need to establish our own registries, based on our real-life scenarios in developing countries where patients' demographics differ significantly, despite close results which might not be true on larger scale studies.

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Management of intermediate lesions in Egyptian experience

F Fares,¹ AKRAM Abd Elbary,¹ AHMED Mowafy,¹ MOHAME Ashraf¹ and HELMY Elghawaby¹

¹CAIRO UNIVERSITY, CRITICAL CARE DEPARTMENT, GIZA, Egypt

Aim of work : Study morphology and severity of intermediate lesions in patients with acute coronary syndromes.

Methodology: Twenty eight patients with Non ST Elevation Acute Coronary Syndromes showed intermediate lesions assessed by QCA and IVUS. Percent area stenosis $\geq 70\%$, MLA adjusted to the reference vessel diameter & MLA $\leq 6\text{mm}^2$ for left main artery were the criteria for intervention. Six months follow up.

Results: Mean age 53.2 ± 9.1 years. Males=71.4%. Seventy six vessels were affected with 23 Culprit vessels, 44 non-culprit vessels & 9 left main vessels. sixty one intermediate lesions were detected with higher fibrofatty structure. Negative remodeling in 51% of lesions. Higher lipidic content in lesions of culprit vessels ($P<0.001$) while higher calcific content in lesions of non-culprit vessels ($P<0.001$). 27 lesions were subjected to revascularization based on IVUS measures. QCA Minimum lumen diameter was significantly lower ($P=0.002$) and percent diameter stenosis was significantly higher in revascularization group ($P=0.02$). MLA was significantly lower ($P<0.001$) and Percent area stenosis was significantly higher in revascularization group ($P<0.001$). 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 significant positive strong correlation between QCA minimal lumen diameter and minimum lumen diameter measured by IVUS at the site of lesion ($P<0.001$, $r=0.704$). A significant positive strong correlation between QCA minimal lumen diameter and MLA measured by IVUS ($P<0.001$, $r=0.695$). A significant inverse moderate correlation between QCA minimal lumen diameter and percent area stenosis measured by IVUS ($P<0.001$, $r=-0.449$). A significant positive weak correlation between QCA percent stenosis and percent area stenosis measured by IVUS ($P=0.021$, $r=0.295$). A significant concordance between QCA & IVUS regarding percent stenosis ($P\text{-value}=0.01$, ICC=0.451, 95% CI=0.084-0.67). Disconcordance between QCA & IVUS regarding measurement of the lesion length ($P=0.2$, ICC=0.22, 95% CI=-0.3 -0.53). One patient (3.6%) with MACE & six month mortality.

Conclusion: Intermediate lesions in culprit vessels showed high lipidic content indicating high vulnerability for plaque rupture. QCA is a reliable tool for detecting severity of coronary artery disease .

P450

Frequency Domain Optical Coherence Tomography for the evaluation of Left Main coronary artery disease. Comparison of two different pull backs from the daughter vessels.

K Bouki,¹ D Vlad,¹ D Tsoukalas,¹ N Goulas,¹ D Varvarousis,¹ M Gavriilidis,¹ K Kastritsis,¹ K Paravolidakis¹ and T Apostolou¹

¹General Hospital of Nikea, Pireaus, Greece

Purpose: The aim of the present study was the assessment of left main (LM) coronary artery lesions by frequency domain optical coherence tomography (FD-OCT) and the comparison of measurements between different pull-backs from both daughter vessels.

Methods: We prospectively enrolled 35 patients with LM coronary artery disease (20-80% diameter stenosis by angiographic visual estimation). In each patient, double FD-OCT imaging of the LM was performed from both left anterior descending (LAD) and left circumflex (LCx) artery pull-backs. Images were compared regarding: 1) ability to visualize the whole LM segment and 2) concordance of measurements. The following parameters were measured: LM length, reference lumen area, minimum lumen area, reference lumen diameter, minimum lumen diameter, % area stenosis, % diameter stenosis.

Results: Number of repeated runs and total amount of contrast used did not differ significantly between LAD and LCx pull-backs in order to visualize the entire length of the LM ($3,2 \pm 1,4$ runs vs. $3,1 \pm 1,6$ runs respectively, $p=\text{ns}$ and $36,3 \pm 14,5\text{ml}$ vs. $35,3 \pm 16,5\text{ml}$, respectively, $p=\text{ns}$). Ostial (proximal third of LM) stenosis was present in 10/35 (28%) patients. FD-OCT provided adequate visualization of the LM ostium in all the 10/10 (100%) patients with ostial lesion, either from LAD or from LCx or from both pull-backs. FD-OCT measurements regarding LM parameters showed excellent reproducibility between LAD and LCx pull-backs (Table 1).

Conclusions: FD-OCT is feasible and effective for the imaging of LM lesions even in the ostium of the vessel. Pull-backs either from LAD or from LCx provide very similar results and thus both vessels can be used for the assessment of the LM.

Table 1.

	Pull-back LAD	Pull-back LCx	Absolute difference	Intraclass correlation coefficient, (CI)	P value
LM Length (mm)	9,21±4,06	10,47±3,81	1,25±2,30	0,88 (0,71–0,94)	0,000
Reference lumen area (mm)	14,13±4,75	14,09±4,99	0,04±0,99	0,99 (0,98–0,99)	0,000
Minimum lumen area (mm)	5,50±2,02	5,98±1,98	0,47±0,98	0,92 (0,81–0,96)	0,000
Reference lumen diameter (mm)	4,14±0,63	4,16±0,76	0,02±0,24	0,97 (0,94–0,98)	0,000
Minimum lumen diameter (mm)	2,29±0,55	2,40±0,56	0,10±0,40	0,84 (0,67–0,92)	0,000
% area stenosis	58,54±13,80	53,48±16,17	5,05±9,44	0,86 (0,65–0,94)	0,000
% diameter stenosis	43,33±13,33	40,23±11,23	3,09±10,16	0,78 (0,54–0,90)	0,000

Comparison of FD-OCT measurements of LM parameters between LAD and LCx pull-backs.

Interventional Cardiology

P451

Primary early ventricular fibrillation in patients with acute myocardial infarction: hospital and long term outcome, possible mechanisms of recurrence.

IY Kostyanov¹

¹Moscow City Center of Interventional Cardioangiology, Moscow, Russian Federation

Objective: to study the state of the coronary blood flow, short and medium-long-term clinical and angiographic results of endovascular treatment in patients with acute myocardial infarction (AMI) complicated with early primary ventricular fibrillation (VF).

Materials and methods: in the present study retrospectively from January 2001 till December 2014, included 192 patients with acute myocardial infarction at the age of 57,1 ± 12,1 years, the majority of whom were men (83%) who had the disease in the early hours of primary VF. All patients underwent emergency defibrillation and endovascular intervention. We evaluated the following parameters: antegrade flow in the infarct-related artery (IRA) on the classification of TIMI, evaluation of coronary arteries SYNTAX Score, estimate the severity of thrombosis by TTG, localization of AMI, left ventricular ejection fraction, the effectiveness of PCI, indicators of myocardial perfusion by MBG, the frequency of MACE to hospital and medium-distant periods of the disease.

Results: 182 (94.8%) patients had STEMI, systemic thrombolysis on pre-hospital stage was 89 (46,3%) patients. AMI front localization in 94 patients (48,9%), posterior or lateral localization in 88 (45,8%), circular AMI in 10 (5,3%) patients. Blood flow in IRA TIMI 0-I grade had 85 (44,3%) patients, blood flow TIMI I-II grade in 52 (27,2%), blood flow

TIMI II-III grade had 55 (28,5%) patients. The average value of SYNTAX Score: 17,8 ± 7,2 points. Indicator thrombosis TTG ≥ 3 was revealed in 97 (50,5%) patients with AMI VF. In patients with recurrent VF (2 or more cases) indicator TTG ≥ 3 met more frequently than with single VF: 61,6% vs 39,2% (p < 0,01). The average LV ejection fraction was 47,2 ± 5,7%. Successful endovascular intervention was 92,5% of cases, of the blood flow TIMI III was achieved in 86,4% of cases. Index MBG 0-1 was found in 14 (7,3%) patients after PCI. In 37,8% of cases, the optimal angiographic result was achieved by a combination of stenting procedure with manual vacuum trombo-aspiration. In-hospital MACE rate was 5,6% of the cases. In the mid-late period (8,4 ± 1,2 months) MACE rate was 8,9% of the cases.

Conclusions: urgent endovascular intervention in patients with acute myocardial infarction with early primary VF is an effective and safe treatment, which provides a high survival rate of complicated patients in a hospital and in the long term. Development VF recurrence in some cases may be caused by a massive thrombosis of the IRA, which can detect intermittent flow in the target vessel.

P452

Clinical characteristics and predictors of outcome in patients with premature acute coronary syndromes of either atherosclerotic or atypical aetiology.

AW Fronczak,¹ P Tyczynski,¹ M Kruk,² A Debski,¹ Z Chmielak,¹ J Pregowski,¹ J Kadziela,¹ K Kukula¹ and A Witkowski¹

¹Institute of Cardiology, Department of Interventional Cardiology and Angiology, Warsaw, Poland ²Institute of Cardiology, Department of Coronary and Structural Heart Diseases, Warsaw, Poland

Background: ACS occurs mainly in older population and data on clinical characteristics and outcomes of younger

patients are scarce and conflicting, especially with regard to ACS aetiology, either typical (atherosclerotic) or atypical. The aim of the study was to investigate the risk profiles and outcomes of these patient.

Methods: 54 consecutive pts aged ≤ 35 yrs (mean age 31 ± 4 ; 85% males), admitted with ACS and angiographically confirmed flow-limiting coronary stenosis/lesion. The atypical aetiology included: embolus, arterial spasm, hypercoagulable states, myxoma. The primary outcome was in-hospital cardiac death or heart failure.

Results: The typical aetiology was more frequent than atypical (72%vs28% respectively). The latter group patients were younger (28.9 ± 5.8 vs 32.2 ± 1.9 ; $p < 0.03$), less of them were smokers (40%vs74%; $p = 0.03$), and none of them was diabetic (0%vs10%; $p = 0.57$).

The primary outcome occurred in 9 pts (17%). The univariable predictors were: CRP ≥ 1.8 g/dL; WBC $> 13.9 \times 10^3/\mu\text{L}$ (both thresholds indicated by ROC curve analysis) and EF $\leq 40\%$. ACS aetiology did not predict the outcome. In multivariate logistic regression analysis the independent predictors were: CRP ≥ 1.8 g/dL (HR 35.0 CI 2.01- 609.7; $p = 0.02$) and EF $\leq 40\%$ (HR 18.8 CI 1.6 to 217.0).

The combination of LVEF $< 40\%$ and CRP > 1.8 g/dL produced the sensitivity of 87% and the specificity of 100% in prediction of clinical outcome.

Conclusion: Patients with premature ACS with either atypical or atypical ACS aetiology differ in terms of risk profiles, which however, are not related to clinical outcomes. The best accuracy in prediction of outcome in these patients provides the combination of CRP ≥ 1.8 g/dL and EF $< 40\%$.

P453

Impact of body mass index (BMI) on clinical performance in non ST elevation acute coronary syndrome (NSTEMACS) patients undergoing percutaneous coronary intervention (PCI)

L Simoni,¹ E Shirka,¹ S Kabili¹ and A Goda¹

¹University Hospital Center "Mother Theresa" Cardiology Service, Tirana, Albania

Background and purpose: Obesity is clearly associated with a high risk for coronary artery disease. Different studies have described an "obesity paradox" with prognosis and various treatments of cardiovascular disease, whereby higher BMI is associated with lower mortality in heart failure, acute myocardial infarction, acute coronary syndrome, atrial fibrillation. Our objective was to investigate the impact of BMI on morbidity and all cause mortality in NSTEMACS diagnosed patients following first-time elective PCI.

Methods: Were included in the study 721 NSTEMACS diagnosed patients who underwent first elective PCI (were used bare metal stents) from September 2011 to December 2013 in Department of Cardiology and were followed for one year. Patients were categorized according to BMI groups. BMI 18.5 - 24.9 kg/m² as normal, 25 - 29.9 kg/m² overweight and > 30 kg/m² obese group. Primary endpoints were defined as rehospitalizations for ischemic heart disease (IHD), in-stent restenosis rate (ISR), repeat revascularization (RR) rate and all cause death.

Results: Baseline clinical parameters were more severe in overweight and obese individuals. Obese compared to normal weight individuals had significantly more Diabetes Mellitus (45.3% vs 27.2% $p = 0.0005$, Dyslipidemia (75.8% vs 65.4% $p = 0.049$) and Hypertension (90.6% vs 80.5% $p = 0.016$). Obese individuals were younger (58.73 ± 7.93 vs 62 ± 10.45 $p = 0.0018$). Obese compared to normal weight individuals had a higher length of stents per person (36.3 ± 20.92 vs 31.7 ± 17.71 $p = 0.024$) and a larger diameter of stents used (3.12 ± 0.4 vs 2.98 ± 0.32 $p = 0.0002$) and a greater use of ACEI+ARB 85.6% vs 76.1% $p = 0.033$. Compared to normal weight individuals, those obese had a significant reduced number of hospitalizations for IHD (17.2% vs 34.9% $p = 0.0004$) and all cause death or hospitalizations for CVD (8.5% vs 25% $p = 0.0009$). The ISR rate was lower in obese individuals (8.5% vs 18.4% $p = 0.017$) also the RR rate for was lower in obese (11.7% vs 20.96% $p = 0.035$). There was no significant difference in all cause mortality between groups (1.8% vs 0.3% vs 2.3% $p = 0.73$).

Conclusions: The NSTEMACS patients with higher BMI undergoing percutaneous coronary intervention paradoxically have a better clinical performance. We suggest that this "obesity paradox" partially can be explained with the younger age, a more aggressive treatment, and to the larger diameter of vessel treated with larger diameter stents in obese individuals which can explain the lower incidence of restenosis and indirectly to the lower need for RR and rehospitalizations for IHD in these patients.

P454

Results of percutaneous coronary intervention with SeQuent Please paclitaxel eluting balloon catheter at a very long-term follow-up.

I Sanchez Perez,¹ A Jurado Roman,¹ F Lozano Ruiz-Poveda,¹ N Pinilla Echeverri,¹ MT Lopez Lluva,¹ A Moreno Arciniegas,¹ J Benitez Peyrat¹ and M Marina Breysse¹

¹Hospital General de Ciudad Real, Interventional Cardiology, Ciudad Real, Spain

Introduction: Drug eluting balloons currently constitute one of the therapeutic tools used in percutaneous coronary

interventions (PCI) of both stent restenosis and “De Novo” coronary lesions, mainly in bifurcations and small vessels. Nowadays, their results at a very long-term follow up are unclear.

Purpose: The main objective of this study was to evaluate the efficacy and safety of second-generation Sequent Please® paclitaxel eluting balloon (PEB) at 6 years follow-up.

Methods: We prospectively included 202 consecutive patients (68±12 years, 73.3% male) with 202 lesions (de novo or restenosis) treated with PEB between March 2009 and March 2014. We evaluated the presence of major cardiac events (MACE) after a prolonged clinical follow-up (median 47 months): death, nonfatal myocardial infarction, target lesion revascularization (TLR) and thrombosis.

Results: 41.1% of patients had stable coronary artery disease and 58.9% acute coronary syndromes (48% Non-STEMI and 10.9% STEMI). 51.5% of patients were diabetic and 25.2% of the lesions were bifurcations. Of the 202 lesions, 81 were “De Novo” lesions and 121 restenosis [83 restenosis of bare metal stent (BMS) and 38 of drug-eluting stents (DES)]. 88.1% of the lesions were treated with PEB, 8.9% with PEB and BMS and 3 % with PEB and DES. There were no significant differences regarding baseline characteristics of these three groups neither in the MACE rate after a long-term follow-up (p=0.5). During follow-up, 13 patients died (3 cardiovascular and 10 non-cardiovascular deaths) and a TLR rate of 4% was observed. No cases of thrombosis were observed, immediately after the procedure nor during follow-up. 21.8% of patients had an angiographic follow-up.

We observed a very low rate of additional stent after PEB in complex lesions such as bifurcations (p=0.023) and diffuse coronary disease in small vessels (p=0.026).

Conclusions: Percutaneous coronary intervention of de novo coronary lesions and in-stent restenosis (both of BMS and DES) with Sequent Please® PEB provide very favorable results at a very long-term follow up.

P455

Invasive management of complex coronary artery disease in a hospital without on-site cardiac surgery

A Jurado Roman,¹ I Sanchez Perez,¹ F Lozano,¹ MT Lopez Lluva,¹ A Moreno,¹ P Agudo Quilez,² M Marina,² J Piqueras,¹ J Benitez¹ and N Pinilla¹

¹Hospital General de Ciudad Real, Ciudad Real, Spain ²University Hospital Infanta Leonor, Cardiology, Madrid, Spain

Introduction: The invasive treatment of complex coronary artery disease [affecting left main (LM) or 3 vessels] can

be performed by percutaneous coronary intervention (PCI) or coronary artery bypass surgery (CABG) depending on the clinical profile and coronary anatomy of the patient.

Purpose: To assess the invasive management of complex coronary artery disease in a hospital with a high volume of percutaneous coronary interventions without on-site cardiac surgery.

Methods: We analyzed the characteristics of patients with LM or 3 vessels disease studied in our center and the differences of the invasive treatment performed in them: PCI vs CABG

Results: Between March 2014 and February 2015, 960 consecutive patients underwent a coronary angiography in our center. Among them, 273 patients (28.4%) had severe LM or 3 vessels disease. 70.7% were male with a mean age of 70 ± 11 years. 47.2% were diabetic and 32.4% had ventricular dysfunction. Mean Syntax score was 29.6 ± 13.5 and mean Euroscore 8.2 ± 4.9%. 22.6% had total chronic occlusions of at least one vessel. Clinical presentation was stable ischemic heart disease in 35.7% and 64.3% acute coronary syndromes. PCI was performed in 78% and CABG in 32% of these patients. The patients who were sent to surgery had a higher syntax score (35.7 ± 27.9 vs 16 ± 12; p = 0.002) but did not show a significantly different Euroscore (6.8% vs 7.9%; p = 0.5). Patients with isolated LM were sent to surgery significantly less than patients with multivessel disease (6% vs 25.5%; p = 0.025). Patients with previous PCI were revascularized preferably with new PCI (26.7% vs 11.1%; p = 0.04). The clinical presentation of the patients who were sent to CABG was stable ischemic heart disease in the majority of cases (27.7% vs 4.3%; p = 0.018). Angiographic PCI success was 96.6%. No patient died and only 6 patients had complications (periprocedural myocardial infarction: 2 patients, recovered cardiac arrest during the procedure: 3 patients and cardiogenic shock: 1 patient).

Conclusions: In a high-volume PCI hospital without on-site cardiac surgery, only 32% of patients with complex coronary disease are sent to CABG. These patients have more frequently 3 vessels disease (instead of isolated LM), a higher syntax score, and stable ischemic heart disease without previous PCI. The EuroSCORE was not a variable associated with the indication of CABG. Despite the complexity of coronary artery disease, the results of PCIs are remarkable with a low rate of complications.

P456

Results of percutaneous coronary intervention with sequent please paclitaxel eluting balloon catheter in elderly patients at a very long-term follow-up.

I Sanchez Perez,¹ A Jurado Roman,¹ F Lozano Ruiz-Poveda,¹
 MT Lopez Lluva,¹ A Moreno Arciniegas,¹
 M Marina Breysse,¹ J Piqueras Flores¹ and
 N Pinilla Echeverri¹

¹Hospital General de Ciudad Real, Interventional Cardiology, Ciudad Real, Spain

Introduction: Drug eluting balloons currently constitute one of the therapeutic tools used in percutaneous coronary intervention (PCI) of both stent restenosis and “De Novo” coronary lesions, mainly in bifurcations and small vessels. Elderly patients (>75 years) represent an unfavorable subgroup because of high rate of complex lesions and adverse events. Nowadays, the results at a very long-term follow up are unclear in this subset of patients.

Purpose: The main objective of this study was to evaluate the efficacy and safety of second-generation Sequent Please paclitaxel eluting balloon (PEB) at 6 years in the elderly.

Methods: We prospectively included 71 consecutive patients (81±4 years, 59.2% male) with 71 lesions (“De Novo” or restenosis) treated with PEB between March 2009 and March 2014. We evaluated the presence of major cardiac events (MACE) after a prolonged clinical follow-up (median 47 months): death, nonfatal myocardial infarction, target lesion revascularization (TLR) and thrombosis.

Results: 38% of patients had stable coronary artery disease and 62% acute coronary syndromes (53.5% Non-STEMI and 8.5% STEMI). 25.4% of lesions were bifurcations and 43.7% were diffuse. Of the 71 lesions, 46.5% were “De Novo” lesions and 53.5% restenosis [29.6% restenosis of bare metal stent (BMS) and 23.9% of drug-eluting stents (DES)]. Predilatation was performed in 84.5% of lesions. 87.3% of the lesions were treated with PEB, 8.5% with PEB and BMS and 4.2% with PEB and DES. There were no significant differences regarding baseline characteristics of these three groups neither in the MACE rate after a long-term follow-up (p=0.5). During follow-up, 12 patients died (3 cardiovascular and 9 non-cardiovascular deaths) and a TLR rate of 1.4% was observed. No cases of non-fatal myocardial infarction or thrombosis were observed, immediately after the procedure nor during follow-up. 14.1% of patients had an angiographic follow-up.

Conclusions: In elderly patients, percutaneous coronary intervention of “De Novo” coronary lesions and in-stent restenosis (both of BMS and DES) with Sequent Please PEB provide very favorable results with a low rate of adverse events at a very long-term follow up.

P457

Incidence of vascular complications between in-patients undergoing cardiac catheterization by femoral access: manual compression vs vascular closure devices, a prospective single-centre registry

N Pinilla-Echeverri,¹ A Jurado Roman,²
 I Sanchez Perez,² F Lozano Ruiz-Poveda,²
 MT Lopez Lluva,² M Marina Breysse,²
 J Piqueras Flores,² A Moreno Arciniegas²
 and J Benitez Peyrat²

¹McMaster University, Department of Medicine, Cardiology Division, Interventional Cardiology Service, Hamilton, Canada
²Hospital General de Ciudad Real, Ciudad Real, Spain

Background: Patients undergoing left heart catheterization using femoral access are at higher risk of vascular complications (VC). The use of femoral vascular closure devices (VCDs) has expanded despite no clear evidence of benefit reported in previous trials. The objective of this prospective single-centre registry was to compare VCDs to manual compression in all consecutive patients undergoing cardiac catheterization.

Methods: A total of 1.797 consecutive patients undergoing cardiac catheterization via femoral access were included. In-hospital, 6 and 12-month outpatient outcomes were collected through a registry from June 2010 to December 2013. The primary end point was the presence of VC defined as a composite of: hematoma > 6 cm, recurrent bleeding, pseudoaneurysm, arteriovenous fistula, arterial thrombosis or retroperitoneal bleeding. Propensity scores were calculated to identify markers for VC.

Results: 444 (53,5%) patients underwent manual compression and 1.353 (46,5%) VCDs. 99 (5,5%) patients had a VC; 12 (2,7%) with manual compression compared to 87 (6,4%) with VCDs (p=0.09). Risk of VC was significantly associated with the use of long sheaths (p=0.03). Propensity scores for VC trended to be higher in the following variables: acute indications OR 1.82 (IC95% 0.86-3.8, p=0.15), peripheral artery disease OR 2.6 (IC95% 0.87-8.07, p=0.09) and previous femoral access OR 1.2 (IC95% 0.57-2.57, p=0.56).

Conclusions: VC using femoral access in patients undergoing cardiac catheterization remains high despite the routine use of VCDs. Propensity scores for VC identified trends in acute indications, peripheral vascular disease, and previous femoral access as potential markers that may identify patients that may benefit from VCDs.

P458

Influence of age on short and long term prognosis after an acute coronary syndrome treated with percutaneous revascularization

G Yanes Bowden,¹ F Bosa Ojeda,¹ A Sanchez Grande Flecha,¹ M Vargas Torres,¹ JJ Ferrer Hita,¹ MI Padilla Perez,¹ E Gonzalez Cabeza,¹ MJ Garcia Gonzalez,¹ M Llabres De Prada² and A Casajuana Perez²

¹University Hospital of Canary Islands, Cardiology, La Laguna, Spain

²University of La Laguna, La Laguna, Spain

Introduction: It is known that the prognosis in elderly patients after an Acute Coronary Syndrome (ACS) is worse than younger patients because of higher mortality rates.

Porpouse: Analyze, depending on the age, short and long term outcomes of a series of patients admitted to our hospital because of an ACS treated with coronary angioplasty (PTCA), and possible causes that contribute to it.

Methods: Retrospective study of 310 consecutive patients admitted to our hospital from January 2011 to May 2012 with the diagnosis of ACS (NSTEMI and STEMI) that were treated with PTCA. We analyzed the baseline clinical characteristics of patients. MACE (composite of death from any cause and cardiac, myocardial infarction (MI), new revascularizations and heart failure (HF)) and each of its components separately were collected at a 30 days and 2 years follow-up. Two groups were established according to age: Group 1- Patients aged 75 years or more and group 2 - patients under 75 years. The qualitative variables were analyzed using the chi-square test or Fisher's exact test.

Results: There were no differences in baseline clinical characteristics, except a higher percentage of women in group 2 (35.3% vs 21.2% p 0.046). There was a lower rate of complete revascularization in group 2 (p 0.0001). At 30 days follow-up, we obtained a higher percentage of deaths from any cause (p 0.009), death of cardiac origin (p 0.012) and HF (p 0.031) in group 2. There was also a trend to higher MACE in group 2 but without reaching statistical significance (p 0.057). There were no differences in terms of new revascularizations. However, at 2 years follow-up, no differences between the 2 groups were observed in any of the analyzed adverse events.

Conclusions: In our series, the older patients were associated with worse short term outcomes due to higher mortality and HF development. Of all the variables analyzed the percentage of complete revascularization was significantly lower in this population. We should probably be more aggressive in terms of complete revascularization of these patients.

Non invasive imaging - Echocardiography, CMR, CT and Nuclear Techniques

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Thoracic FAST protocol for differential diagnosis of dyspnea in the emergency department

J Oehman,¹ VP Harjola,² J Lassus³ and P Karjalainen¹

¹Satakunta Central Hospital, Cardiology, Pori, Finland ²Helsinki University Central Hospital, Emergency care, Helsinki, Finland ³Helsinki University Central Hospital, Helsinki, Finland

Introduction: Dyspnea is a common chief complaint among ED patients, and AHF is a common etiology in this population - Lung ultrasound (LUS) has shown good results in diagnosing pulmonary congestion, as well as other pulmonary pathology - E/e' is considered a robust tool for echocardiographic estimation of left sided intracardiac filling pressures - Combining LUS and echo for diagnosing AHF would seem logical and could provide benefit regarding differential diagnosis in dyspneic patients

Objectives: To combine LUS and Echo into a rapid FAST thoracic exam to be used for examining dyspneic ED patients

- To study it's yield in diagnosing left sided AHF and differential diagnosis in dyspneic ED patients
- To evaluate the correlation between LUS and Echo for AHF
- To evaluate the differential-diagnostic yield of a the protocol

Methods: We included 99 adult patients in our ED with dyspnea at rest as a chief complaint

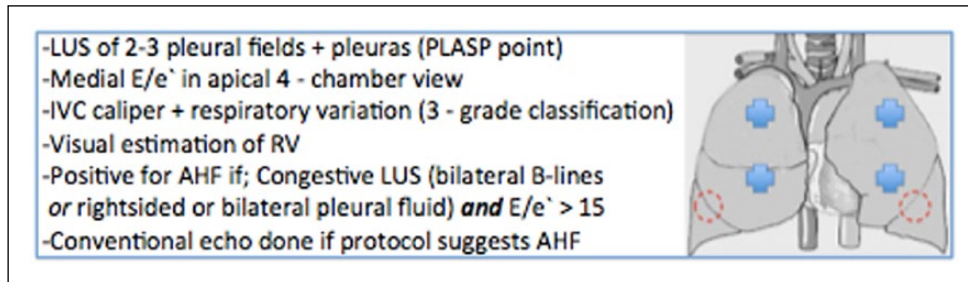
- FAST thoracic protocol was done to all patients before further diagnostic evaluation, details of the protocol are explained in table 3
- ED physicians conducted their diagnostic workup per usual protocol and were given access to protocol findings if they so wished

Results: 53/99 patients had a positive protocol for AHF

- Mean E/e' was 19.9 (SD 5.10) for patients with a congestive LUS and 9.3 (SD 2.99) in the rest (p<0.001)
- The protocol was indicative of a final ED diagnosis in 21/46 (57%) of the the AHF - negative patients
- The protocol identified 11/16 pneumonias and RV load in 4/5 of pulmonary embolisms
- The protocol further identified one aortic dissection and one chordae rupture of the mitral valve

Conclusions:

- LUS and echo findings suggesting AHF correlate well
- Combined LUS and echo provide diagnostic yield regarding other causes of dyspnea



thoracic FAST protocol.

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Assessment of left atrial deformation in hypertrophic cardiomyopathy

RIM Ben Said,¹ AMIRA Zaroui,¹ T Chalbia,¹ N Khedher,¹ M Ben Halima,¹ A Farhati¹ and MS Mourali¹

¹La Rabta hospital, cardiology, Tunis, Tunisia

Introduction and aim: Hypertrophic cardiomyopathy (HCM) represents a generalized myopathic process affecting both ventricular and atrial myocardium. We aimed to assess left atrial (LA) function by two-dimensional speckle tracking echocardiography (2DSTE) and its relation with left ventricular (LV) function.

Methods and results: We prospectively enrolled 105 consecutive patients with HCM and 65 normal subjects matched for age and gender: LV global longitudinal strain (GLS) was assessed as well as the LA strain: s-wave (LASs).

GLS was significantly lower in patients with HCM compared with controls ($-13.81 \pm 6.19\%$ Vs $-21.85 \pm 1.46\%$ $P < 0.001$). All LA function parameters were significantly lower in patients with HCM compared with controls: LA diameter was respectively $36.75 \pm 5.74\text{mm}$ Vs $27.25 \pm 2.33\text{mm}$, $p=0.01$; LA volume was $66.19 \pm 19.9\text{ml}$ Vs $42.75 \pm 4.95\text{ml}$, $p=0.0$; LA ejection fraction was $47.14 \pm 12.63\%$ Vs $57.10 \pm 12.88\%$, $p=0.002$; LA area was $22.82 \pm 4.5\text{cm}^2$ Vs $14.80 \pm 1.60\text{cm}^2$, $p=0.01$; and E/E' ratio was 13.28 ± 6.72 Vs 7.12 ± 1.11 , $p=0.01$. Patients with HCM had also a significantly lower LASs compared with controls ($24.46 \pm 10.75\%$ Vs $32.37 \pm 3.33\%$, $P < 0.01$).

Conclusion: LA myocardial deformation is significantly impaired in patients with HCM compared to healthy controls. LA strain assessed by 2D speckle tracking should be incorporated in the initial evaluation of HCM patients.

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Chest pain and positive troponin, is everything acute coronary syndromes?

J Pais,¹ B Picarra,¹ AR Santos,¹ D Neves,¹ J Carvalho,¹ K Congo,¹ R Guerreiro¹ and J Aguiar¹

¹Hospital Espirito Santo de Evora, Departement of Cardiology, Evora, Portugal

Purpose: The absence of significant coronary lesions is described in approximately 15% of hospitalized patients with suspected acute coronary syndromes (ACS). However, the majority of these data are prior to the introduction of the cardiac magnetic resonance (CMR) in current clinical practice. The main objective of this study is to characterise the findings and the diagnostic impact of CMR on the evaluation of patients admitted with chest pain and troponin elevation, but without a clear diagnosis of ACS.

Methods: Prospective study conducted over a period of two years. During this period we performed CMR on all patients with acute chest pain and troponin elevation, but without a clear diagnosis of ACS. All patients underwent morphological and functional CMR and we looked for the presence of late enhancement. Cardiovascular risk factors, ST segment alterations on admission and maximum troponin value (troponin I, in ng / mL) were evaluated. The definitive diagnosis was established through the integration of clinical presentation and the findings of the CMR, including the presence and pattern of late enhancement.

Results: We evaluated 39 patients (25 men, mean age 43 ± 17.5 years). The presence of hypertension was 48.5%, diabetes mellitus 7.6%, dyslipidaemia 23%, smoking 25.6%. On admission 13 patients (33.3%) had ECG with ST segment elevation. Eight of these patients were referred to primary angioplasty and one patient had done fibrinolysis in another hospital. The average of maximum troponin I level of the study population was $10.1 \pm 13.5\text{ng} / \text{mL}$. In CMR the presence of late enhancement was found in 34 patients (87.1%). According to the distribution pattern of late enhancement, it was possible to establish the following definitive diagnosis: myocarditis in 30 patients, acute myocardial infarction (AMI) with spontaneous reperfusion in 1 patient, hypertrophic cardiomyopathy in 2 patients and nonischemic dilated cardiomyopathy in 1 patient. The establishment of a definitive diagnosis different from the initial presumptive diagnosis of SCA had important

therapeutic and prognostic implications. In only 5 patients it was not possible to establish a definitive diagnosis, although CMR excluded a type 1 AMI.

Conclusions: In our study population of patients with chest pain and troponin elevation, but without a clear diagnosis of ACS, CMR allowed the establishment of a different diagnosis than ACS in 87.1%, which has very important and different therapeutic and prognostic implications. CMR should be considered in the differential diagnosis in these cases.

P462

In the absence of a blocked artery: baseline characteristics of patients presenting with “acute coronary syndrome” but unobstructed coronary arteries

P Avari,¹ TE Kaier,¹ S Mohiddin¹ and R Weerackody¹

¹Barts Health NHS Trust, Barts Heart Centre, London, United Kingdom

Background: Patients presenting with symptoms suggestive of an acute coronary syndrome (ACS) still represent a diagnostic and therapeutic challenge, as some with chest pain, electrocardiographic changes and an elevated troponin may reveal unobstructed coronaries on invasive angiography. With no culprit lesion identified, on-going management of such patients lacks clear guidance and relies on further imaging modalities.

Aim: To descriptively characterise the presentation and features of this subset of patients.

Methods and Results: 129 patients (mean age 54years; female 51%) were referred for cardiac magnetic resonance (CMR) imaging following an admission with presumed ACS as no culprit lesion was detected angiographically. Abnormal ECGs were recorded in 64% of the cohort, with one third having ST-changes. 93% of patients had an elevated troponin. Approximately two-thirds of patients (64%) had ≥ 1 cardiovascular risk factors. Three patients presented with ventricular fibrillation. Of the 129 patients:

- 5 had a myocardial infarct most likely from a paradoxical embolus via a patent foramen ovale (PFO) demonstrated on subsequent transoesophageal echocardiography
- 1 had a small PFO but it was uncertain whether the infarction was resultant from this
- 5 patients were diagnosed with hypertrophic cardiomyopathy
- 14 had features of myocarditis, and another 9 patients had findings that could represent MI or myocarditis

- 5 had no clear diagnosis made at the index presentation (2 demonstrated amyloidosis on follow-up scans, 1 sarcoid and one with confirmed Fabry’s disease)

Baseline bloods: mean haemoglobin 15.8g/dL, mean creatinine 83 μ mol/L, mean cholesterol 4.9mmol/L. For the patients with CRP levels checked, only 22% had elevated levels >20 mg/L. Of these, CMR suggested an infarct in approximately two-thirds, an uncertain diagnosis in one-third and two cases had myocarditis.

Conclusion: Our study highlights the heterogeneous nature of this group of diagnostically challenging patients. CMR is useful to determine the mechanism of troponin elevation and leads to diagnostic clarity in a majority of patients, most of who would have had plaque rupture leading to distal embolization. About 15% of patients however presented with myocarditis or an underlying cardiomyopathy and an early diagnosis seems prudent to avoid potentially harmful treatment with antiplatelet agents. Whilst the paucity of quality data regarding indications for PFO closure leaves the physician in a somewhat evidence free zone, in the context of embolic infarction careful consideration of future risk ought to be applied.

P463

How often transthoracic echocardiography shows typical pattern in acute pulmonary embolism ?

K Kurnicka,¹ S Goliszek,¹ B Lichodziejewska,¹ M Cieurzynski,¹ M Kostrubiec,¹ O Dzikowska-Diduch,¹ M Koc,¹ M Krupa,¹ P Palczewski² and P Pruszczyk¹

¹Dept of Internal Medicine and Cardiology, Medical University of Warsaw, Warsaw, Poland ²Medical University of Warsaw, Dept of Radiology, Warsaw, Poland

Purpose: Transthoracic echocardiography (TTE) can be used for diagnosis in unstable patients with suspected acute pulmonary embolism (aPE). ESC guidelines recommend against routine TTE use in the diagnosis of hemodynamically stable patients. However, TTE is frequently used as a first choice examination in acute dyspnea or chest pain, which can accompany aPE. TTE can detect typical pattern for aPE: “60/60” or McConnell sign, right heart thrombi (RHTh) or enlarged RV (RV/LV ratio $> 0,9$) with flattened IVS and distended IVC. In some cases TTE results can be non-typical or even misleading, showing alternative abnormalities: systolic LV dysfunction or valvular lesions. The aim of study was to analyze echocardiographic patterns in high and non-high risk aPE pts.

Methods: We analyzed typical, non-typical and misleading TTE patterns in consecutive 408 pts (176M, 232F), aged 64.3 \pm 18.3 yrs with aPE confirmed by MSCT, managed

in our department. Fourteen pts (3.4%) (8M,6F) were hemodynamically unstable, with SBP <90mmHg (UNaPE), while 394 others (168M,226F) had preserved SBP (SaPE). TTE was performed at admission for prognosis assessment according to the standardized protocol.

Results: TTE detected abnormalities typical for aPE in all unstable pts. In SaPE TTE showed pattern typical for aPE in 23.6% pts, while in 42.3% pts it was non-typical, in 5.3% pts misleading and in 28.7% pts without abnormalities of RV morphology and function.

Conclusion: TTE is useful in the diagnosis of hemodynamically unstable aPE. However, in hemodynamically stable patients TTE shows typical pattern of aPE only in minority and can be even misleading in approximately 5% of them

Table 1.

ECHO pattern	UN aPE n=14 (3.4%)	S aPE n=394 (96.6%)
1. Typical for aPE n(%)	14 (100.0)	93 (23.6)
60/60 sign n (%), McConnell sign n(%)	5 (35.7), 10 (71.4)	54 (13.7), 72 (18.3)
RV/LV ratio >0,9, flattened IVS, distended IVC n(%)	3 (21.4)	26 (6.6)
RHTh n (%)	3 (21.4)	2 (0.5)
2. Non-typical for aPE n(%)	0	167 (42.4)
3. Preserved RV morphology and function n(%)	0	113 (28.7)
4. Misleading: LVEF ≤ 35% or moderate aortic stenosis	0	21 (5.3)

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Serum galectin-3 levels are independent of coronary artery disease in patients with normal systolic left ventricular function

M Hell,¹ M Marwan,¹ A Schuhbaeck,¹ M Hammon² and S Achenbach¹

¹University of Erlangen-Nuremberg, Department of Cardiology, Erlangen, Germany ²University of Erlangen-Nuremberg, Department of Radiology, Erlangen, Germany

Purpose: Macrophage-derived galectin-3 mediates heart failure by inducing cardiac fibroblast proliferation and collagen deposition. Elevated galectin-3 levels have been associated with acute and stable heart failure and a predictive value concerning heart failure is assumed for asymptomatic patients. The purpose of our study was to investigate if the presence of coronary artery disease affects serum galectin-3 levels in patients with normal systolic left ventricular function.

Methods: 48 patients admitted for coronary computed tomography (CT) angiography for the exclusion of coronary artery disease with normal systolic left ventricular function on echocardiography, normal creatinine levels and exclusion of any organ fibrosis were included. Prior to the CT scan, written informed consent was obtained and blood was drawn from a peripheral vein for analysis of serum galectin-3 levels using a commercial quantitative test (VIDAS® Galectin 3, bioMérieux SA, France). Patients received a non-contrast CT scan for quantification of calcification using the Agatston Score followed by contrast-enhanced coronary CT angiography. Patients were grouped according to their serum galectin-3 levels using commonly suggested categories (≤ 17.8 ng/ml: low risk, 17.8 to 25.9 ng/ml: intermediate risk, >25.9 ng/ml: high risk).

Results: In all 48 patients (60±9 years, 25 males), mean serum galectin-3 was 11.7±6.2 ng/ml. CT excluded coronary atherosclerosis in 14 patients (29.2%, mean serum galectin-3 9.8±0.5 ng/ml), revealed non-stenotic coronary artery disease in 23 patients (47.9%, mean serum galectin-3 12.1±1.6 ng/ml) and at least one coronary stenosis in 11 patients (22.9%, mean serum galectin-3 13.2±2.0 ng/ml; p-value non-significant when comparing serum galectin-3 levels). 28 patients (58.3%) showed coronary calcium (mean Agatston score 367±130, mean serum galectin-3 12.3±1.2 ng/ml), while 20 patients had no coronary calcification (Agatston Score 0, mean serum galectin-3 10.8±1.3 ng/ml, p = n.s.). When stratifying patients by the commonly used serum galectin-3 risk levels, 45 patients were at low risk (94%), one patient at intermediate risk (2%) and two patients at high risk (4%), of which one patient had no coronary atherosclerosis and the other had coronary artery stenoses.

Conclusion: In patients with normal systolic left ventricular function, no influence of coronary artery disease presence and severity on serum galectin-3 level was found.

P465

Echocardiographic diagnosis of left subclavian artery stenosis in the ICCU before coronary bypass grafting (CABG)

S Dabbah¹

¹Ziv hospital, safed, Israel

Introduction: Subclavian stenosis is mostly asymptomatic, but may cause “steal syndrome” affecting the brain via the vertebral artery. In patients with left internal mammary artery bypass graft this may cause “coronary –subclavian steal” and myocardial ischemia amenable to treatment by subclavian revascularization. In patients planned for

CABG, Subclavian stenosis occurs in 2.5-4.5% of cases; Identifying it pre-operatively may prevent steal syndrome and ischemia by avoiding LIMA grafting or subclavian revascularization. Thus, some authors recommend measuring both arms blood pressure in all patients planned for CABG, but this is not fully implemented.

purpose: I describe a case where subclavian stenosis was discovered by routine echocardiography before CABG, leading to avoiding LIMA graft and preventing post-operative myocardial ischemia.

The case: A 65-years old man admitted to ICCU with acute coronary syndrome was urgently catheterized and planned for CABG. In preoperative routine echocardiography, from suprasternal view, a continuous flow with a fast systolic (maximal velocity of 360 cm/sec) and slow diastolic components, oriented cranially was recorded by continuous wave Doppler. Although this flow resembles flow through aortic coarctation, it differs from it by its direction, and stenosis of an aortic branch was suspected. Color Doppler images focusing on distal Aortic arch and its branches showed continuous flow in left subclavian artery indicating subclavian stenosis. When re-examining the patient, left arm systolic blood pressure was lower by 40mmHg compared to right arm. Angiography (CT) showed 85% stenosis of proximal left subclavian artery. Duplex study showed significant stenosis of subclavian artery and flow reversal in vertebral artery indicating "brain-subclavian steal".

conclusion: Our case demonstrates that echocardiography, performed routinely before CABG can be helpful in identifying subclavian stenosis and avoiding coronary steal post operatively. we recommend to perform suprasternal images focused on subclavian artery in all patients planned for or after LIMA bypass.

P466

Effect of glycaemic status on left ventricular diastolic function detected by pulsed tissue doppler imaging in type 2 diabetes patients

M Eldeeb,¹ M Mokarrab,¹ K Marghany¹ and M Albaz¹

¹Al-Azhar University, cardiology, Cairo, Egypt

Background: Diabetes mellitus is considering an important independent factor in developing diastolic dysfunction. Diastolic dysfunction comprises about 30 to 50% of all patients hospitalized for heart failure. The aim of this study was to determine the effect of glycaemic status on left ventricular diastolic function by pulsed tissue Doppler imaging in type 2 diabetic patients

Methods and results: our study included (100) subjects, 20 normal healthy subjects ,80 known to be Diabetic

patients presented in our diabetic outpatient clinic and Echocardiographic unit at Al-Hussein University Hospital between November 2010 and June 2011.the patient were classified according glycaemic status in to three groups: Group (A) Normal healthy control subjects. Group (B) well controlled diabetes HbA1C less than 7, Group (C) uncontrolled diabetes HbA1C more than 7. There was no statistically significant difference between the three groups as regard LVEDD,LVESD,LV EF% and LVFS%. There was statistically significant difference between the three groups as regard LA mean E wave mean of A wave mean of E/A ratio diameter mean of DT mean of IVRT mean of Em wave mean of E/Em degree of diastolic dysfunction .There was statistically significant difference in patient have LV diastolic dysfunction between the three groups as regard E wave , A wave ,DT , and IVRT . but there was no statistical difference between patient have diastolic dysfunction as regard mean of Em. There was negative correlation between HbA1c level and Ewave , E/A, Em and positive correlation with LA ,A wave ,IVRT , DT and E/Em.

Conclusion: The Glycemic status is well correlated with severity of diastolic dysfunction in asymptomatic type 2 diabetic patients. Tissue Doppler imaging has been shown to be more sensitive and more independent from various confounders, such as preload. for assessment of diastolic function in asymptomatic type 2 diabetic patients and its results are significant correlated with glycaemic state.

P467

Usefulness of ultrasonographic assessment of basal coronary flow to detect significant left descending coronary artery stenosis in women suspected of having a Takotsubo cardiomyopathy

M Accadia,¹ L Irace,¹ M Abitabile,¹ R Iengo,¹ R Cocchia,¹ R Arnese,¹ P Spadaro,¹ F Scotto Di Uccio¹ and B Tuccillo¹

¹PO Loreto Nuovo, ASL Na I Centro, UOC Cardiology UTIC , Napoli, Italy

Object: Takotsubo cardiomyopathy (TTC) is a cardiac syndrome characterized by transient left ventricular systolic dysfunction mimicking an acute coronary syndrome; it is usually precipitated by acute physical or emotional stress in the absence of significant obstructive coronary artery disease. We know that in normal coronary arteries blood flow mostly occurs during diastole, exhibiting a biphasic pattern at rest with a higher diastolic and a smaller systolic component; the presence of significant stenosis of left anterior descending coronary artery (LAD) cause changes in coronary velocity pattern at rest with a decreased diastolic to systolic velocity ratio (DSVR).The purpose

of our study was to evaluate whether a decreased DSVR of basal flow studied with transthoracic echocardiography (TTE) may be useful to detect significant LAD stenosis (>75%) in women supposed having TTC by the clinicians at the hospitalization.

Methods: the study group consisted of 30 consecutive women patients, mean age 64±9 years, admitted to hospital for chest pain preceded by a physical or emotional stress; with ischemic ECG abnormality as T wave inversion in the precordial leads and no ST elevation; and at the TTE presented LV contraction abnormality involving both apical and mid-ventricular segments, suggestive for Apical Ballooning Syndrome. All patients underwent standard two-dimensional TTE with Doppler evaluation of coronary flow in the distal LAD 24-48h before coronary angiography had been performed. Peak systolic and diastolic velocities were measured by pulsed-wave Doppler velocity recordings and the DSVR was calculated from an average of three consecutive cardiac cycles.

Results: adequate Doppler recordings in the LAD were obtained in all patients. Eight patients had significant LAD stenosis (28.6%), while 71.4% did not have LAD stenosis. DSVR was significantly lower in patients with significant LAD stenosis than in those without stenosis (1.30 vs 1.95, $P=0.0044$). The receiver operating characteristic curve showed that a DSVR <1.5 had a sensitivity of 75%, a specificity of 95%, a positive predictive value of 75%, a negative predictive value of 87%.

Conclusions: The assessment of basal coronary flow in the LAD may be useful to detect the presence of significant stenosis in patients supposed having normal coronary artery.

value incompletely understood. We sought to evaluate the association between STD-R and markers of myocardial injury as well as to determine the prognostic impact of STD-R in patients with acute reperfused STEMI.

Methods: We enrolled 611 STEMI patients in this multicenter cardiac magnetic resonance (CMR) study. STD-R, defined as either complete ($\geq 50\%$) or incomplete (<50%), was determined 90 minutes after primary percutaneous coronary intervention (PCI). Patients underwent CMR in median 3 [2-4] days after infarction. Major adverse cardiac events (MACE) were defined as a composite of death, reinfarction and new congestive heart failure within 12 months after enrollment.

Results: Patients with STD-R <50% ($n=170$, 27.8%) had a significantly larger area-at-risk (37[29-50] vs. 35[24-47] %LV, $p=0.01$), larger infarct size (18[11-26] vs. 15[7-23] %LV, $p=0.02$), larger volume of microvascular obstruction (0.5[0-2.8] vs. 0.0[0-1.4] %LV, $p=0.01$), lower myocardial salvage index (50[33-65] vs. 54[35-73] %LV, $p=0.03$), and a lower left ventricular ejection fraction (48[41-56] vs. 52[45-58] %, $p<0.01$). MACE rate ($n=37$ [6%]) was significantly higher in patients with incomplete STD-R ($n=20$ [12%]) than in patients with complete STD-R ($n=17$ [4%], $p<0.01$). In multivariate Cox regression analysis, STD-R <50% emerged as an independent predictor of MACE at 12 months (hazard ratio: 2.32 [95% CI 1.18-4.54], $p=0.01$) after adjusting for clinical variables.

Conclusion: Patients with acute STEMI and incomplete STD-R after PCI show a more pronounced myocardial as well as microvascular damage as detected by CMR with subsequent independent prognostic information on MACE over a 12 months follow-up period.

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Galectin-3 and copeptin assessment as a decision making tool in patients admitted for acute coronary syndrome

L Malinova,¹ R Podbolotov,¹ T Denisova² and P Dovgalevsky¹

¹Saratov State Medical University, Research institute of cardiology, Saratov, Russian Federation ²Saratov State Medical University, Saratov, Russian Federation

Purpose of the study was to evaluate whether addition of galectin-3 (Gal-3) and copeptin (Cop) to standard biomarkers panel in patients with acute coronary syndrome (ACS) would be helpful in identifying patients at elevated risk of adverse cardiovascular events (ACVE) in real clinical practice.

Methods: 74 patients (66 (59;74) years old) admitted to the emergency department for ACS were involved in the prospective cohort study. Follow-up period was 12

Risk Stratification

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ST-segment depression resolution predicts infarct size and reperfusion injury in ST-elevation myocardial infarction

S Reinstadler,¹ A Baum,² KP Rommel,³ C Eitel,² S Desch,² B Metzler,¹ J Poess,² H Thiele² and I Eitel²

¹Innsbruck Medical University, Department of Internal Medicine III, Cardiology, Innsbruck, Austria ²Medical University, Medical Clinic II, Cardiology, Lübeck, Germany ³Heart Center of Leipzig, Leipzig, Germany

Purpose: ST-elevation myocardial infarction (STEMI) is frequently associated with reciprocal ST-segment depression in contralateral ECG leads. However, the relationship of the resolution of ST-segment depression (STD-R) with myocardial damage is unknown and the potential prognostic

months. The primary end point (PEP) was the composite of cardiovascular (CV) mortality and rehospitalization (RH) due to worsening of CV symptomatic. Copeptin and Gal-3 were measured by commercially available ELISA kit. Gal-3 threshold level was accepted as 17.8 ng/mL. In-hospital and post discharge (6 months) risks of death were calculated (GRACE risk models).

Results: The rate of primary end point was 28.4%: CV mortality – 10.8% and RH – 17.6%. Gal-3 threshold was exceeded in 54.1%.

Compared with patients with Gal-3 concentration less than 17.8 ng/mL, those with Gal-3 concentrations exceeding this level were significantly more likely to reach the PEP with HR 2.06 (CI 1.57; 2.71). Risk of CV death within 12 month since ACS manifestation was also higher in patients with Gal-3>17.8 ng/mL (HR 3.87 (CI 3.38; 4.43)). No significant correlations were detected between Gal-3 and calculated risks of in-hospital death and death within 6 months from discharge, as well as between Gal-3 and timing of ACVE. In those patients with increased Gal-3 who successfully survived follow-up period more aggressive treatment may be beneficial (normalized ACE inhibitors dose: 78.1 vs 64.2, % target dose).

Compared with patients with Cop concentration less than upper quartile, those with copeptin concentrations exceeding this level were not more likely to reach the PEP with HR 0.54 (CI 0.22; 1.36). Never the less Cop increase (upper quartile) within first three hour of ACS manifestation (Cop 3h) was associated with risk of adverse cardiovascular events (HR 2.01 CI 1.45; 3.14, $p < 0.05$). Cop 3h added to Gal-3, troponin, age, BMI, glucose, RBC, platelets and creatinine significantly increased ROC AUC of life span without ACVE (0.937 vs 0.760).

Conclusion: Measurement of Gal-3 and Cop 3h in the emergency department can be useful for identifying patients with ACS at elevated risk for near-term CV mortality and rehospitalisation. Gal-3 may serve as a new marker to indicate patients suitable for more aggressive pharmacological treatment. Cop 3h, Gal-3 and troponin are complementary prognostic markers for CV death and RH in patients admitted for ACS.

P470

Obstructive sleep apnea in acute coronary syndrome patients: prevalence and long-term prognosis

S Leao,¹ P Magalhaes,¹ F Cordeiro,¹ B Conde,²
P Mateus,¹ P Fontes¹ and I Moreira¹

¹Hospital Center of Tras-os-Montes and Alto Douro, Cardiology, Vila Real, Portugal ²Hospital Center of Tras-os-Montes and Alto Douro, Pneumology, Vila Real, Portugal

Background: Obstructive Sleep Apnea (OSA) is frequently associated with cardiovascular disease. Its diagnosis seems to be related with poor prognosis.

Aim: To determine the prevalence of OSA in patients with acute coronary syndrome (ACS). Evaluate the prognostic impact of OSA and CPAP therapy in these patients.

Methods: Prospective study of 73 patients diagnosed with ACS. A polysomnography was performed in all patients. An Apnea-hypopnea index >5 was considered diagnostic of OSA and patients were referred to CPAP therapy. We evaluated the occurrence of the primary composite endpoint of death, myocardial infarction and revascularization.

Results: The prevalence of OSA was 63.0%. The average age (62.4 ± 11.3) was similar in both groups. Gender and cardiovascular risk factors were not significantly different between groups. Patients were admitted for Non-ST elevation ACS in 60.3% and for ST elevation ACS in 39.7%. OSA was classified as mild (OSA-M) in 30.4% and as moderate to severe (OSA-S) in 69.6%. After a median follow-up of 75 months (IQR 71-79), patients with OSA-S showed a significantly higher incidence of the composite endpoint (relative risk 3.29, 95% CI 1.07-10.10; $p=0.038$). Kaplan-Meier survival curves are represented in Figure 1. Adherence to CPAP was 42.9% and there was a numerically lower proportion of patients with composite endpoint in the group of compliant patients (33.3% vs. 37.5%, $p=NS$).

Conclusions: OSA has a high prevalence in ACS patients. Its screening has high diagnostic yield and allows to identify patients with clearly unfavorable prognosis and a potentially treatable risk factor. CPAP notes a significant number of noncompliant, but may improve prognosis, justifying further randomized clinical studies.

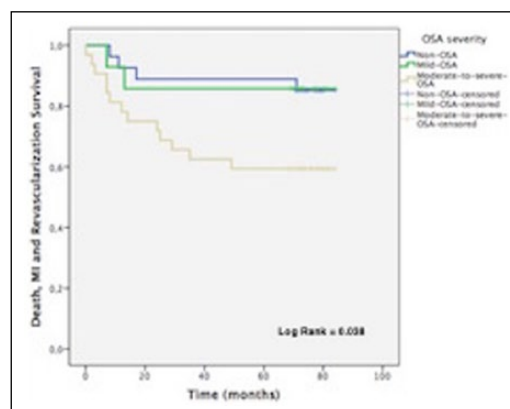


Figure 1.

P471

Impact of previous anti-ischemic therapy on the occurrence of acute coronary syndrome and the length of hospital stay in a chest pain unit

M B Rivas,¹ A Volschan,¹ MI Garcia,¹ MV Martins,¹ ET Mesquita,¹ AV Meireles,¹ I Starling,¹ AA Ferreira,¹ K Mocarzel¹ and M Mariano¹

¹Hospital Pro Cardiaco, Rio de Janeiro, Brazil

Background: Adherence to anti-ischemic therapy (AIT) is one of the challenges in the management of chronic coronary artery disease. Recurrent ischemic events are frequent in this population and the impact of regular use of AIT on hospital outcomes in patients admitted to chest pain units (CPU) is not well defined.

Purpose: To evaluate whether there is an association between the previous use of AIT, acute coronary syndromes (ACS) and the length of hospitalization in the CPU

Methods: This prospective study included 1,741 patients consecutively admitted into the CPU with symptoms suggestive of ACS. Patients with previous coronary artery bypass graft (CABG), percutaneous coronary intervention (PCI) or chronic coronary heart disease were included in the AIT group. Patients underwent serial assessments of EKG and troponin I on admission and after 6 hours. We evaluated the following medications prescribed up to 7 days before admission: anti-platelet drugs (APD), beta blockers (BB) and statins. Statistical analysis was performed using student t-test and chi square.

Results: Previous coronary artery disease was reported by 28% of patients (66.4% ICP, 28.3% CABG and 14.9% with both) and ACS event rate was 35.1% in this group. The mean age was 62.6+16.4y and ACS occurred in 21.7% of the total population. Previous use of BB was reported in 63.3% of patients with coronary heart disease, APD in 88.5% and statins in 72.7%. There was no difference in the incidence of ACS in patients with or without previous use of BB (respectively 34% vs 36.9%; $p=0.93$), APD (35.2% vs 33.9%; $p=0.99$) or statins (34.8% vs 35.8%; $p=0.99$). In patients with ACS, the average length of stay did not change significantly according to previous use of BB (5.1+9.6d vs. 4.6+5.9d; $p=0.33$) or APD (4.7+8.6d vs 6.2+6d; $p=0.18$).

Conclusion: Patients with chronic coronary artery disease represents more than 25% of CPU admissions and have distinct adherences to AIT. There was no association between previous use of AIT, ACS occurrence or length of hospital stay in the CPU.

P472

The prognostic importance of admission serum uric acid in patients admitted with acute myocardial infarction that were treated conservatively.

KASHIF Naeem,¹ SUAD Hanawi,¹ TAMER Mahmoud¹ and NAJIBA Abdulrazzaq¹

¹Al Baraha Hospital., Cardiology, Dubai, United Arab Emirates

Purpose: The prognostic impact of admission uric acid (UA) levels in patients with acute myocardial infarction (AMI) is controversial. We assessed the role of admission uric acid in predicting in-hospital events in patients admitted with AMI that were treated conservatively.

Methods: We analysed retrospectively 120 consecutive patients admitted with diagnosis of AMI to our center between January 2014 and April 2015. All were treated conservatively. Serum uric acid was measured on admission. Accordingly, patients were divided into 3 groups: high UA (male >420 umol/L, female >360 umol/L), high-normal UA (male 310-420, female 250-360) and low-normal UA (male <310, female <250). Patients were observed for in-hospital mortality and AMI complications (heart failure, cardiogenic shock and arrhythmias). The correlation between admission serum UA and cardiovascular events was analysed by logistic regression analysis.

Results: We analysed 120 patients with AMI. Mean age was 52 years (+13, 27-93). 110 (92%) were males (mean age 51, +13) and 10 females (mean age 65, +9). 39% were diabetics and 44% were hypertensives. When analysed according to the 3 groups of patients, none of the end-points showed any statistically significant correlation: mortality ($p=0.167$, 95% CI 0.715-6.942), heart failure ($p=0.489$, 95% CI 0.658-2.397), cardiogenic shock ($p=0.468$, 95% CI 0.458-3.179) and arrhythmias.

Conclusion: Admission serum UA has not shown to predict adverse in-hospital outcomes. However, study is limited by the small sample size. Prospective studies with larger cohort are warranted to confirm our findings.

P473

The prognostic importance of admission HbA1c (glycated hemoglobin) in patients (diabetic and non-diabetic) admitted with acute myocardial infarction that were treated conservatively.

KASHIF Naeem,¹ SUAD Hanawi,¹ TAMER Mahmoud¹ and NAJIBA Abdulrazzaq¹

¹Al Baraha Hospital, Cardiology, Dubai, United Arab Emirates

Purpose: The prognostic impact of admission HbA1c levels in patients with acute myocardial infarction (AMI) remains controversial. We assessed the role of admission HbA1c in predicting in-hospital events in patients admitted with AMI that were treated conservatively.

Methods: We analysed retrospectively 59 consecutive patients admitted with diagnosis of AMI to our center between January 2014 and April 2015. All were treated conservatively. HbA1c was measured on admission. Accordingly, patients were divided into 3 groups according to the HbA1c levels: <5%, 5-8%, >8%. Patients were observed for in-hospital mortality and AMI complications (heart failure, cardiogenic shock and arrhythmias). The correlation between admission HbA1c and cardiovascular events was analysed by logistic regression analysis.

Results: We analysed 59 patients with AMI. Mean age was 51 years (+12, 30-87). 56 (95%) were males (mean age 51, +12) and 3 females (mean age 58, +9). 63% were diabetics and 42 % were hypertensives. Admission HbA1c was not found to have statistically significant correlation with in-hospital mortality, heart failure ($p=0.126$, 95% CI 0.828-4.618), cardiogenic shock ($p=0.526$, 95% CI 0.295-10.879), composite end-point including all above ($p=0.371$, 95% CI 0.697-2.630).

Conclusion: Admission HbA1c has not shown to predict adverse in-hospital outcomes. However, study is limited by the small sample size. Prospective studies with larger cohort are warranted to confirm findings.

P474

Simple risk score for predicting prognosis in nonSTEMI

V Chioncel,¹ C Andrei,¹ L Axente,¹ A Avram,¹ A Ion,¹ S Guberna¹ and C Sinescu¹

¹Bagdasar-Arseni Emergency Hospital, Bucharest, Romania

The probability of adverse events estimate is crucial in acute coronary syndrome condition.

Objectives: Our goal was to develop a easy-to-use risk score for the patients presenting with non-ST-segment elevation acute coronary syndrome.

Methods: We followed 442 patients with acute myocardial infarction without ST elevation hospitalized between January 2010 and January 2013. To assess the risk of complications we have built a score based on clinical, ECG and biochemical criteria, easy to apply in practice. The score was created by the arithmetic sum of independent predictors points. Points were determined

by corresponding probabilities of event occurrence. The following variables have been identified: age (1 to 3 points); persistence of chest pain after admittance (1 to 3 points); glycemic level (1 to 3 points); creatinine level (1 to 3 points); troponin I level (1 to 3 points) and ST-segment depression (1 to 3 points). Three risk groups were defined: low (6 to 9 points), intermediate (10 to 14 points) and high risk (15 to 18 points).

Results: End-points were death and reinfarction at six months. Combined event occurred in 64 patients (14,47%), with differences between three groups: 12 (10,52%) in the first group, 20 (12,34%) in the second group and 32 patients (19,27%) in the high risk group.

Conclusion: A risk score of easy application in the emergency service was developed to predict death or (re) infarction within 6 months in a population with non-ST-segment elevation acute myocardial infarction.

P475

ST elevation acute myocardial infarction (STEMI) and kidney failure: comparative study between 3 mathematical estimators

M Rodrigues Neto,¹ R Rodrigues,¹ A Correia,¹ M Gomes Serrao,¹ N Santos,¹ A Pereira,¹ G Caires,¹ A Alves,² A Drumond Freitas¹ and D Pereira¹

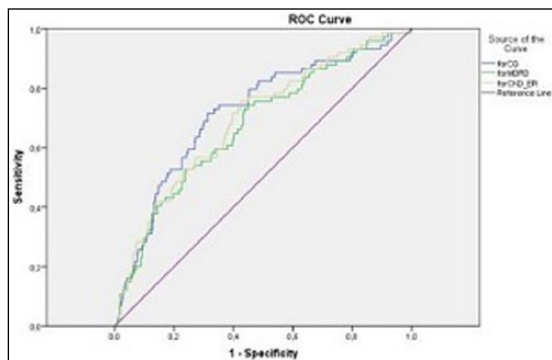
¹Hospital Dr. Nélio Mendonça, Cardiology, Funchal, Portugal ²Hospital Dr. Nélio Mendonça, Funchal, Portugal

Background: Many patients diagnosed with ST elevation acute myocardial infarction (STEMI) have evidence of kidney damage, either acute or chronic, which has a well-known negative impact on clinical outcome. Prior studies showed that renal impairment is best assessed by estimated glomerular filtration rate (eGFR).

Purpose: Our goal was to compare the ability of eGFR calculated by the Modification of Diet in Renal Disease Study (MDRD), the Cockcroft-Gault (CG) and the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formulas to predict morbidity (composite primary endpoint of re-infarction, stroke and mortality) and mortality at one year of follow-up (FU).

Methods: Prospective study of 445 consecutive patients admitted for STEMI, in a single coronary unit, between October 2009 and September 2013. Predictive accuracy of the three different equations was assessed by comparing their ROC curves.

Results: Moderate or severe renal impairment (eGFR <60 ml/min/1.73m²) was present in 38,5%, 47,0% and 41,8% of patients, when eGFR was calculated by CG, MDRD and the CKD-EPI formulas, respectively. All formulas had a good



discriminatory power in predicting the composite primary endpoint at one-year of FU, however, CG proved to be the best formula by ROC curve analysis [AUC (CG): 0.719 vs AUC (MDDR): 0.689 vs AUC (CKD-EPI): 0.707]. Also, all the three formulas were valuable in prediction of one-year total mortality, with similar results [AUC (CG): 0.778 vs AUC (MDDR): 0.748 vs AUC (CKD-EPI): 0.768].

Conclusion: In our population all formulas proved value in predicting adverse outcomes at 1-year follow up. The CG formula was more accurate than MDRD and CKD-EPI in predicting the composite primary endpoint at one-year of FU.

P476

Incidence, clinical characteristics and prognostic factors of acute coronary syndromes in young patients

G Tini,¹ MB Musumeci,¹ M Casenghi,¹ M Colopi,¹ G Proietti,¹ C Autore¹ and M Volpe¹

¹Sapienza University of Rome, Rome, Italy

Aim: Acute coronary syndromes (ACS) in young patients are uncommon, though they influence premature morbidity and impairment on survival rate. Aim of our study was to evaluate incidence, clinical features and outcome in patients diagnosed with ACS aged ≤ 45 years compared with patients aged > 45 years.

Methods: We enrolled 1232 patients diagnosed with ACS aged < 75 years, admitted to Sant'Andrea Hospital, Rome, between 2007 and 2013. Patients ≥ 75 years were excluded because of frequent comorbidities and different treating strategies. Clinical data were obtained from Cardiologic Intensive Care Unit electronic database. Follow up data were provided from Public Health Agency services. Primary composite endpoint was any occurrence of death or non-fatal AMI or revascularization.

Results: 116 out of 1232 patients diagnosed with ACS were ≤ 45 years (9.4%, mean age 40.59 ± 5.2 years). Young

patients with ACS were mostly male and had a prevalent diagnosis of STEMI. Compared with ACS patients aged > 45 years, young patients had less frequently hypertension (37.1% vs. 65.7%; $p=0.000$), diabetes (12.1% vs. 28.6%; $p=0.000$), dyslipidemia (31.9% vs. 50.4%; $p=0.000$) and history of prior MI (12.2% vs. 21.7%; $p=0.015$), but they were more frequently current smokers (75% vs. 47.5%; $p=0.000$) and substance abusers (8.6% vs. 0.6%; $p=0.000$). Prevalence of one-vessel disease (50.9% vs. 36.2%; $p=0.000$) and absence of coronary obstructive disease (14.7% vs. 4.5%; $p=0.000$) was statistically higher in young patients. During a follow up of 3.12 ± 2.03 years, a total of 277 (22.5%: 13,11.3% young ACS vs. 264, 23.7% older ACS, $p=0.001$) patients reached composite endpoint. Survival free from death, myocardial infarction and revascularization was better in young patients (log rank=0.0001). Cox regression analysis showed that young age was the only protective factor (OR: 0.47; 95% CI: 0.27 to 0.83; $p=0.009$), while EF $<45\%$ (OR: 1.40; 95% CI 1.10 to 1.79; $p=0.006$) and diabetes (OR: 1.32; 95% CI: 1.02 to 1.72, $p=0.03$) were independent predictive factors of events. At multivariate analysis, diabetes resulted the strongest risk factor for composite endpoint occurrence during follow up in young patients (OR 3.47; 95% CI 1.01 to 11.9; $p=0.04$). Survival free from composite endpoint in young diabetic ACS patients was similar to older diabetic ACS patients (log rank= 0.53).

Conclusions: Young ACS patients show peculiar clinical features. The main prognostic factor in this population is diabetes. This finding, together with the evidence of a more common abuse of substances and smoking, indicate the need of a strict control of lifestyle.

P477

Prevalence and significance of unrecognized renal insufficiency in patients with acute coronary syndrome

D Pereg,¹ Z Rozenbaum,² M Shlezinger,³ I Goldenberg³ and M Mosseri¹

¹Meir Medical Center, Kfar Saba, Israel ²Sourasky Medical Center, Tel Aviv, Israel ³Chaim Sheba Medical Center, Neufeld Cardiac Research Institute, Tel Hashomer, Israel

Introduction: Unrecognized renal insufficiency (RI), defined as eGFR <60 mL/min/1.73m² in the presence of normal serum creatinine, is common among patients with acute coronary syndrome (ACS). The aim of our study was to determine the prevalence of unrecognized renal insufficiency in a large unselected/ population of patients with ACS and to assess its clinical significance compared with recognized renal insufficiency and normal renal function.

Methods: The study population consisted of patients with ACS included in the Acute Coronary Syndrome Israeli biennial Surveys (ACSIS) during 2000-2013. Patients who presented with cardiogenic shock were excluded. The eGFR was calculated using the simplified Modification of Diet in Renal Disease (MDRM) formula. Patients were stratified into three groups: (1) normal renal function (eGFR \geq 60 mL/min/1.73m² with serum creatinine \leq 1.2 mg/dl), (2) unrecognized RI (eGFR < 60 mL/min/1.73m² with serum creatinine \leq 1.2 mg/dl) and (3) recognized RI (eGFR < 60 mL/min/1.73m² with serum creatinine \geq 1.2 mg/dl). The primary endpoint was all-cause mortality at 1 year.

Results: Included in the study were 12,830 patients with ACS. Unrecognized RI was present in 2,536 (19.8%). Patients with unrecognized RI were older and more frequently females. All-cause mortality rates at 1-year were highest among patients with recognized RI followed by patients with unrecognized RI, with the lowest mortality rates observed in patients with normal renal function (19.4, 9.9, 3.3% respectively, $p < 0.0001$). Differences in mortality rates remained significant even following a multivariate analysis.

Conclusions: ACS patients with unrecognized RI should be considered as high risk population. The question whether this group would benefit from a more aggressive therapeutic approach should still be evaluated.

ST-elevation myocardial infarction - ACS

P478

Relationship of neutrophil to lymphocyte ratio and hemoglobin levels on long-term clinical outcomes in patients with acute myocardial infarction

M Kurobe,¹ S Kaibara,¹ K Minami,¹ S Muto,¹ S Furudono,¹ H Suenaga,¹ T Nunohiro,¹ S Takeshita,¹ H Nakashima¹ and K Maemura²

¹Nagasaki Harbor Medical Center City Hospital, Cardiology department, Nagasaki, Japan ²Nagasaki University Hospital, Cardiology department, Nagasaki, Japan

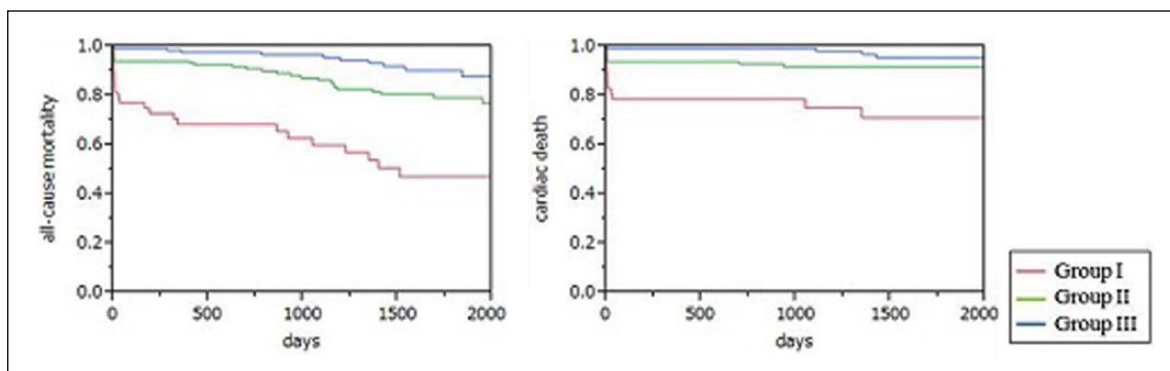
Background: The neutrophil to lymphocyte ratio (NLR) can be used for risk stratification in patients with acute myocardial infarction (AMI) who undergo primary percutaneous coronary intervention (PCI). Anemia also has been known to be an independent prognostic predictor of mortality in patients with AMI.

Aim: To assess the value of the combined use of NLR and hemoglobin (Hb) levels for risk stratification in patients with AMI.

Methods: This study included 356 patients with AMI who underwent primary PCI within 6 hours of onset. The complete blood count datum were measured on admission. All patients were categorized into 3 groups using the median NLR (3.18) and the presence of anemia (Hb < 13 mg/dl in men and < 12 mg/dl in women); group I had high NLR and anemia (n = 54), group II had low NLR and anemia, or high NLR and no anemia (n = 163), group III had low NLR and no anemia (n = 139). The main outcome measures were all-cause mortality and cardiac death. We performed a multivariate Cox regression analysis adjusted for multiple covariates; the combined use of high NLR and anemia, age \geq 75 years, Killip class \geq II, anterior infarct, peak CK levels, post-PCI left ventricle ejection fraction \leq 40%.

Results: The median follow-up duration was 1425 days. There were significant gradient of all-cause mortality and cardiac death among 3 groups, with a markedly increased mortality hazard in group I (log-rank chi-square = 40, $p < 0.001$). By multivariate Cox regression analysis, the combined use of high NLR and anemia was an independent prognostic predictor of mortality (hazard ratio = 4.66, 95% CI: 2.20-9.49, $p < 0.001$).

Conclusion: Combined measurement of NLR and Hb levels on admission is a valuable strategy for identifying patients at the highest risk of long-term mortality.



Kaplan-Meier Plot.

P479

“Comparison of mortality outcomes during normal hours” vs “out of normal hospital hours” primary percutaneous coronary interventions for st-elevation myocardial infarction (STEMI)

S Thirunavukarasu,¹ J Mcshane,¹ J Hasleton¹ and M Andron¹

¹Liverpool Heart and Chest Hospital, Liverpool, United Kingdom

Introduction: Primary percutaneous coronary intervention (PPCI) is the gold standard reperfusion strategy in patients presenting with STEMI. Prompt myocardial reperfusion in patients presenting with an acute myocardial infarction preserves cardiac function and improves long-term survival.

Purpose The aim of this study was to analyse all cause 30 day mortality and long-term survival of out of hours PPCI patients with routine hours patients in a centre with a PPCI program which runs 24 hours a day, 7 days a week.

Methods: This prospective study consisted of 3691 consecutive patients undergoing PPCI at a single centre between 2009 and 2014. The study population was split into 3 groups: In Hours (08:00 – 17:59), Out of Hours (18:00 – 07:59) and Weekends (Any time). Differences in casemix and 30-Day Mortality between the 3 groups were assessed using chi-squared test in the case of categorical variables and Wilcoxon test for the continuous factors. Differences in survival were analysed using the method of Kaplan and Meier and a Log-Rank Test.

Results: Call-to-balloon times were different in the 3 groups (Median times: In-Hours = 99 minutes, Out-of-Hours = 100 minutes and Weekends = 101 minutes). However, there was no clinically significant difference in the times each group waited. There was no significant difference in 30-day mortality between the 3 groups (4.8% v 4.3% v 4.7% respectively, $p = 0.84$). At 1 year, survival

rates were 91%, 93% and 92% respectively. At 5 years, all 3 groups had a survival rate between 83% and 86% (Log-Rank $p=0.33$).

Conclusion: Our study demonstrates no difference in 30-day or 1 year mortality following PPCI undertaken at differing time points during a 24 hour period. PPCI remains safe and effective whether carried out during or out of working hours.

P480

Cognitive disorders in patients with ST-elevation myocardial infarction

A JU Evstigneeva,¹ VA Razin¹ and MV Krestjyaninov²

¹Ulyanovsk State University, Ulyanovsk, Russian Federation ²Ulyanovsk Regional Hospital of War Veterans, Radiology department, Ulyanovsk, Russian Federation

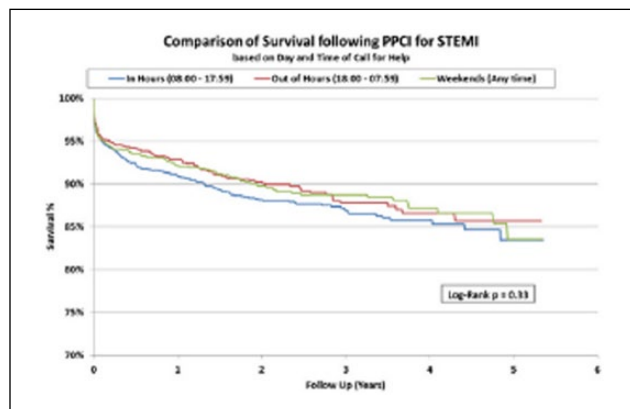
It's well known that volume of ischaemised brain tissue play important role in development of cognitive disorders in patient with myocardial infarction (MI). Reduced pumping function of the heart and cerebral atherosclerosis leads to decrease of brain perfusion and results in development of cognitive disorders in patients with MI.

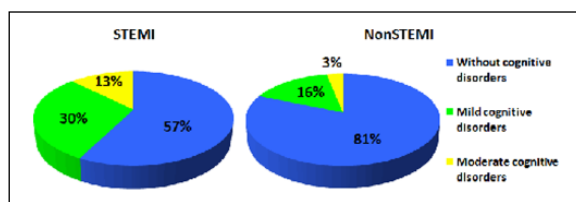
The purpose of the study is to evaluate cognitive function in patients with ST elevation (STEMI) and Non-ST-elevation myocardial infarction (NonSTEMI).

72 patients (both men and women) with MI in history (during period of 6-9 months) were examined. The mean age of patients 59 (10) years. For validation of MI ECG, EchoCG (ASE/EAE recommendations 2005) was performed and were evaluated levels of troponins. All patients were divided for 2 groups. 1st group - patients with STEMI (n=40), 2nd group - patient with NonSTEMI (n=32). We used Mini Mental State Examination (MMSE) for evaluation of cognitive status of patients. Statistical significance was defined at the level of methods for $p < 0,05$.

As it can be seen from Picture 1 cognitive impairments were observed significantly often in patients with STEMI (42%; n=17) in comparison with patients with NonSTEMI (19%; n=6); ($\chi^2=4.61$, $p=0.031$). In the group of patients with STEMI mild cognitive disorders were observed in 30% (n=12) and moderate disorders - in 12% (n=5). Whereas in patients with NonSTEMI mild cognitive disorders were observed in 16% (n=5) and moderate disorders - in 3% (n=1). Also the mean score of MMSE in patients with STEMI was 27,8 (1,7), while in patients with NonSTEMI - 28,5 (1,4); ($p = 0.04$).

Thus in patients with STEMI cognitive disorders were more severe compared to patients with NonSTEMI, which is probably develops due to acute injury of the cerebral cortex at macrofocal myocardial infarction (STEMI).





Cognitive disorders on MI patients.

P481

Evaluation of the Manchester Triage System for patients with acute coronary syndrome with primary presentation in the emergency department

D Kiblboeck,¹ K Steinrueck,² W Lang,¹ E Zeindlhofer,¹ K Hoellinger,¹ A Winter,¹ M Schmid¹ and P Siostrzonek¹

¹Krankenhaus der Barmherzigen Schwestern, Department of Internal Medicine II - Cardiology, Linz, Austria ²Medical University of Vienna, Vienna, Austria

Introduction: Chest pain is a frequent cause of presentation in emergency departments (ED). An early diagnosis of acute coronary syndrome (ACS), in particular in patients with ST-elevation myocardial infarction (STEMI), is crucial for treatment and prognosis. The Manchester Triage System (MTS) classifies patients based on their main symptoms into five different levels of urgency in terms of their need for assessment, irrespective of the eventual diagnosis. The aim of this study was to evaluate the MTS for patients with ACS and primary presentation in the ED.

Methods: Retrospective, single-center study of patients diagnosed with ACS (STEMI, non-STEMI, unstable angina pectoris) with primary presentation in the emergency department between January 1st and June 30th, 2014.

Results: 148 patients (69.4 ± 14.5 years; female, n = 47, 31.8%; STEMI, n = 54, 36.5%; non-STEMI, n = 86, 58.1%; unstable angina pectoris, n = 8, 5.4%) were admitted because of ACS to the cardiac care unit and were triaged by the MTS in the ED as follows: MTS level 1 (immediate assessment), n = 1 (0.7%); MTS level 2 (very urgent), n = 82 (55.4%); MTS level 3 (urgent), n = 53 (35.8%); MTS level 4 (standard), n = 12 (8.1%); MTS level 5 (non urgent), n = 0. While 101 patients (68.1%) presented with chest pain, 47 patients had other main symptoms (e.g. respiratory distress, nausea and vomiting). There was no significant difference between the mean MTS level in different types of ACS (STEMI, 2.5, 95% CI 2.3 – 2.6; non-STEMI, 2.5, 95% CI 2.4 – 2.7; unstable angina pectoris, 2.6, 95% CI 2.2 – 3.1) or with respect to gender (male, 2.5, 95% CI 2.4 – 2.6; female, 2.6, 95% CI 2.4 – 2.8), age (age < 80 years, 2.5,

95% CI 2.4 – 2.6; age ≥ 80 years, 2.6, 95% CI 2.4 – 2.9) and diabetes status (diabetic, 2.4, 95% CI 2.2 – 2.6; non diabetic, 2.6, 95% CI, 2.2 – 2.7). Overall in-hospital mortality was 2.7% (n = 4; STEMI, n = 1; non-STEMI, n = 3).

Conclusion: The majority of patients with ACS and primary presentation in the ED were classified as MTS levels 1 to 3 (immediate to urgent assessment) in our retrospective study. We did not observe a significant difference in terms of type of ACS, gender, age and diabetes status. This data leads to the hypothesis that the MTS is a valuable triage tool for patients with ACS. Further prospective studies are needed to confirm our hypothesis.

P482

Left ventricle hypertrophy predicts heart failure and death after ST-elevation acute coronary syndrome

S Leao,¹ F Cordeiro,¹ P Magalhaes,¹ M Moz,¹ J Trigo,¹ P Mateus,¹ P Fontes¹ and I Moreira¹

¹Hospital Center of Tras-os-Montes and Alto Douro, Cardiology, Vila Real, Portugal

Background: Left ventricular hypertrophy (LVH) is associated with increased mortality and other cardiovascular events. There are limited data regarding the prognostic importance of LV mass after a myocardial infarction.

Aim: Evaluate prognostic impact of moderate or severe LVH in ST-Elevation Myocardial Infarction (STEMI) patients.

Methods: Ninety-three consecutive STEMI patients who had a transthoracic echocardiogram with assessment of left ventricular (LV) mass index during admission were identified retrospectively. Patients were divided in two groups according to LV mass index >116 g/m² in men and >100 g/m² in women. The primary study endpoint was a composite of death and readmission for heart failure (HF).

Results: Eleven patients (11.8%) had moderate or severe LVH. Median age was 75 (IQR: 75-81) years in LVH patients vs 64 (IQR: 54-75) years (p=0.039). Basal clinical characteristics were not significantly different between groups: cardiovascular risk factors (p=NS), ischemic time (8.0 (IQR: 5.0-10.0) hours vs 5.9 (IQR: 3.5-8.7) hours, p=0.202), infarct size (assessed by Troponin T elevation) (8.5 (IQR: 2.5-10.0) ng/mL vs 5.9 (IQR: 2.8-10.0) ng/mL, p=0.650) and LV ejection fraction (41 (IQR: 32-50) % vs 48 (IQR: 41-56) %, p=0.071).

During a follow-up of 19.3 months (IQR 15.4-23.3), primary composite endpoint occurred in 12 patients (12.9%). LVH was a strong predictor of death and readmission for HF (hazard ratio 3.94, 95% CI 1.18 to 13.09, p=0.025). After adjustment for age, patients with LVH tend to have a

worst prognosis (hazard ratio 2.71, 95% CI 0.81 to 9.11, $p=0.107$).

Conclusions: In this study, LVH in STEMI patients was associated with poor outcomes driven by death and readmission for HF. Larger studies are needed to determine if this simple measure can be useful for guiding therapeutic strategies or secondary prevention.

P483

Prior statin therapy and infarct size in ST-elevation myocardial infarction treated with primary percutaneous coronary intervention

M Moltrasio,¹ N Cosentino,¹ S Cortinovi,¹ M Rubino,¹ V Milazzo,¹ A Cabiati,¹ J Campodonico¹ and G Marenzi¹

¹Cardiology Center Monzino IRCCS, Milan, Italy

Purpose: Although statin pre-treatment is reported to have cardio-protective effects in patients undergoing elective and urgent percutaneous coronary intervention (PCI), data in ST-elevation myocardial infarction (STEMI) patients undergoing primary PCI are still controversial. In this prospective study, we evaluated the effect of prior statin therapy on infarct size (IS), myocardial salvage index (MSI), and micro-vascular obstruction in a consecutive cohort of STEMI patients undergoing primary PCI.

Methods: Two-hundred-thirty STEMI patients (mean age 61 ± 11 years, 183 men) treated with primary PCI, undergoing cardiac magnetic resonance (CMR) imaging during hospitalization (median 4 days), were included. In all patients, peak troponin I level was measured, and IS, MSI, and micro-vascular obstruction were determined by CMR.

Results: Fifty (22%) patients had prior statin therapy. They showed a significantly lower troponin I peak value when compared to patients without statins (54 ± 47 vs. 88 ± 106 ng/ml; $P=0.02$). At CMR evaluation, the IS related to the index event was significantly smaller (12.5 ± 11.5 vs. 18.5 ± 18.5 grams, $P=0.05$), and the MSI was greater (0.68 ± 0.25 vs. 0.52 ± 0.30 ; $P=0.01$) in patients with prior statin therapy. Micro-vascular obstruction was less frequent in this group (10% vs. 20%; $P=0.14$). At multivariable analysis, prior statin therapy remained significantly associated with IS and MSI ($P=0.05$ and $P=0.02$, respectively).

Conclusions: In this study, we demonstrated that, in STEMI patients undergoing primary PCI, prior statin therapy is associated with a smaller IS and with a greater MSI. Future studies should confirm these findings and investigate their potential clinical implications.

P484

Time related benefit of antiplatelet therapy on coronary reperfusion and left ventricular function in st-segment elevation myocardial infarction patients.

A Cafaro,¹ V Paradies,¹ M Pepe,¹ D Zanna,¹ F Resta,¹ N Camassa,¹ N Signore,¹ F Masi,¹ D Quagliara¹ and S Favale¹

¹University of Bari, Department of Cardiology, Bari, Italy

P2Y12 inhibitors demonstrated to improve angiographic results of primary PCI (pPCI) and patients clinical prognosis. Current guidelines recommend rapid initiation of antiplatelet therapy but data on time related effects on coronary reperfusion and left ventricular (LV) function are missing. Aim of our observational study was to evaluate if the benefits of P2Y12 inhibitors loading dose (LD) administration is time related.

A total of 119 consecutive patients with STEMI (83% males, 63.6 ± 12.8 years old, 32% diabetics) addressed to pPCI were enrolled; the only exclusion criterion was cardiogenic shock at presentation. We divided our population into three groups depending on the time interval from P2Y12 inhibitors LD administration to balloon: the first group included patients receiving P2Y12 inhibitors LD at least 60 minutes before pPCI, the second group between 30 and 60 minutes before pPCI, the third group less than 30 minutes before. Conventional two-dimensional (2D) echocardiography was performed at admission and 5 days later. Angiographic, clinical and biochemical parameters were evaluated.

LV segmental function was assessed by wall motion score index (WMSI).

The whole study cohort showed a mean ischemia time of 405 minutes; among groups there was no difference in terms of pain to balloon time, admission ejection fraction, troponin peak, diabetes, rate of anterior infarction, anticoagulants and other antiplatelets therapy. Post pPCI TIMI flow grade was significantly different in the three groups ($p<0.001$); it improved throughout the groups proportionally to the increase of "P2Y12 inhibitors LD administration to balloon" time. We found the following rates of post pPCI TIMI flow grade 3: 93,5% in the first group, 91,4% in the second group, 86,2% in the third group. Similarly LV function recovery, defined as WMSI variation between admission and 5 days later, significantly increased throughout the groups (0,10 in the first group; 0,14 in the second group; 0,15 in the third group; $p<0,001$). A positive and significant association was also found between WMSI and "P2Y12 inhibitors LD administration to balloon" time ($p<0.05$).

Our findings support a time-related benefit of P2Y12 inhibitors administration: a longer time window between P2Y12 inhibitors administration and pPCI drives a better coronary reperfusion in terms of TIMI flow grade, that is known to be related to mid to long term prognosis. Moreover P2Y12 LD administration seems to impact also on LV recovery.

P485

Predictors of mortality in patients with ST elevation ACS far away from the catheterization laboratory

M Nunez Torras,¹ P Loma-Osorio,¹ A Fageda,¹ D Bosch,¹ R Brugada,¹ C Tiron,¹ A Fort,¹ J Conejos,¹ G Vazquez¹ and J Aboal¹

¹University Hospital de Girona Dr. Josep Trueta, Girona, Spain

Purpose: Long distances to a catheterization laboratory in patients with ST elevation acute coronary syndrome (STEACS) may difficult the choice of the reperfusion strategy. Our aim was to evaluate the predictors of mortality in patients with STEACS > 50 km further the catheterization laboratory.

Methods: We prospectively registered consecutive patients presenting with STEACS (2007-2012) admitted to the acute cardiac care unit. A model of long-term survival of patients with a first medical contact to more than 50 km from the center with a catheterization laboratory and who had a reperfusion therapy was performed.

Results: 757 STEACS received reperfusion therapy. 526 patients were > 50 km from the catheterization laboratory. A survival analysis according the reperfusion strategy was performed. The risk of mortality in the primary angioplasty group were higher than patients treated with fibrinolysis (HR 2.26 95% CI 1.04-4.91). Besides distance, other variables associated with poor prognosis were age, anterior infarction and Killip grade III-IV on admission.

Conclusions: We detected an increased mortality in patients undergoing primary angioplasty compared to fibrinolysis if the location of the first medical contact was > 50 km away from the catheterization laboratory.

P486

In-hospital prognosis and long-term mortality of STEMI before and after a primary PCI reperfusion network. Eleven years experience

C Garcia-Garcia,¹ LL Recasens,² N Ribas,² O Merono,² I Subirana,³ A Fernandez,² A Perez,² F Miranda,² R Elosua³ and J Bruguera²

¹Germans Trias i Pujol University Hospital and Hospital del Mar, Badalona (Barcelona), Spain ²Hospital del Mar, Cardiology Department, Barcelona, Spain ³Hospital del Mar, Municipal Institute for Medical Research (IMIM), Barcelona, Spain

Background and purpose: Acute myocardial infarction (AMI) Code was initiated in Catalonia in June of 2009. The objective of AMI Code was to reach an optimal reperfusion therapy in ST Elevation AMI (STEMI) patients with primary percutaneous coronary intervention (PPCI). The aim of our study is to analyze the results of the AMI Code in in-hospital prognosis and reperfusion therapy of a non-selective population of STEMI patients.

Method: Between January 2002 and December 2013, 1268 STEMI patients were consecutively admitted in the Coronary Care Unit of a University Hospital. Before the establishment of the AMI code (1st June 2009-pre-Code period), PPCI were performed in STEMI patients only in working hours and thrombolytic therapy out of this time. After June 2009 (post-Code period), PPCI were election reperfusion therapy in STEMI patients. In working hours (between 8-20 h), PPCI were done in our hospital and out of this time patients first admitted to our hospital were transferred to another PPCI capable centre near our institution. Depending on the period of admission, patients were classified in two groups: pre-Code (n=670) and post-Code (n=598). We compared clinical characteristics, ischemia time, type of reperfusion therapy and in-hospital mortality in both groups. A two-years follow up is available of all patients.

Results: The AMI Code increased the rate of reperfusion in STEMI patients (89.2% vs 64.4%, p<0.001). In post-Code patients, main cause for not reperfusion were delay in patients consulting (45.8% vs 30.4% in pre-Code) with less contraindication to therapy (0% vs 10.8% in pre-Code), both p<0.001. PPCI were increased in post-Code (98% vs 43.9%, p<0.001). Median time of ischemia (onset pain to reperfusion) were slightly higher after the code (post-Code 186 min, P25-75:130-284 vs 165 min, P27-75:105-235, p<0.001). In-hospital mortality decreased in post-Code period (2.51% vs 7.0%, p<0.001). After multivariate adjustment by comorbidities and reperfusion therapy, OR of in-hospital mortality were inferior in the post-Code patients (OR:0.26, CI95%:0.08-0.83, p=0.025). There were no differences in two-year mortality after the code (post-Code HR:0.83:CI95%:0.55-1.25,p=0.37).

Conclusions: The AMI Code increased the rate of reperfusion therapy in STEMI patients due to an important increase in primary PCI. Instead the major rate of primary PCI, whole ischemia times only increase slightly. In-hospital mortality of STEMI patients were reduced by 76% in post-Code period. Two-year mortality was similar in both groups.

P487

Primary angioplasty in elderly people. Presentation, management and prognosis.

J Navarro Cuartero,¹ MJCP Mguel Corbi Pascual,¹ JGCS Juan Gabriel Cordoba Soriano,¹ MIBS Maria Isabel Barrionuevo Sanchez,¹ GGS Gonzalo Gallego Sanchez,¹ DPM Daniel Prieto Mateos,¹ JJM Jesus Jimenez Mazuecos,¹ CLG Cristina Llanos Guerrero,¹ SCN Sofia Calero Nunez¹ and CRG Cristina Ramirez Guijarro¹

¹Albacete University Hospital, Cardiology, Albacete, Spain

Introduction: elderly population is an important sector of medical attention, and this will be an upward trend in future years. STEACS is a frequent event in this age group.

Methods: Our purpose was to analyze the epidemiological, clinical, management and prognosis of patients (p) over 75 years old undergoing primary angioplasty for STEMI in our center in 2005-2014, by a retrospective record of cases.

Results: 166 p was included, the mean age was 79.9 years and 69% were men. About cardiovascular risk factors, hypertension was the most prevalent (78%), followed by dyslipidemia (34%), diabetes (32%) and former smokers (30%). 9.6% of patients had AF and 6% had previous AMI. In terms of clinical presentation, inferior AMI was the most frequent (51%); 25% of patients were Killip III-IV and the time pain-PCI was <6 hours in 77% of cases. Radial access was chosen in 70% of the total. Single-vessel coronary artery disease was 52% and triple vessel patients in 6%. LAD was the most frequent culprit vessel (44%) followed by the RCA (38%). Final TIMI III flow was achieved in 87% of cases. 45% of patients with multivessel disease underwent to complete revascularization in a second catheterization. BCIAo was used in 4.2% of cases. About complications during admission, 16% of patients developed AF, 15% renal failure and 8% of patients required cardiac surgery during hospitalization. 11% of patients suffered cardiogenic shock, and a 6% of patientes needed oro-traqueal intubation; 12% of the total died. The mean LVEF at discharge was 45%; dual antiplatelet therapy was prescribed in 79% of cases and warfarin in 8% for home treatment. 135 p were followed-up along 46 months mean time; 13% of them suffered AMI; bleeding and stroke events in 11% and 4% respectively. 22% of patients died during follow-up, 4% of cardiac origin, 14% from other sources and 4% of unknown cause. The mean time from discharge until death was 30 months.

Conclusions: STEACS in the elderly population is an event with significant mortality and hospital complications. When patients are discharged from hospital, the prognosis is not good due to high incidence of major cardiovascular events, but in our study the main cause of death is non-cardiac.

P488

Door to balloon time delays in self-presenting ST elevation MI patients

L J Eveson¹ and V Achan¹

¹Frimley Park Hospital, Cardiology, Camberley, United Kingdom

Primary angioplasty is the reperfusion strategy of choice in STEMI patients who present in a timely fashion. Shorter 'door to balloon' (DTB) times are associated with better outcomes. Our District General Hospital is a regional STEMI centre performing approximately 300 primary percutaneous coronary interventions (PPCIs) per year. Patients presenting directly to our PPCI centre are either brought directly to the cath lab by ambulance or self-present to the Emergency Department (ED). We compared DTB times and other differences between these two groups.

Data was collected retrospectively using PRISM, MINAP and patient medical records for patients self-presenting to the ED and those brought directly by ambulance to our centre with a diagnosis of STEMI and undergoing PPCI between 1st January 2010 and 31st December 2013. Patients with cardiogenic shock or brought in following out of hospital cardiac arrest were excluded from length of stay (LOS) and mortality analyses.

1001 patients underwent PPCI for STEMI between 1st January 2010 and 31st of December 2013. 73% (n=737) of patients were direct admissions brought straight to the cath lab via ambulance or helicopter 9% (n=87) of patients self presented to the ED. 74.2% (n=547) of direct admissions were male compared to 89.7% (n=78) of self-presenters. Median age of direct admissions was 65 years and median age of self-presenters was 56. From 2010 to 2013 there has been a 50% reduction in average DTB times for direct admissions, from 72 to 36 minutes, and a 23% reduction in average DTB times for patients self-presenting to the ED, from 109 to 84 minutes. There was no difference in average LOS for self-presenters compared to direct admissions (3 days in both groups). In-hospital mortality for self-presenters and direct admissions was 2.3% and 2.5% respectively.

Self-presenters account for 9% of STEMI patients receiving PPCI at our centre. Self-presenters are younger and more likely to be male. Public health strategies about seeking help for chest pain should target this group. DTB times are longer for self-presenters and DTB time reductions in this group have been less successful over four years. We are analysing factors that determine delays in the ED and transfer to the cath lab. Despite longer DTB times, LOS and hospital mortality amongst self-presenters was not affected. Differences in long-term outcomes between these groups is the subject of further study.

P489

Hospital outcome of acute hyperglycemia in patients with ST-elevation myocardial infarction

T Al-Maimoony¹¹Cairo University, cardiovascular, Cairo, Egypt

Aims: To test whether hyperglycemia detected in patients with acute ST-elevation myocardial infarction (STEMI) is a predictor of in-hospital major adverse cardiovascular events (MACE).

Methods: 81 patients with an acute STEMI were enrolled in this clinical study. The studied patients were classified into 3 groups, group A included patients with a plasma glucose (< 200 mg/dl) and no previous history of diabetes, group B included diabetic patients with hyperglycemia and group C included patients with hyperglycemia and no history of diabetes. The primary end point was the composite of mortality, arrhythmia, recurrent nonfatal MI, or heart failure (MACEs) during the hospital stay.

Results: Compared with the other groups, group C patients had significantly higher plasma levels of cardiac biomarker (Troponin I and CK-MB) and inflammatory marker (TNF and WBCs, $p < 0.01$) while MACEs developed more among groups B and C groups. Seventeen (21.8%) patients suffered MACE (mortality in 6 patients, heart failure in 13, re-infarction in 3, atrial fibrillation in 3 and one patient developed heart block. TNF α level, Troponin I and the left ventricular ejection fraction were the most independent predictor of the MACEs after acute STEMI.

An admission cutoff value of blood glucose level > 230mg/dl cut-off showed sensitivity of 76.5% and specificity of 63.9% as predictor of MACEs.

Conclusion: Hyperglycemia is an important predictor of the outcome in patients hospitalized with acute STEMI. Hyperglycemia is associated with increased levels of inflammatory markers and cardiac biomarker. TNF α concentrations and hyperglycemia correlated with left ventricular ejection fraction.

P490

Risk factor paradox in ST elevated myocardial infarction. A new reality?

N Vale,¹ J Brito,¹ R Teles,¹ R Rodrigues,¹ S Madeira,¹ M Almeida,¹ A Tralhao,¹ M Castro,¹ J Mesquita¹ and M Mendes¹¹Hospital Santa Cruz, Carnaxide, Portugal

Background: Conventional cardiovascular risk factors (RF) are associated with the onset of coronary artery disease and, subsequently, to an increase in mortality. There seems to be, however, a paradox between the number of risk factors and a worse long-term prognosis.

Methods: A single center, prospective registry study, of 514 consecutive patients admitted to our Coronary Unit for ST elevated myocardial infarction (STEMI), for a period of 4 years and 10 months. 78,2% were male, with an average of 63±13. We divided the patients into 2 groups depending on the number of conventional RF (hypertension, dyslipidemia, diabetes, smoking, BMI> 25 and family history of coronary disease): Group A: 0 to 1 RF, n = 124 (24%), mean age 67 ±14 years; Group B: ≥ 2 RF, n= 390 (76%), mean age 61±12 years.

Results: In a median follow-up period of 18.3 months, there were a total of 60 deaths (11.7%). Group A had 17.7% all cause mortality vs 9.7% in group B ($p=0.016$). Although group A, with less conventional risk factors appears to have a higher overall mortality, when we integrate these variables in a multivariate Cox regression model, the only independent predictors of mortality in this population are age (HR 1.07, CI 95% 1.04-1.09, $p<0.001$) and multivessel coronary intervention (HR 3.12, CI 95% 1.73-5.73, $p<0.001$).

Conclusions: In patients with STEMI, a larger number of conventional risk factors was associated with a lower long-term mortality. This data suggests the existence of a paradox of risk factors, a phenomenon which is further explained by age and multi-vessel coronary disease, which are unequivocally independent predictors of mortality.

P491

The obesity enigma in STEMI patients

N Vale,¹ J Brito,¹ R Teles,¹ S Madeira,¹ A Tralhao,¹ M Castro,¹ J Carmo,¹ J Mesquita,¹ M Almeida¹ and M Mendes¹¹Hospital Santa Cruz, Carnaxide, Portugal

Background: As a structural part of the metabolic syndrome, obesity has long been considered a risk factor for coronary disease, and thus for ST elevated myocardial infarction (STEMI). But experience and a few none randomized studies have shown that patients with higher body mass index (BMI), probably due to other factors, tend to paradoxically have a better long-term prognosis. We aimed to analyse and demystify the outcome of our population admitted with STEMI and elevated BMI.

Methods: Single center study of 514 prospectively included STEMI patients admitted to our Coronary Unit,

after primary angioplasty, during a period of 5 years. The primary outcome was all cause mortality. We analysed 335 (65.4%) patients with BMI above 25, and studied their long-term prognosis through Cox regression multivariable analysis.

Results: In a median follow-up period of 549 days, there were a total of 60 deaths (11.7%). In patients with BMI above 25, the mortality rate was 9.3% vs 15.8% in patients with a lower BMI ($p=0.027$). Patients with higher BMI were younger (61.5 ± 12.6 years vs 64.3 ± 13.5 years, $p<0.001$), had more diabetes (23.3% vs 15.3%, $p=0.032$), higher rates of dyslipidemia (48.1% vs 33.3%, $p=0.01$), more hypertension (56.1% vs 45.8%, $p=0.026$) and even tended to smoke more (58.2% vs 49.7%, $p=0.066$). When we integrate obesity in a multivariate Cox regression model, we observe that this variable is not a predictor of mortality, unlike age which is the only independent predictor of this outcome (HR 1.067 CI 95%, 1.044-1.091, $p<0.001$).

Conclusions: Patients with a higher BMI, also have a larger number of conventional risk factors for coronary disease and in apparent contradiction, have a lower mortality rate. Although this seems patent, this might be partially explained by the fact that these patients are younger, and in our population, age remains the only independent predictor of mortality.

(ventricle fibrillation, sustained ventricle tachycardia, atrial fibrillation, second and third degree atrioventricular block) were recorded since the first medical contact. The incidence of arrhythmias in the above mentioned subgroups was statistically compared using chi-squared test. The project was approved by the local Ethics committee and all patients signed the informed consent.

Results: Combination of severe arrhythmias is described in Figure 1. No significant difference in the incidence of arrhythmias was observed (A vs. B+C; $p=0.55$), (A vs. B; $p=0.77$), (A vs. C; $p=0.3$), (B vs. C; $p=0.4$).

Conclusion: In our pilot study group, the occurrence of severe arrhythmias in acute phase of STEMI in patients treated with pPCI was not dependent on the location of STEMI, nor on the involvement of the right ventricle.

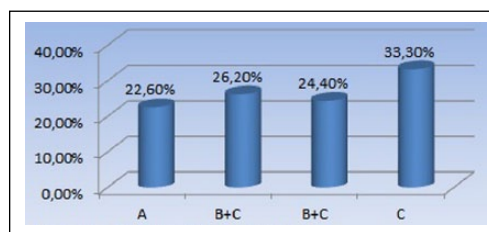


Figure 1.

P492

Primary PCI and incidence of severe arrhythmias in acute phase of STEMI

L Koc,¹ M Mikolaskova,¹ J Kanovsky,¹ T Ondrus,¹ T Novakova,¹ A Pleskova,¹ M Poloczek,¹ R Miklik,¹ J Spinar¹ and P Kala¹

¹University Hospital Brno, Brno, Czech Republic

Introduction: In the era of thrombolysis, the right ventricle involvement in STEMI of inferior wall was an independent risk factor of worse prognosis. In the primary percutaneous coronary intervention (pPCI) era, similar data are missing.

Purpose: To compare the incidence of severe arrhythmias in the first 48 hours of the onset of STEMI, according to its location and involvement of the right ventricle.

Methods and study group: The study group consisted of 196 patients with the first STEMI treated with pPCI. The average age was 62 years (62.2% males). According to the location of STEMI, the study group was divided into 3 subgroups: A - anterior STEMI ($n=93$; 47.5%), B - inferior STEMI without involvement of right ventricle ($n=82$; 41.8%), C - inferior STEMI with involvement of right ventricle ($n=21$; 10.7%). The involvement of right ventricle was defined as 1mm elevation of ST segment in right precordial lead V4 before pPCI. Severe arrhythmias

P493

Current prognosis of elderly patients with STEMI. Do we need to improve our practice? Data from HULAR

M Santas Alvarez,¹ R C Vidal Perez,¹ E Pereira Lopez,¹ J Elices Teja,¹ AJ Perez Perez,¹ R Rios Vazquez,¹ J Bayon Lorenzo,¹ M Freire Tellado,¹ A Testa Fernandez¹ and C Gonzalez-Juanatey¹

¹University Hospital Lucus Augusti, Cardiology, Lugo, Spain

Purpose: There is scarce data about the prognosis of ST elevation myocardial infarction (STEMI) in elderly patients (≥ 75 years old) after discharge. We assessed the prognosis and management of this group of patients not well represented in clinical trials.

Methods: HULA registry is a cohort study of consecutive patients with STEMI diagnosis. For this analysis we included patients ≥ 75 years-old hospitalized from 2010 to 2013 in our cardiology department. Follow-up was done by clinical review or telephone contact and death or CV events were recorded, as well as the cause of death.

Results: 157 patients were included, 63.1% (99p) male sex, age at inclusion 81.8 ± 4.5 years old. We found hypertension 68.2%, diabetes 28%, hyperlipidemia 49.7% active smoker

18.7%, prior coronary artery disease 11.5% (only 6.4% were prior revascularized), COPD 14.8%, chronic kidney disease 12.1%, prior stroke 10.2%, atrial fibrillation 6.4%. The STEMI therapeutic strategy at admission was mainly primary PCI 59.9%, thrombolysis 8.9%, 31.2% were managed conservatively at the diagnosis. At discharge 66 patients (50%) had been revascularized with bare metal stents and 10 (7.5%) with drug eluting stents. We found a 15.9% in-hospital mortality. The median follow up for the discharged patients was 609 days [IQR 156-1243] Aspirin use at discharge was 98.5%, clopidogrel 81.1%, prasugrel 0.8%, dicumarin 11.3%, statins 93.2%, betablockers 84.8%, RAAS Inhibitors 81.8%. We found a 1-year mortality of 17.4%. Multivariate analysis for all cause mortality is shown (table).

Conclusions: The elderly patients showed an important mortality in STEMI during the admission and in the follow up. We didn't find any prognosis influence of the invasive strategy at admission, but diabetes and prior heart failure were predictors for a worse prognosis in the follow up and statin use showed to be protective in our elderly sample

Table 1. Multivariate analysis for death.

	HR	95%-CI	p-value
Age	1.08	1.006–1.163	0.034
Diabetes Mellitus	2.43	1.144–5.169	0.021
Prior Heart Failure	3.19	1.448–7.026	0.004
Statin use	0.30	0.11–0.782	0.014

95% CI- 95% Confidence interval 95%.

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Antiplatelet therapy in acute coronary syndrome. Do we follow the guidelines?

JC Gomez Polo,¹ P Martinez Losas,¹ C Ferrera,¹ L Nombela Franco,¹ G Tirado,¹ B Terol,¹ T Nogales Romo,¹ A Freitas Ferraz,¹ A Fernandez Ortiz¹ and A Viana Tejedor¹

¹Hospital Clinic San Carlos, Madrid, Spain

Purpose: Latest guidelines recommend the use of prasugrel or ticagrelor as first choice treatment, in patients admitted for acute coronary syndrome with ST segment elevation (STEMI). However, different records have shown great under-utilisation rates. Our aim was to analyse the use of antiplatelet therapies, and factors related with their apply in patients with STEMI admitted in an Acute Cardiac Care Unit (CCU) of a tertiary hospital.

Methods: We studied retrospectively a cohort of 284 patients admitted sequentially in a CCU with the diagnosis of STEMI, from January of 2013 to July of 2014. We registered analytical, echocardiographic and clinical

features, performing a 6 months since the cardiovascular myocardial infarction follow-up.

Results: Among the 284 patients, 221 (77,8%) were men, with an average age of 64 years old. 35% were anterior wall located myocardial infarctions. 221 patients (77,8%) received clopidogrel, and only 63 (22,2%) new antiplatelet therapies (36 with prasugrel, 27 with ticagrelor). An uni and multivariate analysis was performed, in order to identify those factors related with a higher probability of prasugrel's or ticagrelor's prescription at discharge. Anterior wall infarction (OR 2,56; CI 95% 1,32-4,93; p=0,005), acute stent thrombosis (OR 22,4; CI 95% 1,79-275 p=0,01) and treatment with high-intensity statins (OR 2,72; CI 95% 1,09-6,79) were related with higher rates. On the other hand, factors that a priori may have an influence, as age, previous myocardial infarction or GRACE and CRUSADE scores, did not show any statistically significant differences.

Conclusions: Despite favorable results obtained in pivotal clinical trials and several studies, the use of prasugrel and ticagrelor still remains in an unjustifiably low rate. Our study is in accordance with this trend, becoming the anterior wall infarction and the acute stent thrombosis two factors related with a higher probability of prescription, unlike the risk scores, which surprisingly did not show any association.

Table 1. Predictors of prescription.

Predictors	Multivariate analysis OR (CI 95%)	P value
Previous AMI	1,84 (0,71–4,76)	0,207
Anterior Wall AMI	2,56 (1,32–4,93)	0,005
Stent thrombosis	22,24 (1,79–275,6)	0,016
Grace score	0,99 (0,98–1,01)	0,124

AMI: Acute myocardial infarction. OR: Odds Ratio. CI: Confidence interval.

P495

Safety and efficacy of angio-seal vs exo-seal in patients undergoing primary percutaneous coronary intervention for ST-elevation myocardial infarction

N Pinilla-Echeverri,¹ I Sanchez Perez,² A Jurado Roman,² F Lozano Ruiz-Poveda,² MT Lopez Lluva,² M Marina Breyse,² J Benitez Peyrat,² J Piqueras Flores² and A Moreno Arciniegas²

¹McMaster University, Department of Medicine, Cardiology Division, Interventional Cardiology Service, Hamilton, Canada ²Hospital General de Ciudad Real, Ciudad Real, Spain

Background: Patients undergoing primary percutaneous coronary intervention (PCI) for ST-elevation myocardial

infarction (STEMI) are at high risk of femoral vascular complications (VC). In spite of the growing use of the radial approach, femoral remains the most common in primary PCI. The use of femoral vascular closure devices (VCDs) has expanded in recent years despite the controversial in previous trials. The objective is to evaluate safety and efficacy, and to compare these VCDs in primary PCI.

Methods: A total of 827 consecutive patients undergoing primary PCI for STEMI via femoral were studied for in-hospital and 6 months out-patient outcomes through a registry from January 2010 to October 2013. The primary end point was the presence of VC defined as a composited of hematoma > 6 cm, recurrent bleeding, pseudoaneurysm, arteriovenous fistula, arterial thrombosis or retroperitoneal bleeding.

Results: 404 (48.8%) patients received Angio-Seal® and 423 (51.2%) Exo-Seal®. 39 (4.7%) patients had a VC; with a similar incidence of events between the 2 VCDs, 18 (4.4%) in Angio-Seal® and 21 (4.9%) in Exo-Seal® (p=0.7). The risk of VC was significantly associated with body mass index (BMI) OR 2.1 (95% CI 0.77-0.86, p=0.01), sheath size OR 1.2 (95% CI 0.12-0.48, p=0.04), presence of chronic kidney disease (CKD) OR 1.5 (95% CI 1.1-1.7, p=0.005) and peripheral arterial disease (PAD) OR 3.2 (95% CI 1.78 -3.1, p=0.03). There was just a trend to present hematoma (6.6% vs. 3.5%; p=0.4) and arteriovenous fistula (3.3% vs. 1.7%; p=0.5) in Exo-Seal®; pseudoaneurysm (5.2% vs. 1.1%; p=0.3) and recurrent bleeding (2.2% vs 0%; p=0.5) in Angio-Seal®.

Conclusions: VC after femoral approach in patients undergoing primary PCI for STEMI remain a high incidence despite the routine use of VCDs in our hospital. These VC were significantly associated with individual characteristics (BMI, CKD, PAD) and procedure-related (sheath size). The safety and efficacy of both VCDs is similar after primary PCI in patients with STEMI.

Non ST-elevation myocardial infarction - ACS

P496

Acute coronary syndromes in octogenarians. One year mortality predictors

J M Amado,¹ D Bento,¹ D Silva,¹ J Guedes,¹ N Marques,¹ W Santos,¹ P Gago,¹ J Mimoso¹ and I Jesus¹

¹Faro Hospital E.P.E., Faro, Portugal

Introduction: The coronary disease is one of leading causes of death around the world. Few data is available about follow-up among the octogenarian population with acute coronary syndromes (ACS). Our goal was to

determine the one year mortality predictors in patients older than 80 years, admitted in our department with acute coronary syndromes

Methods: A retrospective cohort was analyzed, involving patients admitted with ACS from 1 of October of 2010 and 30 of October of 2014. Their basal characteristics, admission data and therapeutic strategies were evaluated. A telephone follow-up was performed. An univariate and multivariate statistical analysis for 1 year mortality was performed, using SPSS 20.0.

Results: On 2032 patients with ACS, 416 had \geq 80 years, 215 (51.7%) were male, with a mean age of 84,2 \pm 4,1. On this group 36,3% were admitted with STEMI, 53,1% with NonSTEMI, 2,6% with unstable angina and 7,9% with undetermined location acute myocardial infarction. The majority (79,6%) had a class I killip-kimball (KK1). 29,6% had a prior ACS diagnosis.

In our population, 202 patients (48,6%) performed invasive coronariography, and of the 158 (38%) that underwent angioplasty, 17,3% had multivessel disease and 12 (2,9%) were referred to revascularization surgery .

Most of them (61,5%) had a Left Ventricle ejection fraction higher than 50%. In-hospital mortality was 9,1%. And one year mortality was 21,2%.

During the follow-up mortality was associated with: female gender (p<0,05), STEMI diagnosis (p=0,02), previous history of heart failure (p=0,02) and stroke (p=0,02), kidney failure (p=0,00), KK III/IV on admission (p=0,00), LVEF <50% (p=0,00) and to the non realization of coronariography (p=0,00).

STEMI diagnosis, stroke history, kidney failure, KK class 3/4 on admission and the non realization of coronariography were found as independent mortality predictors.

Conclusions: In our center the one year mortality rate, among patients with ACS and more than 80 years old, was 21,2%.

The principal predictors of one year mortality in our population were the STEMI diagnosis, previous stroke, kidney failure, KK III/IV on admission, LVEF <50% and not performing coronariography during admission.

P497

Time to presentation and 12-month health outcomes in patients presenting to the emergency department with symptoms of possible acute coronary syndrome.

L Cullen,¹ J H Greenslade,¹ M Than,² C Pemberton,³ S Aldous,² J Pickering,³ R Foreman,⁴ B Crosling⁴ and W Parsonage¹

¹Royal Brisbane & Women's Hospital, Brisbane, Australia ²Christchurch Hospital, Christchurch, New Zealand ³Christchurch Heart Institute, University of Otago, Christchurch, New Zealand ⁴National Heart Foundation of Australia, Brisbane, Australia

Purpose: To examine whether the time taken to present to the emergency department (ED) with symptoms of possible acute coronary syndrome (ACS) impacts on one year outcomes.

Methods: We utilised prospectively collected data from adult patients presenting with suspected ACS to two EDs in Australia and New Zealand. The composite primary endpoint included death, acute myocardial infarction (AMI), unstable angina pectoris (UAP) treated with revascularisation, or readmission with heart failure occurring after discharge but within 12 months after the index presentation. Research staff recorded time of symptom onset during a structured patient interview. Time of presentation was obtained from the ED databases. Cox proportional hazards regression was conducted to assess the relationship between time to presentation and time to the primary endpoint after controlling for age, ethnicity, prior angina and prior CABG.

Results: ACS was diagnosed at presentation in 420 (16.8%) of 2515 patients recruited. After adjustment for age, ethnicity, prior angina and prior CABG, middle (2-6h) and late presenters (>6h post symptom onset) developed the primary endpoint at a rate 1.23 (95% confidence interval: 0.81-1.88) and 1.69 (95% confidence interval: 1.15-2.48) times higher than early presenters. Patients with known risk factors and cardiovascular disease were more likely to present late to the ED.

Conclusions: There is an independent association between time to presentation and one-year cardiac outcomes following initial chest pain assessment for ED patients with possible cardiac chest pain in the Australian and New Zealand setting. Effective public health campaigns and other measures that facilitate early presentation with symptoms suggestive of ACS are justified and may improve prognosis.

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The development and validation of prediction model for acute coronary syndrome

R Alrezk,¹ M Al Rezk,² M Assaf,³ CH Tseng,⁴ F Al Rezk⁵ and N Weintraub⁶

¹University of California Los Angeles, Geriatrics Medicine/Biomathematics, Los Angeles, United States of America ²Greater Los Angeles VA Hospital, Geriatrics, Los Angeles, United States of America ³Damascus University, Damascus, Syrian Arab Republic ⁴University of California Los Angeles, Internal Medicine, Los Angeles, United States of America ⁵JW Goethe University, Frankfurt am Main, Germany ⁶University of California Los Angeles, Geriatrics Medicine, Los Angeles, United States of America

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Purpose: We aim to develop a prediction model for Acute Coronary Syndrome (ACS) in patients presenting to the Emergency Room with chief complaint of chest pain. Up to 25 % of non-traumatic emergency room visits are related to chest pain diagnoses that can be fatal, such as ACS. If we could predict with accuracy the cases that have high probability of ACS before any laboratory testing, it would allow us to facilitate the process and stratify patients early based on the likelihood of having ACS. Also, it would allow for the initiation of early treatment and intervention.

Methods: We prospectively collected data from patients presenting to the emergency room with chief complaint of chest pain. We collected relevant history related to the chest pain including location, quality, features, intensity on a scale (0-10), as well as patient data including ethnicity, age, associated symptoms, translator use, in addition to laboratory data including current and peak troponin levels, EKG changes and a personal history of ACS. We followed the patients until discharge and recorded the final diagnosis.

Analysis started with univariate analysis, then we proceeded to multivariate logistic regression analysis using stepwise backward selection method using the criteria of eliminating the least significant variable.

Results: We identified 4 significant variables in the final model in the Multivariate Logistic Regression Analysis. The final ACS prediction model evaluation has C-statistic: 0.896, sensitivity: 75.7%, specificity: 94% and accuracy of 85%. The model was validated using cross-validations on 5 different iterations of the original dataset.

Conclusion: The development of this predictive model shows promising results and has good discrimination and calibration. The early identification of patients with high probability of ACS has useful clinical implications for detecting and stratifying ACS cases early, which can lead to improved outcomes.

Table 1. Probability of ACS Prediction Model.

Parameter	Estimate	SE	Adjusted OR	95% CI	P Value
Intercept	-2.39	0.68	-	-	0.0005
No EKG Changes	-2.14	0.19	0.117	0.007-0.168	0.0001
Prior MI	1.05	0.33	2.867	1.498-5.597	0.0016
Diaphoresis	0.97	0.35	2.630	1.313-5.224	0.0058
Age	0.02	0.01	1.023	1.001-1.046	0.0469

SE, standard error; OR, odds ratio; CI, confidence interval.

P499

Non-st-elevation acute coronary syndrome in octogenarians: observations from a 30 year-registry

M Rodrigues Neto,¹ A Correia,¹ R Rodrigues,¹ M Gomes Serrao,¹ N Santos,¹ A Pereira,¹ G Caires,¹ A Alves,¹ A Drumond Freitas¹ and D Pereira¹

¹Hospital Dr. Nélio Mendonça, Cardiology, Funchal, Portugal

Background: There is a systematic growth in the number of octogenarian patients diagnosed with Non-ST-Elevation Acute Coronary Syndrome (NST-ACS). They constitute a clinical challenge, despite all the major advances in the NST-ACS management.

Purpose: We aimed to evaluate the changes in clinical profile and treatment of octogenarians patients in the last three decades and assess their in-hospital outcome.

Methods: Retrospective analysis of prospective collected data of 235 patients with ≥ 80 years admitted for NST-ACS in a coronary care unit of a tertiary hospital, in distinct periods over the last three decades. We divided the patients in three groups: patients admitted between October 1989-September 1993 (group A: n=51, 21.7%; 45.1% men); October 1999-September 2003 (group B: n=86, 36.6%; 32.6% men) and October 2009-September 2013 (group C: n=98, 41.7%; 55.1% men). We compared them in relation to baseline characteristics, therapeutic procedures and in-hospital prognosis.

Results: Regarding baseline characteristics there were no differences between groups in relation to gender, age (A=83 Iq(3) vs B=83 Iq(4) vs C=84 Iq(4); p=ns) and previous history of diabetes mellitus or myocardial infarction. Compared to groups B and C, group A presented less previous history of dyslipidemia (A=15.7% vs B=44.2% vs C=37.8%; p<0.03) and arterial hypertension (A=60.8% vs B=64.0% vs C=82.7%; p<0.05) and more history of angina (A=76.5% vs B=33.7% vs C=38.8%; p<0.01) and smoking habits (A=23.5% vs B=4.7% vs C=4.1%; p<0.01). At admission, there were no differences in Killip-Kimball class [Killip ≥ 2 : (A=58.3.0% vs B=53.8% vs C=48.4%; p=ns)]. In relation to the treatment, group C was more frequently submitted to invasive stratification (A=3.6% vs B=19.6% vs C=76.8%; p<0.01) and angioplasty. Also, was more frequently medicated with beta-blockers (A=17.6% vs B=20.9% vs 34.7%; p<0.04), diuretics (A=47.1% vs B=44.2% vs C=61.2%; p=0.05) and ACEi (A=19.6% vs B=0.0% vs C=62.2%; p<0.01) and was more submitted to invasive ventilation (A=0.0% vs B=0.0% vs 14.3%; p<0.01). Group A presented more post-infarction angina (A=9.8% vs B=7.0% vs C=1.0%; p<0.05). There was no significant difference in in-hospital mortality between the three groups (A=17.6% vs B= 12.8% vs C=12.2%, p=ns).

Conclusion: The number of octogenarian patients keeps growing, although, nowadays, they present with a different clinical profile. Despite all the improvements in NST-ACS management over the last decades, this was not accompanied by a decline in in-hospital mortality, in our study.

P500

Bleeding risk of fondaparinux vs enoxaparin in non ST-elevation acute coronary syndromes

A Fageda,¹ P Loma Osorio,¹ M Nunez,¹ E Badosa,¹ P Fluvia,¹ J Pascual,¹ D Bosch,¹ G Vazquez,¹ R Brugada¹ and J Aboal¹

¹University Hospital de Girona Dr. Josep Trueta, Cardiology, Girona, Spain

Introduction and Objectives: OASIS 5 trial (The Fifth Organization to Assess Strategies in Acute Ischemic Syndromes), made fondaparinux the anticoagulant of choice in Non ST-Segment Elevation Acute Coronary Syndromes (NSTEACS) due to his safety. Our purpose was to identify the impact of his introduction in the incidence of bleeding.

Methods: We analysed the incidence of bleeding in all consecutive patients admitted to the hospital with the diagnosis of NSTEACS from 2007 to 2015, divided into two groups depending on the anticoagulant therapy used (fondaparinux vs. enoxaparin).

Results: We included 1581 patients, 962 in the enoxaparin-group and 619 in the fondaparinux-group. Although patients treated with fondaparinux were older (66 vs 63, p <0.001), had more previous renal failure (10.7% vs 3.6%, p <0.001), had higher CRUSADE score (25.9 vs 16, p <0.001) and less use of glycoprotein IIb / IIIa antagonists (1.5% vs 33%, p <0.001) compared to enoxaparin group, a significant decrease in the number of bleeding events (2.1% vs 4.6%, p=0.01, relative risk RR 2.1, CI 1.1-4.0) was observed. In the multivariate analysis, female sex, older age, higher CRUSADE score, use of glycoprotein IIb/IIIa antagonists and use of enoxaparin were independent variables associated with a major bleeding risk.

Conclusions: In routine clinical care of patients with NSTEACS, fondaparinux was associated with significant lower risk of bleeding events. than enoxaparin.

P501

Mortality reduction with use of oral b-blockers in patients with early coronary intervention

A Soeiro,¹ PGM Barros,² SA Simoes,² MY Okada,² EAC Roque,³ FCM Pedroti,³ TCAT Leal,¹ AS Bossa,¹ CV Serrano Jr¹ and MT Oliveira Jr¹

¹Emergency Unit - Heart Institute (InCor) - University of Sao Paulo Faculty of Medicine, Sao Paulo, Brazil ²Hospital Total Cor, Sao Paulo, Brazil ³Hospital Metropolitano, Unidade Coronariana, Serra, Brazil

Purpose: To analyse the outcomes of patients with acute coronary syndromes that started oral B-blockers during the first 24 hours (group I) versus patients without oral B-blockers at this time (group II – N=341).

Methods: This was a observational, prospective and multicentric study with 2,553 patients (2,212 in the group I and 341 in the group II) with acute coronary syndromes included between May 2,010 and May 2,014. The following data were obtained: age, sex, diabetes, systemic arterial hypertension, smoke, dyslipidemia, familial history of precoces coronary artery disease, previous coronary artery disease (percutaneous coronary intervention or coronary artery bypass graft), hemoglobin, creatinine, higher troponin, left ventricle ejection fraction, medication used at hospital and coronary definitive treatment. The primary endpoint was all cause of in-hospital death. The secondary end point was combined events (death, non-fatal unstable angina or myocardial infarction, Killip IV, bleeding and stroke). Comparison between groups was made by Anova and Q-square. Multivariate analysis were determined by logistic regression and was considered significant when $p < 0.05$.

Results: Were observed significant differences in prevalence of use of angiotensin converting enzyme inhibitor (87.27% x 51.32%, $p < 0.0001$), creatinine (1.47 mg/dL x 2.09 mg/dL, $p = 0.035$), ejection fraction (49.77% x 43.14%, $p < 0.0001$), smoke (30.41% x 38.71%, $p = 0.001$), male sex (59.02% x 69.77%, $p = 0.03$) and previous coronary artery bypass graft (68.1% x 56.3%, $p = 0.006$), respectively between groups I and II. Significant difference was observed between groups I and II in deaths (2.67% x 9.09%, OR=0.35, $p = 0.02$).

Conclusions: In patients with acute coronary syndromes and early intervention the use of oral B-blockers during the first 24 hours showed smallest in-hospital deaths, without increase in cardiogenic shock.

P502

Acute coronary syndromes in Latin America: a comparison between public versus private health services

A Soeiro,¹ PGM Barros,² SA Simoes,² MY Okada,² EAC Roque,³ FCM Pedroti,³ AS Bossa,¹ TCAT Leal,¹ CV Serrano Jr¹ and MT Oliveira Jr¹

¹Emergency Unit - Heart Institute (InCor) - University of Sao Paulo Faculty of Medicine, Sao Paulo, Brazil ²Hospital Total Cor, Sao Paulo, Brazil ³Hospital Metropolitan, Unidade Coronariana, Serra, Brazil

Purpose: To analyze the demographic data and outcomes of patients with acute coronary syndromes at a public hospital (group I) versus a private hospital (group II – N=341) in Brazil.

Methods: This was a observational, prospective and multicentric study with 2,553 patients (1,032 in the group I and 1,521 in the group II) with acute coronary syndromes included between May 2,010 and May 2,014. The following data were obtained: age, sex, diabetes, systemic arterial hypertension, smoke, dyslipidemia, familial history of precoces coronary artery disease, previous coronary artery disease (percutaneous coronary intervention or coronary artery bypass graft), hemoglobin, creatinine, higher troponin, left ventricle ejection fraction, medication used at hospital, final diagnosis, electrocardiogram and coronary definitive treatment. The primary endpoint was all cause of in-hospital death. The secondary end point was combined events (death, non-fatal unstable angina or myocardial infarction, Killip IV, bleeding and stroke). Comparison between groups was made by Anova and Q-square. Multivariate analysis were determined by logistic regression and was considered significant when $p < 0.05$.

Results: Were observed significant differences in prevalence of previous percutaneous coronary intervention (26.1% x 15.5%, $p < 0.0001$), previous coronary artery bypass graft (17.2% x 10.8%, $p < 0.0001$), previous acute myocardial infarction (38.4% x 29.2%, $p < 0.0001$), T-wave inversion (11.3% x 7.8%, $p = 0.003$), creatinine (1.78 mg/dL x 1.25 mg/dL, $p = 0.01$) and left ventricle ejection fraction (44.03% x 51.66%, $p < 0.001$), respectively between groups I and II. About 35.1% and 45.7% of patients were submitted to coronary percutaneous intervention and 19.1% x 19.0% to coronary artery bypass graft, respectively between groups I and II. Significant difference was observed between groups I and II in deaths (5.7% x 2.0%, OR=8.12, $p = 0.02$), cardiogenic shock (6.9% x 2.5%, OR=24.63, $p < 0.0001$), bleedings (7.4% x 1.4%, OR=3.35, $p = 0.047$) and combined events (13.6% x 5.8%, OR=4.55, $p < 0.0001$).

Conclusions: Significant differences were observed between public and private hospital services in Brazil related to deaths and combined events. These findings could be explained to difficult of medical access in public services and the higher severity of patients in public services too.

Valvular heart disease

P503

Referral to aortic valve replacement surgery: characteristics of the population and 1 year follow-up results

JP Moura Guedes,¹ J Amado,¹ D Carvalho,¹ D Bento,¹ J Chin,¹ N Marques,¹ W Santos,¹ J Mimoso,¹ V Brandao¹ and I De Jesus¹

¹Faro Hospital, Cardiology, Faro, Portugal

Introduction and Objectives: Aortic valve disease (AVD) is one of the most frequent indications for cardiac surgery (CS). The purpose of this study was to characterize patients referenced by our center to another hospital with cardiac surgery facility, to aortic valve replacement surgery (AVRS) and to determine the prognosis, through the rate of mortality and hospitalization in the 1st year after CS.

Methods: A retrospective, descriptive and correlational study was conducted encompassing all patients referred to AVRS in a Cardiology Service from 1st January 2008 to 31st October 2013. Baseline characteristics of the patients were evaluated and a follow up in the medium term 12 months was carried out by telephone contact made by a cardiologist. Univariate and multivariate analysis of hospitalizations for cardiovascular causes and cardiovascular mortality at 1 year after CS were performed. Statistical analysis was performed using SPSS 20.0.

Results: Our center referenced 301 patients to AVRS between 1st January 2008 and 31st October 2013, with an average age of 69.7 ± 11.3 years. Of these, 206 (68%) were male, 183 patients were referred (60.8%) to isolated AVD, 84 (27.9%) for AVD and coronary heart disease and 34 (11.3%) for mitral and aortic valve disease. Euroscore had an average of 7.3 ± 5.8 and a systolic left ventricle ejection fraction (LVEF) of $65.2 \pm 13.1\%$.

Hospitalization rate for cardiovascular causes in the 1st year after CS was 15.9% and was associated with increased age ($p < 0.01$) and the need for combined surgery ($p < 0.01$). No association was found between hospitalization rate and the EuroSCORE, LVEF or cardiovascular risk factors. Increased age and advanced stages of chronic kidney disease (CKD) ($eGFR < 30 \text{ ml/min/1.73m}^2$) were independent predictors of hospital admission in the 1st year after CS.

The cardiovascular mortality rate in the first year after CS was 7% and was associated with increasing age ($p < 0.01$), higher EuroSCORE ($p < 0.01$) and combined surgery ($p < 0.01$). No independent predictors of mortality were identified.

Conclusion: 1. Patients referred by our center to AVRS had an hospital admission rate in the 1st year after AVRS of 15.9%. This was associated with increased age and with performing combined surgery.

2. Increasing age and advanced stages of CKD were identified as independent predictors of hospitalization in the 1st year after AVRS.
3. Mortality at 1 year after AVRS was 7%. This was associated with increasing age, higher EuroSCORE and the need for combined coronary.
4. Independent predictors of cardiovascular mortality at 1 year after AVRS were not identified.

P504

Does valvular commitment determinates worst prognosis in device endocarditis?

A Fernandes,¹ M Cassandra,¹ J Nascimento,¹ MC Cachulo,¹ M Costa¹ and L Goncalves¹

¹Centro Hospitalar Coimbra, EPE, Coimbra, Portugal

Cardiac device infections (CIED) are a rising entity and a cause of important morbidity and mortality. The prognosis of patients (P) with concomitant valvular commitment is unknown.

Objective: To evaluate if valvular commitment in CIED causes different intra-hospital and follow-up (32 ± 22 months) prognosis.

Methods: Retrospective study with 47 P admitted with CIED 01/2008 and 09/2014. Nineteen P were excluded because no echocardiogram was found. Patients were divided in two groups: group A (GA) with valvular commitment (8P, 21,6%) and group B (GB) without valvular commitment (29D, 78,4%).

Results: The global infection rate was 1,48% (pacemakers 1,21%, CDI/CRT 5,40%).

There were no differences between groups in age (GA 62 ± 25 years; GB: 63 ± 15 years, $p = 0,779$) and male gender (75% vs 79,3%, $p = 0,100$).

CIED were mainly in pacemakers (GA and GB - 75% vs 72,4%, $p = 0,100$), late (50% vs 69%, $p = 0,413$), related with a first implantation (75% vs 62,1%, $p = 0,685$) and with re-infection in 25% vs 45% ($p = 0,431$).

Several risk factors were identified in both groups without difference between them: immunosuppression 25% vs 0%, $p = 0,042$, chronic renal disease 12,5% vs 10,3%, $p = 0,864$, left ventricle dysfunction 25% vs 17,2%, $p = 0,631$ and previous anticoagulation 12,5% vs 3,4%, $p = 0,390$.

Patients from GA went to the doctor sooner (12 ± 6 vs 25 ± 41 days, $p = 0,049$) and after an embolic event (25% vs 0%, $p < 0,042$).

Blood cultures were positive in 87,5% from GA and 58,6% P from GB ($p = 0,216$), without difference in the microorganism identified between groups.

Electrocatheter vegetations were more frequent (87,5% vs 24,1%, $p = 0,002$) and bigger ($11 \pm 12 \text{ mm}$ vs $2 \pm 8 \text{ mm}$, $p = 0,030$) in GA patients,

Device extraction was performed in 87,5% of P from GA and 79,3% from GB ($p = 0,677$), preferably using surgical extraction ($p = 0,036$).

Intra-hospital complications were similar in both groups (37,5% vs 31%, $p = 0,791$), with embolism more relevant in GA (25% vs 0%, $p < 0,042$).

There were no differences between groups in in-hospital mortality (12,5% vs 6,9%, $p=0,530$) and mortality during follow up (37,5% vs 20,7%, $p=0,394$).

Conclusions: Although with a higher number of embolic events P from GA didn't have a worst prognosis. Globally patients with CIED have a bad prognosis with death in at least a third during three year follow-up.

P505

Percutaneous Mitral Valvuloplasty With Balt Single Balloon. Long-term Follow-up Of 25 Years.

I P Borges,¹ ECS Peixoto,² RTS Peixoto,³ RTS Peixoto,⁴ AAB Aragao⁵ and VF Marcolla¹

¹Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Fluminense Federal University, Rio de Janeiro, Brazil ³Policia Militar do Rio de Janeiro, Rio de Janeiro, Brazil ⁴Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil ⁵State University of Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

Objective: To evaluate the long-term follow-up (FU) of mitral balloon valvuloplasty (MBV) with Balt single balloon (BSB) technique and to determine independent predictors of survival and event-free survival (EFS).

Method: From 1987 to 12-31-2013, 526 procedures of MBV were performed, 404 (77.1%) with BSB. There were 256 procedures with long-term FU. Balloon diameter: 25 mm in 5 procedures, 30 mm in 251; mean dilatation area: 7.02 ± 0.30 cm². FU was 54.6 ± 32.8 (1 to 174) months. Multivariate Cox analysis to determine IPS and EFS.

Results: Mean age: 38.0 ± 12.6 (13 to 83) years, 222 (86.7%) female gender, 215 (84.0%) sinus rhythm, echo score (ES) 7.2 ± 1.5 (4 to 14) points and echo mitral valve area (MVA) pre-MBV 0.93 ± 0.21 cm². Mean pre and post-MVA (Gorlin): 0.90 ± 0.20 and 2.02 ± 0.37 cm², respectively ($p < 0.001$). Success (MVA ≥ 1.5 cm²): 241 (94.1%) procedures. Mean pulmonary artery pressure pre and post-MBV: 27 ± 10 and 20 ± 7 mmHg, respectively. Three (1.2%) patients began the FU with severe mitral regurgitation (SMR). At the end of FU 119 (46.5%) patients were in NYHA functional class (FC) I; 70 (27.3%) in FC II; 53 (20.7%) in FC III; 3 (1.2%) in FC IV; 11 (4.3%) deaths; 17 (8.2%) patients with SMR; 20 (4.7%) were submitted to a new MBV; 27 (10.5%) to mitral valve surgery and 70 (26.3%) without any medicine. Independent predictors of survival were: ES ≤ 8 points ($p < 0.001$, HR 0.116, 95% IC 0.035-0.384), age ≤ 50 years old ($p = 0.011$, HR 0.203, 95% IC 0.059-0.693) and absence of mitral valve surgery in the FU ($p = 0.004$, HR 0.170, 95% IC 0.050-0.571). Independents of EFS were: absence of prior commissurotomy ($p < 0.002$, HR 0.318, 95% IC 0.151-0.667), female gender ($p = 0.036$, HR 0.466, 95% IC

0.229-0.951) and MVA post-MBV ≥ 1.50 cm² ($p < 0.001$, HR 0.466, 95% IC 4.884-28.457).

Conclusions: Success in 94% of procedures. At the end of follow-up (25 years) only 4,3% of mortality. The independent predictors of survival were: ES ≤ 8 points, age ≤ 50 years old and absence of mitral valve surgery in the FU. Independent predictors of EFS were: absence of prior commissurotomy, female gender and MVA post-MBV ≥ 1.50 cm².

P506

25 years follow-up of Percutaneous Mitral Valvuloplasty With Inoue versus Balt Single Balloon in mitral stenosis.

I P Borges,¹ ECS Peixoto,² RTS Peixoto,³ RTS Peixoto,⁴ AAB Aragao⁵ and VF Marcolla⁵

¹Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Fluminense Federal University, Rio de Janeiro, Brazil ³Policia Militar do Rio de Janeiro, Rio de Janeiro, Brazil ⁴Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil ⁵State University of Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

Objective: This study aimed to demonstrate that mitral balloon valvuloplasty (MBV) with the Balt single balloon (BSB) has similar outcome and long-term follow-up (FU) than MBV performed with the Inoue worldwide accepted technique.

Methods: From 1987 to 2013 a total of 526 procedures were performed, being 312 with a FU, 56 (17,9%) with Inoue balloon (IB) and 256 (82,1%) with BSB. The mean FU in IB group was 33 ± 27 (2 to 118) and 55 ± 33 (1 to 198) months, $p < 0.0001$. Univariate analysis (UA) and multivariate Cox analysis (MVA) were utilized to determine independent predict variables of survival and event free survival (EFS) in both techniques groups. The major events (ME) were death, cardiac surgery and new MBV.

Results: In IB and BSB groups there were, respectively: female 42 (75.0%) and 222 (86.7%); mean age 37.3 ± 10.0 (19 to 63) and 38.0 ± 12.6 (13 to 83) years, $p = 0.7138$; sinus rhythm 51 (91.1%) and 215 (84.0%), $p = 0.1754$; echo score (ES) 7.6 ± 1.3 (5 to 10) and 7.2 ± 1.5 (4 to 14) points, $p = 0.0528$; echo mitral valve area (MVA) pre-MBV 0.96 ± 0.18 and 0.93 ± 0.21 cm², $p = 0.2265$; post-MBV mean MVA (Gorlin) were 2.00 ± 0.52 and 2.02 ± 0.37 cm², $p = 0.9554$; MBV dilatation area $6,09 \pm 0,27$ and $7,02 \pm 0,30$, $p < 0,0001$. At the end of the FU, there were in IB and BSB groups, respectively: echo MVA 1.71 ± 0.41 and 1.54 ± 0.51 cm², $p = 0.0552$; new severe mitral regurgitation in 5 (8.9%) and 17 (6.6%) patients, $p = 0.5633$; new MBV in 1 (1.8%) and 13 (5.1%), $p = 0.4779$; mitral valve surgery in 3 (5.4%) and 27 (10.4%), $p = 0.3456$; deaths 2 (3.6%) and 11 (4.3%),

$p=1.000$; cardiac deaths 1 (1.8%) and 9 (3.5%), $p=1.000$; ME 5 (8.9%) and 46 (18.0%), $p=0.1449$. In UA and MCA the BSB or IB technique do not predict survival or EFS. The independent risk factors to survival (MCA with 2 models with 5 and 6 variables) were: age <50 years ($p=0.016$, HR=0.233, 95% IC 0.071- 0.764), ES ≤ 8 ($p<0.001$, HR=0.105, 95% IC 0.34 - 0.327), MBV dilatation area ($p<0.001$, HR 16.838, 95% IC 3.353 - 84.580) and no mitral valve surgery in the FU ($p=0.001$, HR0.152, 95% IC 0.050 - 0.459). Independent risk factors to EFS: no prior commissurotomy ($p=0.012$, HR=0.390, 95% IC 0.187 - 0.813) and post-MBV MVA ≥ 1.50 cm² ($p=0.001$, HR=7.969, 95% IC 3.413-18.608).

Conclusion: MBV with BSB and IB were equally efficient, there were similar survival and EFS in the FU. Independent predictors of survival were: age <50 years, ES ≤ 8 points, MBV dilatation area > 7 mm² and no mitral valve surgery in the FU. Independent risk factors of EFS were no prior commissurotomy and post-MBV MVA ≥ 1.50 cm²

P507

Echocardiographic Score influence, Risk Factors For Death And Major Events in 25 Years Follow-up Of Percutaneous Mitral Balloon Valvuloplasty

I P Borges,¹ ECS Peixoto,² RTS Peixoto,³ RTS Peixoto,⁴ AAB Aragao⁵ and VF Marcolla¹

¹Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Fluminense Federal University, Rio de Janeiro, Brazil ³Polícia Militar do Rio de Janeiro, Rio de Janeiro, Brazil ⁴Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil ⁵State University of Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

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

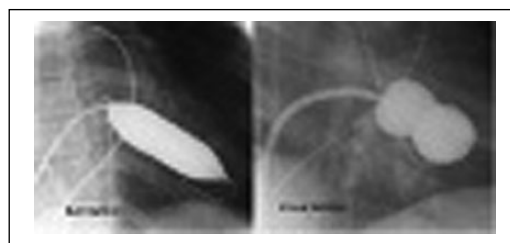
Objective: To identify the independent predictors of death and combined events (death, new mitral balloon valvotomy, or mitral valve surgery) in long-term follow-up of patients undergoing PMBV.

Methods: From 1987 to 2013 a total of 312 patients were followed-up 54.0 \pm 31.0 (1 to 126) months. The techniques were the single-balloon (84.4%), Inoue-balloon (13.8%), and double-balloon techniques (1.7%). The total group was divided in two: echocardiographic score >8 and ≤ 8 points groups. Multivariate Cox regression analysis were performed to identify independent risk factors of long-term survival and event free survival.

Results: The mean age were 38.0 \pm 12.6 years old (range, 13 to 83). Before the procedure, 84.42% patients had echo score ≤ 8 , and 15.57% score > 8 . Females comprised 85%, and 84% patients were in sinus rhythm. During follow-up, survival of the total group was 95.5%, echo score group

≤ 8 was 98.0% and echo score > 8 was 82.2% ($p<0.0001$), whereas combined event-free survival was 83.4%, 86.1%, and 68.9%, respectively ($p = 8$ and the presence of severe mitral valve regurgitation during the procedure. The predictors of combined events were a previous history of mitral valvular commissurotomy, atrial fibrillation, the presence of severe mitral valve regurgitation during the procedure and post procedure mitral valve area < 1.5 m².

Conclusion: PMBV is an effective procedure. Survival was high, even higher in the group with lower echocardiographic scores. Over 2/3 of the patients were event-free at the end of follow-up. Independent predictors of survival were pre procedure echo score ≤ 8 and the absence of severe mitral valve regurgitation during the procedure.



P508

A review of aortic stenosis: aetiology, patho-physiology and management strategies.

USMAN Saeed¹

¹Galway University Hospital, Cardiology, Galway, Ireland

Background: Aortic Stenosis is one of the most common valve diseases in the western world. Current studies show that the exact aetiology of AS is unknown but some studies support the possibility of an ACTIVE inflammatory process with some similarities of risk factors to atherosclerosis.

Methodology: Comprehensive literature search from the main database sources PUBMED, SCIENCE DIRECT, OXFORD JOURNALS and ELSEVIER. Required data was extracted from multiple articles and standard guidelines to achieve the objectives.

Results: Exact aetiology of AS is unknown but few risk factor modifications can slow down the disease progression. Once its developed, no absolute medical treatment can stop the disease progression. Critical assessment of diffuse pathology of calcium phosphate DEPOSITION on AV leaflets is one of the major causes of AS in elderly patients and considered as chronically progressive, "degenerative disease".

Clinical significance of AS is directly proportional to the age. Approx 2-7% of patients aged >65 years had calcified AS with

gradient >25mmHg and sclerosis in approx 25% of group population. Bicuspid AV was found in 3% of patients presented in their 70-80's and tricuspid in 48-57% of octogenarians group. 53% of general population aged 75-86 years who were apparently asymptomatic had some degree of AV disease. Mortality risk in asymptomatic patients with severe AS was <1% but it increased significantly after developing symptoms.

No medical treatment can stop the natural progression of disease. "Wait-and-see" approach is recommended by the guidelines for asymptomatic patients. Surgical AVR is the only appropriate management strategy in symptomatic patients and is safe with survival rate of 60-70% and operative mortality of 10-15% in patients with LV systolic dysfunction. TAVI is the latest and an expensive procedure which is proved to be the best OPTION for high surgical risk and inoperable patients.

Conclusion: Early diagnosis and an appropriate management is one of the most challenging tasks in AS patients, as it can be life threatening if left untreated. There is no absolute medical treatment for AS but it may have limited role in its prevention. Established AS cannot be reversed with medical treatment. Surgical AVR and TAVI remain only viable interventions for symptomatic AS, a GOLD standard and high-risk patients respectively.

P509

Risk factors of decompensation of heart failure in patients undergoing mitral valve replacement

BG Hojakuliyev,¹ B Orazaliyeva¹ and MB Muhammedov²

¹Turkmen State Medical University, Ashgabat, Turkmenistan ²Mary Regional Multi-field Hospital, Myocardial infarction, Mary, Turkmenistan

Purpose of study: To examine the impact of risk factors on the remodeling process and systolic function of the left ventricle (LV) in patients after mitral valve replacement (MVR)

Information and methods: 125 patients of 28-63 years were examined after MVR. 76 of them were women, 49 were men. The patients were divided into 4 groups. Group 1 comprised 31 patients with ischemic heart disease (IHD), where Group 2 included 29 patients without IHD. Group 3 comprised 33 patients with high blood pressure (av. blood pressure -150,8 ± 4,1), Group comprised 32 patients with normal blood pressure (av. -114,0 ± 3,3). Comparative analysis was performed between the patients of Groups 1, 2, 3 and 4.

Results: In Group 1, there had been an increase in the size of LV in: end diastolic volume (EDV) - 19,5%, end systolic

volume (ESV) - 13,4%, myocardial stress in systole (MSs) - 23,3% and in diastole (MSd) - 21,5%, indexed myocardial mass (IMM)-17,4%, lowering of ejection fraction (EF) up to 6,5%, in comparison with Group 2. In Group 3, there had been an increase in LV in: ESV - 24,9%, EDV - 19,5%, MSd - 30,2%, MSs - 31,3 %, IMM - 19,8%, lowering of EF in 12%, as opposed to Group 4.

Therefore, in patients undergoing mitral valve replacement, the presence of ischemic heart disease and hypertension contribute to the increase of hemodynamic load on myocardium, influencing the remodeling processes and systolic function of LV.

P510

Long-term results of mitral valve replacement

BG Hojakuliyev,¹ B Orazaliyeva¹ and MB Muhammedov²

¹Turkmen State Medical University, Ashgabat, Turkmenistan ²Mary Regional Multi-field Hospital, Myocardial infarction, Mary, Turkmenistan

Objectives: Study of myocardial remodeling of left ventricle (LV), depending on the duration of the postoperative period in patients after mitral valve replacement (MVR).

Methods: The observation involved 105 patients after MVR aged 23 to 57 with circulatory failure (CF) of NYHA Class II and III. 63 of them were women, 42 were men. Depending on the duration of the postoperative period, the patients were divided into 3 groups 1st group included 32 (30,5%) patients with early postoperative period of 1-2 years, 2nd group included 38 (36,2%) patients with postoperative period of 6-10 years, and 3rd group included 35 (33,3%) patients with that of over 10 years.

Results: In patients of Group 1, LV indicators remained within normal limits. In group 3, compared with group 1, the following were increased: end-diastolic dimension (EDD) - 10,6%; end-diastolic volume (EDV) - 24 %; end-systolic dimension (ESD) - 14,7%; end-systolic volume (ESV) - 32,3%, left atrium (LA) - 16,1%, ejection fraction (EF) was reduced by 11,8%, integral systolic remodeling index (ISRI) - 17,6%. In group 2, compared with group 1, the following were increased: sphericity index in systole (SIs) - 8,2%; sphericity index in diastole (SId) - 6,2%, myocardial stress in systole (MSs) - 4,7%, myocardial stress in diastole (MSd) - 1,8%, indexed myocardial mass (IMM) - 11,5%, and in the patients of group 3, SIs - 13,1%, SId - 6,2%, MSs - 23,4%, MSd - 7,4%, IMM - 24,6%. Despite the absence of LV dilatation in patients of group 1, a slight improvement was observed in the indicators of remodeling: SIs - 0,61±0,1cm, SId - 0,80±0,1cm, MSs - 126,9±20,8 g/cm², MSd - 71,6±9,8g/cm², IMM - 128,2±15,7g/m² and LA - 4,7±0,3cm,

reduction of ISRI - $77,3 \pm 10,2$. For the patients of group 1 and group 2, eccentric LV non-dilated hypertrophy was typical, where for the patients of group 3, it was eccentric LV dilated hypertrophy.

Conclusions: Thus, in the remote period (over 10 years) in patients after MVR, dilatation of the heart chambers is largely developed as associated hemodynamic load on the LV myocardium.

P511

Early diagnosis of ruptured mitral chordae tendineae is life-saving

I Bojovski¹ and V Andova¹

¹University Clinic of Cardiology, Skopje, Macedonia, The Former Yugoslav Republic of

Purpose: Our purpose is to show the significance of early diagnosis, of mitral chordae tendineae rupture, by clinical exam and echocardiography. Early diagnosis is very important for good outcome.

Introduction: Rupture of the chordae tendineae is a condition which has been reported infrequently, but it is an important complicating factor and may be immediately life-threatening. Rupture is likely to result from degenerative disease affecting the valve, rather than being a primary problem. The important etiologic factors claimed for rupture of the mitral chordae tendineae are bacterial endocarditis, myocardial infarct, rheumatic valvular disease, trauma. Rupture of the chordae tendineae may lead to sudden mitral regurgitation, which generally depends on the number and location of the chordae involved with bacterial endocarditis.

Case report: We present a patient, who is 38 years old male, admitted for the first time at the University Clinic of Cardiology Skopje with symptoms of dyspnea and fatigue, last couple of hours. Ten days prior to hospitalization the patient was couple of days with high temperature, that was not treated. On the physical exam, remarkably was that the first heart sound was followed by a holosystolic murmur at the apex. TA=100-70mmHg. On EKG, we noticed sinus tachycardia(120bpm), without other abnormalities. Immediately echocardiography was made, and was noticed rupture of the chordae tendineae of the posterior leaflet, of the mitral valve. That lead to severe mitral insufficiency, which resulted with enlargement of the left atrium. The dimensions were: LVEDd=72mm, LVEDs=47mm, RVd=33mm, LA=55mm, EF=63%. Regurgitant volume:290ml, EROA=2.3cm², Color area=80%, VTI=130cm. Vegetations were noticed on the edge of the posterior leaflet. The patient was urgently transported to the Special Hospital for cardiac surgery,

where was performed a surgical repair of chordae tendineae. After the procedure the patient was recovering very well.

Conclusion: Our conclusion is that the early diagnosis (with clinical exam and echocardiography) and surgical treatment of acute mitral valve chordae tendineae rupture, is life-saving. The prompt diagnosis and surgical treatment are crucial for good outcome and quality of life after the surgery.

P512

Comparison of neurocognitive and functional changes after surgical (SAVR) and transcatheter (TAVR) aortic valve replacement in elderly patients

M Zaleska-Kociecka,¹ A Skrobisz,¹ M Dabrowski,¹ S Wozniak,¹ K Piotrowska,² K Czerwinska-Jelonkiewicz,¹ A Konopka¹ and J Stepinska¹

¹Institute of Cardiology in Anin, Warsaw, Poland ²Kozminski University, Warsaw, Poland

Purpose: To compare the influence of surgical (SAVR) and transcatheter (TAVR) aortic valve replacement on neurocognitive and functional status in elderly patients with severe aortic stenosis (AS).

Methods: Eighty over 70-year-old patients with AS who underwent TAVR (n=40) or SAVR (n=40) in our center were studied. Neurocognitive status was evaluated within Mini Mental State Exam (MMSE), fundamental functioning within Activities Daily Living (ADL) test and complex independent living skills within Instrumental Activities Daily Living (IADL) test. All tests were performed before and 6 months after procedure (mean 238 days), and MMSE additionally at pre-discharge. Follow-up visits were accomplished by 35 patients in both groups.

Results: TAVR patients were older ($80,1 \pm 5,27$ vs $74,96 \pm$; $p < 0,001$) with higher perioperative risk (logisticEuroSCORE: $17,88 \pm 12,64$ vs $7,4 \pm 3,25$; $p < 0,001$).

Baseline neurocognitive status was significantly lower in TAVR group (mean MMSE 24,50 vs 27,08 $p = 0,001$) but maintained preserved over hospitalization and follow-up. Whereas after SAVR there was a significant, albeit transient, deterioration at pre-discharge (mean MMSE 27,08 vs 25,79; $p = 0,020$). Nitroglycerin administration during TAVR was associated with decline in MMSE over hospitalization ($\chi^2 6,313$; $p = 0,012$) but did not influence changes over the follow-up. We found no risk factors for the changes after SAVR.

Baseline functional status was significantly lower in TAVR group within mean ADL (5,38 vs 5,85; $p = 0,014$) and mean IADL (18,83 vs 22,28; $p < 0,001$). Over follow-up period

differences between groups become comparable for ADL (5,86 in TAVR vs 5,75 in SAVR; $p=0,13$) mainly due to improvement in TAVI group. Whereas mean IADL was maintained lower after TAVR (19,34 vs 23,00; $p<0,001$). Drop of systolic blood pressure below 60 mmHg during TAVR was a risk factor for decline in ADL in univariate (χ^2 14,724; $p<0,001$) and multivariate analysis adjusted by age, sex, history of stroke, hypertension, logEuroSCORE, mitral regurgitation \geq 2nd degree, baseline ADL (OR 0,038; 95% CI 0,002-0,747; $p=0,031$). The drop was also associated with decline in IADL (χ^2 5,041; $p=0,025$) but became insignificant in multivariate analysis. We found no independent risk factors for changes in functional tests after SAVR.

Conclusions: TAVR although dedicated to patients at higher risk is associated with comparable to SAVR cognitive and functional changes over 6 months. TAVR has a potential to improve fundamental functioning. Periprocedural changes in blood pressure may influence cognitive and functional status of TAVR patients.

Afternoon Poster Session Sunday, 18 October 2015 13:30 - 18:00

Acute heart failure

P513

Is it possible to reduce in-hospital mortality after acute heart failure?

L Reis,¹ M Madeira,¹ F Caetano,² I Almeida,¹
A Fernandes,¹ J Nascimento¹ and L Goncalves¹

¹University Hospitals of Coimbra, Coimbra, Portugal ²Royal Brompton Hospital, London, United Kingdom

Background: The acute heart failure (AHF) is the main cause for hospitalization in patients (P) with more than 65 years, being associated with both high morbidity and mortality in-hospital and in the follow-up.

Purpose: From a population admitted to a cardiac intensive care unit, in the setting of AHF, evaluate the in-hospital mortality and follow up, determining their predictive factors.

Methods: Retrospective study of P admitted with AHF in cardiac intensive care unit, in a row, between 2010 and 2014. Were evaluated demographic variables, decompensation reason, etiology of AHF, comorbidities [hypertension, diabetes mellitus and chronic kidney disease (CKD) and clinical parameters. The median follow-up consisted on 219 days [min=46; max=682].

Results: 140 P were included, 74% male. The average age was 69±14 years. The average length of stay was 14±12 days. The in-hospital mortality rate was 18,6% and following 29,3%. The age was associated with a worse prognosis (74±10 versus 63 ± 15 years, $p <0,01$). CKD was associated with the AHF ($p <0,001$), with 63% of these deaths happening in P with CKD. The gender, hypertension, diabetes, aetiology of HF (ischemic versus non-ischemic), NYHA class and decompensated of HF. The global survival of the sample was 60% in the 1st year and 47% at 3rd years. No differences were found in the survival assessment according to gender, hypertension, diabetes, etiology or decompensation of AHF. When it comes to CKD, it was associated with significantly different survival assessments ($p<0,001$): P without renal dysfunction obtained survival estimates for the first year and 74% at 3 years of 58%; while P with CKD obtained survival assessments of 35% and 27%, respectively. CKD was an independent factor predictor of mortality, presenting an increased risk of death of 2,7 times (HR=2,7; CI= 95% [1,6 to 4,4], $p <0,01$). Age was also a mortality predictor with an increased risk of death of 1,1 times each year (HR=1,1; CI= 95% [1,03 to 1,07], $p <0,01$).

Conclusions: In our study, the AHF was characterized by a high rate of in-hospital mortality and during follow-up. The age, a non-changeable variable was responsible for one of the main prognosis predictors; CKD might have come as a potential target for therapeutic optimization, aiming for a prognosis improvement of such patients.

P514

The challenge of heart failure diagnosis in an open general emergency

L Baumworcel¹ and A Scavarda²

¹National Institute of Cardiology, Unidade de Terapia Intensiva Cirúrgica Cardíaca, Rio de Janeiro, Brazil ²State University of Rio de Janeiro (UFRJ), UNIRIO - Production Engineering School, Rio de Janeiro, Brazil

Working in open emergency service is a daily challenge for any group. In the model Smart Track, the patient is covered by the clinical staff within twenty minutes without screening, and promptly directed to the initial therapeutic approaches. If he shows any symptom or sign indicating the possibility of hemodynamic instability or AVC, it follows a preferred route where the ECG held within ten minutes and / or present any sign of seriousness will to a greater vigilance environment a direct route. Heart failure (HF) is the final common pathway of most diseases that involve the heart, one of the most important current clinical challenges in public health management. Heart failure affects 2.4% of the adult population and more than 11% of the population over 80 years. In 2012 the heart failure

was responsible for 26,694 deaths recorded by the Single System of Health- Ministry of Health in Brazil, consuming 3% of the total resources used to meet all admissions made by the system in 2007.

Objective: To analyze preliminaries results of the active search for HF in this population. **Methodology:** Based on the Lean system, were carried out a series of interventions in the team and processes. Regular meetings have been implemented throughout the emergency assistance team to become familiar with all the new services and protocols model. Also, a continuing education program was initiated during working hours so that everyday people need to work and study together to address a new challenge in a controlled learning environment. Another change in attendance was the allocation of the most experienced physicians in the first contact with patients. However, despite training in diagnosis and treatment of HF, this didn't have a specific protocol. The cases were reviewed to diagnosis in admission profile.

Results: This is an analysis from February to December 2014. In the first quarter of this project, the emergence performed around 3400 calls per month in the last quarter were realized making around 5000 consultations month. Ninty protocols were open each month, on average, all three managed protocols (sepsis, AVC and chest pain), being admitted one-third of these patients. The detection of new cases of heart failure was low, less than 1 case per week.

Conclusion: The diagnosis rate of HF was below the expected average, probably by a bias confounding with other pathologies within an open system and inappropriate diagnostic. Discerning cases heart failure is a challenge, and the implementation of a protocol for the heart failure treatment must achieve better results in this field.

P515

Acutely decompensated heart failure: superiority of MR-proANP in prediction of long-term outcome

M Brand,¹ M Schwiede,² H-J Trappe,¹ M Christ,¹ L S Maier,² A Luchner² and C G Jungbauer²

¹University Hospital St. Mary's Hospital Herne, Cardiology and Angiology, Herne, Germany ²University Hospital Regensburg, Department of Internal Medicine II, Regensburg, Germany

Purpose: The BACH trial showed non-inferiority of MR-proANP to BNP/NT-proBNP in diagnosis and risk stratification of patients (pts) with acute heart failure. MR-proADM was found to be superior in risk-stratification for 90-day mortality compared to natriuretic peptides. The aim of this prospective study was to analyse the predictive value of several cardiac biomarkers for long-term outcome of pts presenting with acutely decompensated heart failure (ADHF).

Methods: 58 pts with ADHF were included in our study. Serum levels of MR-proANP, MR-proADM, Copeptin, NT-proBNP, Troponin I were assessed at the end of therapy as well as renal parameters and NYHA stage. Cardiac death (due to arrhythmias, myocardial infarction, ADHF) was chosen as outcome parameter and pts were followed for a maximum duration of three years with a median duration of 644 days (IQR 316, 837). A ROC curve analysis of all studied variables (including patient characteristics, atrial fibrillation, LV ejection fraction, pulmonary artery pressure) was performed. Continuous variables were categorised into quartiles. Variables with an AUC \geq 0.60 were introduced to uni- and multivariable Cox regression analyses.

Results: In our study population [47 men, 11 women; median age 73 years (IQR 62, 77); median EF 40% (IQR 30, 55)] a total of 14 pts (24%) reached the endpoint. Among cardiac biomarkers MR-proANP (AUC 0.752, HR 2.87, $p=0.001$), MR-proADM (AUC 0.716, HR 1.94, $p=0.017$ and NT-proBNP (AUC 0.722, HR 2.12, $p=0.010$) were strong predictors of patient outcome. Troponin I and Copeptin showed lower AUCs and were not significant predictors. Regarding the other studied parameters only NYHA stage, GFR and serum creatinine were significant predictors. In the multivariable analysis of all studied parameters MR-proANP was the strongest and only independent predictor (Fig.1).

Conclusions: In patients with ADHF, MR-proANP measured at the end of therapy might be the preferable serum cardiac biomarker for prediction of long-term outcome.

P516

The effect of the philippine heart center heart failure clinic program on the incidence of mortality and hospital re-admission in patients with heart failure

A C Jayme¹

¹Philippine Heart Center, Adult Cardiology, Quezon City, Philippines

Background: The Heart Center, in an effort to reduce mortality and re-hospitalization rates and improve quality of life of patients with heart failure, established the PHC Heart Failure (HF) Clinic Program. The aim of this paper is to prospectively evaluate the effectiveness of the Heart Center Heart Failure Clinic Program in reducing mortality and re-hospitalization 12 months after discharge.

Methodology: This was a prospective cohort study. Subjects were divided into two groups: those who were enrolled with the HF Clinic Program and those who received conventional follow up. Data on the number of readmissions, hospital days and time to readmission were

prospectively collected from the medical charts. Data were collected at baseline, after 3 and 12 months.

Results: There were 62 patients included in the study, 19 of whom were enrolled in the heart failure clinic while 43 patients received conventional care. There were more mortality in the non-heart failure clinic group compared to those who were enrolled in the program. More patients in the non-HF clinic group were re-admitted within 3 and 12 months after inclusion compared to those who were enrolled in the program. Likewise, patients in the non-HF clinic group stay longer in the hospital compared to those who were enrolled in the program.

Conclusions: The Heart Center Heart (PHC) Heart Failure (HF) Clinic is effective in reducing mortality and re-hospitalization 3 and 12 after inclusion.

Table 1.

Clinical events	HF Clinic Program Mean + SD or n (%)	Non-HF Clinic Program Mean + SD or n (%)	p-value
No. of deaths			
After 3 months	1 (5.56)	3 (6.98)	1.00
After 12 months			
No. of all-cause admission			
After 3 months	1.05 + 1.22	1.51 + 1.69	0.29
After 12 months	0.14 + 0.37	2.9 + 3.14	0.04
Days in the hospital			
After 3 months	1.36 + 1.38	4.37 + 5.71	0.03
After 12 months			

Clinical events in the HF Clinic Program group and non-HF Clinic Program group after 3 and 12 months.

P517

Standard versus intensive care for acute heart failure patients.

I Varga,¹ P Lesny,¹ P Solik,¹ M Luknar¹ and E Goncalvesova¹

¹National Institute of Cardiovascular Diseases (NICVD), Bratislava, Slovak Republic

Aim: To compare characteristics and prognosis in AHF patients (pts) hospitalized on standard department (SD) versus intensive care unit (ICU).

Methods: We used the data from SLOVASEZ II, nationwide multicenter AHF survey with 592 consecutive pts enrolled between 1 April and 31 June 2014. Pts were divided according to their management to SD group (SDG) and ICU group (ICUG). We analysed 52 variables in relation to

clinical manifestation, management and outcome of AHF in univariate analysis, significant of them ($p < 0.05$) were used for multivariate analysis.

Results: 377 (64%) pts were hospitalized on SD and 215 (36%) on ICU. We did not find difference in gender, age, primary AHF etiology or major comorbidities between both groups. Pts in SDG were more in NYHA class III, contrary to more often NYHA class IV in ICUG (66vs32% and 22vs59% resp., $p < 0.001$ both). SDG pts were frequently admitted with new onset or rapid deterioration of heart failure (39vs72%, $p < 0.001$), in one tenth due to acute coronary syndrome or pulmonary edema (10vs46%, $p < 0.001$). Pts in SDG were less tachycardic (19vs37%, $p < 0.001$), but signs of congestion were common (crackles 64vs79%, orthopnoea 28vs65%, jugular vein distension 31vs48%, $p < 0.001$ for all) and peripheral hypoperfusion was also present (7vs21%, $p < 0.001$). We did not find any difference in blood pressure, ejection fraction or laboratory tests, as well as in the chronic oral treatment and implanted defibrillators or resynchronisation therapy. The pre-hospital usage of furosemide and nitrates was less intensive in SDG (31vs55%, 4vs22% resp., $p < 0.001$ both). Intravenous (iv) treatment after admission was less frequent in SDG (72vs87%, $p < 0.001$), including furosemide (72vs82%, $p = 0.005$), nitrates or inotropes (2vs28%, 1vs8%, resp., $p < 0.001$ both). The in-hospital mortality remains high in SDG and ICUG (4.5vs17% resp., $p < 0.001$). Independent in-hospital mortality predictors in ICUG were peripheral hypoperfusion (OR 2.7), stroke (OR 3.4), acute infection (OR 4.5), renal failure (creatinine $> 170 \mu\text{mol/L}$, OR 3.4) and anemia (hemoglobin $< 120 \text{g/L}$, OR 2.7). In SDG was in-hospital mortality higher in pts admitted with orthopnoea (OR 3.7), history of stroke (OR 4.6), asthma (OR 15.6) and necessity of iv furosemide (OR 9.6).

Conclusion: The AHF pts hospitalized on SD are often admitted with signs of hemodynamic deterioration. Almost three quarters of them get iv therapy without appropriate monitoring and intensive care. Their in-hospital mortality is lower than in ICU pts, but remains unacceptably high and should be impulse for intensive management of AHF.

P518

Preserved ejection fraction and inflammatory markers in acute heart failure patients with concomitant metabolic syndrome

I Potocnjak,¹ S Dokoza Teresak,¹ B Radulovic,² M Trbusic,³ G Pregartner,⁴ V* Degoricija³ and S* Frank⁵

¹University Hospital Center Sisters of Charity, Zagreb, Croatia ²University Hospital Centre Zagreb, Zagreb, Croatia ³University of Zagreb School of

Medicine, Zagreb, Croatia ⁴Medical University of Graz, Institute for Medical Informatics, Statistics and Documentation, Graz, Austria ⁵Medical University of Graz, Institute of Molecular Biology and Biochemistry, Center of Molecular Medicine, Graz, Austria

Purpose: Metabolic syndrome (MS) is important concomitant disease in acute heart failure (AHF) thus its effect on HF pathways is crucial field of investigation. The aim of this study was to investigate influence of MS on AHF with emphasised relationship with ejection fraction (EF).

Methods: Research was performed as observational, prospective study on hospitalised AHF patients (pts.) recruited from the Emergency Department (ED), from November 2013 to February 2015. Participants were divided in two groups depending on presence of MS and preserved EF. Pts. were compared according to preserved EF, erythrocyte sedimentation rate (ESR) and level of C-reactive protein (CRP). Pts. were treated by standard protocol for AHF treatment by ESC Guidelines. Study was approved by local Ethics committee. Written informed consent was obtained from each pt. according to Good Clinical Practice and Helsinki Declaration principles. Pts. clinical presentation, diagnostic procedures and laboratory tests were recorded in electronic register.

Results: Complete analysis included data for 152 pts., 79 (51.9%) women. Totally 105 (69.1%) pts. had worsening of chronic HF type (male/female ratio 63/74.7%) and 47 (30.9%) had de novo HF. In total 85 (55.9%) pts. had MS, among whom 56 (65.9%) had worsening of CHF, and 29 (34.1%) had de novo type. Mean age pts. with MS was 74.06 (\pm SD10.28), and without MS was 76.55 (\pm SD 10.12). According to HF classification (ACCF/AHA Heart Failure Guideline 2013) there were total of 83 (57.6%) pts. with reduced (HF_rEF) and 61 (42.4%) with preserved (HF_pEF). MS and HF_rEF had 46 (56.8%) pts. Preserved EF was noted for 46 (62.2%) of pts. with MS and only 28 (37.8%) of pts. without MS. In laboratory parameters ESR mean value was 21 (\pm SD 23, Min 1; Median 14, Max 105). Respectively, for pts. with MS mean value was 24 (\pm SD 25) and for pts. with no MS it was 19 (\pm SD21). CRP value in total was 20.24 (\pm SD 30.47), respectively for pts. with MS mean value was 20.87 (\pm SD 32.90), and for pts. without MS mean value was 19.42 (\pm SD 27.2).

Conclusions: MS is important concomitant parameter in developing HF. Surprisingly presented data showed more preserved EF in MS patients. According to the results of this study MS could be offered as focus comorbidity for influencing outcome of HF pts. Considering pts. with MS were younger, age could be cause of their better EF results. It could be concluded that according to preserved EF, despite increased levels of inflammatory markers MS is significant comorbidity.

*equally contributing senior authors and project leaders

P519

Patients perception of quality of emergency department care for acute heart failure: the Calperica study

O Miro,¹ R Escoda,¹ V Gil,¹ FJ Martin-Sanchez,² P Herrero,³ J Jacob⁴ and P Llorens⁵

¹Hospital Clinic de Barcelona, Emergency Department, Barcelona, Spain ²Hospital Clinic San Carlos, Emergency Department, Madrid, Spain ³University Hospital Central de Asturias, Emergency Department, Oviedo, Spain ⁴Hospital Universitari de Bellvitge, Emergency Department, Hospitalet de Llobregat, Barcelona, Spain ⁵General University Hospital of Alicante, Emergency Department, Alicante, Spain

Objectives: To determine perception of quality of care for acute heart failure (AHF) of patients discharged from the emergency department (ED) in comparison with the perception of admitted patients; to explore the variables associated with perception of quality.

Methods: Prospective, cross-sectional case-control study in 7 Spanish ED. Consecutive patients diagnosed with AHF were recruited to answer a telephone survey assessing their view of quality of physician care, nurse care, overall treatment and health care provided, and degree of resolution of their problem in the ED. Discharged patients were also asked to state their level of agreement with the decision to send them home from the ED. The answers of patients who were discharged home were compared with patients who were admitted to the ward. The results were analyzed according to whether or not adverse events occurred within 30 days.

Results: A total of 1147 patients were enrolled and 1003 (87.4%) were interviewed; 253 of the patients (25.2%) were discharged home. We found no significant differences in any of the assessments (on physician or nurse care, overall health care and treatment, or degree of resolution) between patients who were discharged home and those who were admitted. The mean (SD) overall satisfaction assessments (on a scale of 0 to 10) were 7.38 (1.38) and 7.38 (1.52), respectively, in the 2 groups ($p=0.66$). Over 90% of those discharged home agreed with or highly agreed with the decision. Evaluations were unrelated to whether or not adverse events occurred later.

Conclusions: Patients with AHF have high opinions of the different components of care received in the ED, and their evaluations are unrelated to whether they were admitted or discharged home. Those discharged home agree with the decision and their opinion remains firm regardless of whether adverse events occur later.

P520

Catecholamine induced cardiomyopathy caused by inappropriate adrenaline injection

I Rosenfeld,¹ S Dabbah,¹ T Levins,¹ I Nordkin¹ and M Halabi¹

¹Sieff Government Hospital, Department of Cardiology, Safed, Israel

Catecholamine induced cardiomyopathy is a disorder that manifests as profound transient myocardial dysfunction, reversible after a period of several weeks. The disease is caused by high levels of circulating catecholamines such as in pheochromocytoma, subarachnoid hemorrhage or drugs. These drugs include use of exogenous catecholamines, cocaine abuse and psychotropic drugs overdose.

We describe a case of Catecholamine induced cardiomyopathy in a patient caused by inappropriate injection of 1 mg intravenous adrenaline.

Case report: A 22 year old healthy man was admitted for elective surgery of nasal septum reconstruction. At awakening from general anesthesia he was given inappropriate intravenous injection of IV 1 mg Adrenaline. Immediately he developed a narrow complex tachycardia of 160bpm that lasted few minutes. On ECG tracing prominent 4mm ST segment depression was seen. The patient gradually developed dyspnea with pulmonary congestion and angina. An echocardiographic examination demonstrated reduced left ventricular function, EF 25% with midventricular akinesis and apical hyperkinetic contraction.

The patient was treated with diuretics, beta blockers and ACE inhibitors. After three days in the ICCU he showed improvement in his clinical status. The ECG changes resolved on the first day, and echocardiographic examination revealed significant improvement in systolic function on the third day with EF of 50%. Blood test revealed slightly elevated troponin I. One month later a CMR examination revealed normal LV and RV size and systolic function, without evidence of abnormal delayed enhancement.

Discussion: Catecholamine Induced cardiomyopathy may be caused by endogenous and exogenous triggers. A small dose of IV Adrenaline, as in our case, that is widely used during various medical procedures (cardiac resuscitation, dental procedures, care of anaphylaxis and to minimize surgical bleeding in local surgery) may induce this disorder. High index of suspicion is mandatory in order to diagnose these cases and start proper supportive

treatment on time. The mechanism of catecholamine induced myocardial injury may include direct toxic effect on myocytes and vasomotor constriction of the coronary microcirculation causing myocardial stunning. Recent animal models suggest that switching of epinephrine signaling through the pleiotropic beta 2 adrenergic receptor from stimulatory to inhibitory G-protein-activated cardiodepressant pathways may have evolved as a cardioprotective strategy to limit catecholamine-induced myocardial toxicity during acute stress.

P521

Correlation of serum receptor activator nuclear factor kappa beta ligand "sRANKL" level and one year mortality in patients with acute heart failure

AHMED TA Abdellah,¹ Z Oof,² A El Beih,² A El Eraqi¹ and A El Hawary¹

¹Cardiology Department, Suez Canal University, Ismailia, Egypt

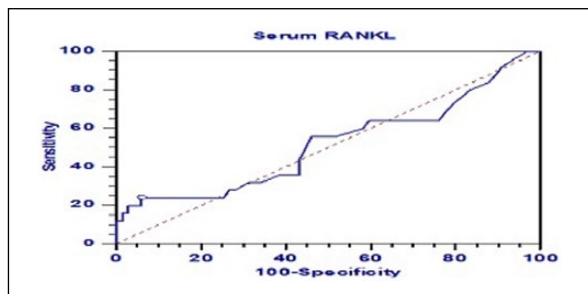
²Suez Canal University, Emergency Department, Ismailia, Egypt

Purpose: To assess the correlation of sRANKL level (serum receptor activator of nuclear factor kappa beta ligand) and one year mortality rate in patients admitted with acute heart failure (HF).

Methods: One hundred fifteen patients with acute HF were randomly selected and approved enrolment. Admission sRANKL was assessed along with clinical, laboratory, electrocardiogram and echocardiogram evaluation. We followed up their mortality rate for 1 year.

Results: Only 92 patients completed the study enrolment. The mean age of the studied patients was 60.8 ± 9.5 years, and 48 patients (52.2%) were males. The mean LVEF was $30\% \pm 6.8$, and the mean sRANKL was 178 ± 398 pmol/L. The one year mortality was 27.2% (25 out of 92 patients), most of them died after 30 days of admission (68%, 17 patients). sRANKL was lower in survived patients than in those who died (127 ± 203 vs. 369 ± 691 pmol/L, P value < 0.015). Left ventricle (LV) size has a positive correlation with sRANKL (LVEDD, $r = 0.359$, P value < 0.01, LVESD, $r = 0.375$, P value < 0.01) while LVEF (LV ejection fraction) has a negative correlation with sRANKL ($r = -0.440$, P value < 0.01). Logistic regression analysis for the predictors for one-year mortality among the studied population showed that sRANKL was able to predict mortality (adjusted odd ratio 1.236, P value < 0.01).

Conclusions: High levels of sRANKL has a positive correlation with one year mortality in patients admitted with acute HF. Furthermore, dilated LV size and reduced LVEF are associated with high sRANKL level. More research is needed to explore the pathophysiology and application of these findings.



Sensitivity of sRANKL and HF Mortality.

Atrial fibrillation

P522

Outcome of direct current cardioversion for atrial fibrillation in a specialist nurse led services at a district general hospital

FB Abdul,¹ R Khatun,¹ E Longster² and RW Cowell²

¹University Hospital of Wales, cardiology, Cardiff, United Kingdom

²Betsi Cadwaladr University Health Board, cardiology, Wrexham, United Kingdom

Background and aims: Atrial fibrillation is the most common cardiac arrhythmia we see in our daily practice; Electrical cardioversion is commonly applied technique in emergency and elective setting to restore sinus rhythm. The aim of this study was to access the Efficacy and safety outcomes of specialist nurse led elective electrical cardioversion service at district general hospital and indentify factors which correlate with early recurrence of AF on follow up.

Methods: We included patient who underwent elective cardioversion for AF during the year 2011-12 and who attended their 6 weeks follow up after cardioversion. Clinical notes were reviewed and pre and post cardioversion information was collected. Primary outcome of successful cardioversion and safety data was analyse on day of cardioversion and review of variables associated with early recurrence of AF in this patients.

Results: 59 patients underwent cardioversion in year 2011-12 and 52 patient's clinical notes were available for review. The mean age of patient's was 68 years, more men than women. Patients were diagnosed to have AF in < 1year. All cardioversion were done in Specialist arrhythmia nurse led. 96% patients were successful cardioverted, with no major complications; all patients were discharged home on the same day.

At 6 weeks follow up, 46 patients attended the post cardioversion nurse led clinic. 42% of them had reverted back to AF. 47% in AF group and 18% of SR group had severe LA dilatation. 23% in AF group and 21% in SR group had Moderate LV systolic dysfunction. 32% in AF group and 7% in SR group had received 3 shocks at the time of cardioversion. 11% in AF group and 40% in SR group were on amiodorone peri cardioversion. 33% in AF group and 30% in SR group were on dronederone in peri cardioversion period.

Conclusions: Arrhythmia nurse led cardioversion service in DGH is a safe with no major complications and effective in initial restoration of sinus rhythm.

88% patients turned up to follow up clinic, nearly half the patients had reverted back to AF, Severe Left atrial size, more than 2 shocks at the time of cardioversion were associated with failed cardioversion. Amiodorone use pre and post cardioversion helped in maintain sinus rhythm. Dronedorone seems to have little effect on maintaining sinus rhythm.

P523

Optimising INR in patients undergoing AF ablation with interrupted warfarin

MY Kim,¹ EM Mcguire,¹ N Qureshi,²
PB Lim,² Z Whinnett,² N Linton,² W Davies,²
NS Peters,² M Koa-Wing² and
P Kanagaratnam²

¹Imperial College Healthcare NHS Trust, London, United Kingdom

²Imperial College Healthcare NHS Trust, Department of Cardiac Electrophysiology, London, United Kingdom

Purpose: Studies have shown feasibility and safety of uninterrupted warfarin for atrial fibrillation (AF) ablation. However, the optimal INR immediately pre-procedure is 1.8. This is a level whereby no reversal would be required in a bleeding complication or bridging heparin to ensure adequate anticoagulation.

Methods: This was a prospective single-centre study including patients on warfarin, undergoing AF ablation.

Patients on aspirin, clopidogrel, novel oral anticoagulant, or no anticoagulant were excluded. We instructed patients to stop warfarin 2 days pre-procedure or target INR between 1.5 and 2.0. On the day of ablation, patients were asked the date they took warfarin last. Their INR and any complications were recorded. Correlation was made between total number of days patients were off warfarin and their INR range.

Results: 96 patients were studied. 58 (60.4%) were on warfarin and 12 were excluded as dates of warfarin stopped or INR on day of ablation were not available. 26/46 (56.5%) achieved an INR range 1.5-2.0. 10 of these patients had 3 days off warfarin, 4 patients each had 0, 1, 2, 4 days off warfarin. No patient with 5 days off warfarin achieved optimal INR. 14/46 (30.4%) achieved INR \leq 1.5. 9/46 (19.6%) achieved INR 2.0 \leq . Bridging heparin was not given pre-procedure. 6/58 (10%) had bleeding complications but none needed Vitamin K reversal. There were no thrombo-embolic complications.

Conclusions: It is possible to achieve an optimal INR in a high proportion of patients without the need for bridging heparin or reversal agent. There is scope for improvement as a significant number of patients did not follow instructions.

Table 1.

No. of days off warfarin	No. of patients	Mean INR	Median INR	INR range
0	7	2.0	2.0	1.5–2.4
1	5	1.8	1.8	1.5–2.5
2	12	1.5	1.4	1.0–2.5
3	14	1.6	1.7	1.2–2.0
4	6	2.0	1.9	1.4–2.8
5	2	1.3	1.3	1.2–1.3
Unknown	11	1.7	1.5	1.0–2.9

No. of days off warfarin, mean, median and range of INR in patients with AF ablation.

P524

Comparison of intravenous vernakalant and intravenous flecainide in acute cardioversion of atrial fibrillation

H P Pohjantahti-Maaroos,¹ HPM Hyppola,¹ M Lekkala² and J Hartikainen²

¹Kuopio University Hospital, Kuopio, Finland ²University of Eastern Finland, Kuopio, Finland

Purpose: To compare the efficacy of intravenous vernakalant and intravenous flecainide in acute cardioversion of atrial fibrillation (AF) at the emergency department.

Methods: 100 consecutive patients undergoing cardioversion of acute AF with vernakalant from 01.01.2011 onwards were compared with 100 consecutive patients undergoing flecainide cardioversion before 31.12.2010 were included in this retrospective study.

Results: Cardioversion was successful in 68 % of patients in the vernakalant group and 47 % of patients in the flecainide group (p=0.003). There was no difference in the complication rate between the groups. Vernakalant (RR 2.4, 95% CI 1.3-4.4, p=0.006) and female gender (RR = 2.2, 95% CI 1.1-4.4, p=0.031) were significant predictors of successful cardioversion in the adjusted regression model. Vernakalant treated patients were older (59.3 \pm 12.5 vs. 55.4 \pm 13.0 years, p= 0.03) and more often on b-blocker medication (59 % vs. 42%, p= 0.039) than flecainide treated patients. There was no difference with respect to other medications or diseases between the groups.

Conclusions: Intravenous vernakalant seems to be more effective than intravenous flecainide in acute cardioversion of AF. A randomized, prospective study is needed to verify this finding.

P525

The blood pressure profile in patients with paroxysmal atrial fibrillation

SM Guberna,¹ N Avram,¹ M Raileanu¹ and CJ Sinescu¹

¹University of Bucharest Carol Davila, Bucharest, Romania

Purpose: The aim of our study was to investigate the blood pressure (BP) profile of patients with paroxysmal atrial fibrillation (AF) in relation with hypertensive patients without paroxysmal AF.

Method: We analyzed a group of 50 patients presented for paroxysmal AF less than 48 hours to the Cardiology Department of a Emergency Clinical Hospital during a year starting from January 2014 to January 2015. Conversion of AF to sinus rhythm was either chemical or electrical. We excluded patients that couldn't be converted to sinus rhythm, patients with important mitral or aortic valvular disease (regurgitation > grade II, stenosis > large), left ventricular failure or elevated troponin levels.

After 24 hours of hospitalization patients were subjected to ambulatory BP monitoring (ABPM). Systemic

blood pressure was measured automatically at the non-dippered arm by a non-invasive blood pressure monitoring system every 15 min in the day and every 30 min in the night. We compared this group with another group of 50 patients, age-sex matched who attended the Cardiology Department for uncontrolled BP values without paroxysmal AF.

The parameters that we followed were: age, sex, dipper/nondipper profile, maximum systolic blood pressure (SBP) and maximum diastolic blood pressure (DBP), the difference between maximum SBP and minimum SBP, the difference between maximum DBP and minimum DBP, % of BP values >140/90 mmHg.

Results: The mean age was 64,76 ani (max 84 ani, min 21). The percent of non-dipper BP profile was greater in patients with paroxysmal AF (40%) than control group (16%) $p=0,0000025$. Maximum SBP was higher in patients with paroxysmal AF (the mean of SBP was 170,4 mmHg compared to 157,25 mmHg in patients without paroxysmal AF) and the percent of BP >140/90 mmHg was higher in this group (29,72% vs control group 20,06% with statistic value).

Conclusion: The outcome of this study was the fact that nondipper BP profile represented a risk factor for paroxysmal AF and the patients with paroxysmal AF had a poorer control of BP.

P526

Elevation of cardiac troponin I after electrical cardioversion of atrial fibrillation is dependent on energy delivered

P Abramczyk,¹ J Slomka,¹ A Kaczynska¹ and I Nawrocka¹

¹Medical University of Warsaw, Department of Internal Medicine, Hypertension and Vascular Diseases, Warsaw, Poland

Purpose: The energy of direct current delivered during electrical cardioversion (EC) may potentially lead to myocardial injury. We investigated whether it can be detected with repeated cardiac troponin I (cTnI) evaluation and whether it depends on energy delivered.

Methods: Fifty patients with paroxysmal or persistent atrial fibrillation (48 hours – 2 months duration) were enrolled into the study. EC was performed using biphasic external defibrillator. Blood samples for cTnI evaluation (quantitative enzyme immunoassay) were taken before, 6 hrs and 24 hrs after the EC.

Results: Overall cTnI concentration has increased from 0.0 (0.0–0.094) ng/ml to 0.035 (0.0–0.127) ng/ml after 6 hrs

($p=0.006$) and to 0.005 (0.0–0.118) ng/ml ($p=0.002$) 24 hrs after EC. However, only patients who required higher energy (> 100 J) to restore sinus rhythm had significant increase in cTnI concentration both 6 hrs and 24 hrs after EC (Tab.). In 4 patients, cTnI concentration even reached the cut-off point used in detection of myocardial necrosis in myocardial infarction.

Conclusions: Higher energy (> 100 J) as compared to lower energy (≤ 100 J) EC for atrial fibrillation is more likely to cause myocardial injury.

Table 1. Cardiac troponin I before and after EC.

Energy delivered	Before EC	6 hrs after EC	24 hrs after EC	p
≤ 100 J	0.000 (0.000–0.094)	0.004 (0.000–0.097)*	0.005 (0.000–0.084)*	n.s.
> 100J	0.000 (0.000–0.062)	0.004 (0.000–0.127)*	0.005 (0.000–0.118)*	<0.05

* as compared to the values before EC (Wilcoxon test).

P527

Left atria enlargement in a stroke unit: atrial fibrillation and effect on the outcome.

R Costa Rodrigues,¹ A Correia,¹ M Neto,¹ A Spinola,¹ MG Serrao,¹ S Gomes,¹ M Rodrigues,¹ R Freitas,¹ M Brazao¹ and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Purpose: Atrial fibrillation (AF) is associated with an increased risk of severe or fatal ischemic stroke whereas atrial enlargement is associated with increased incidence of stroke. We intended to evaluate atrial enlargement as a poorer predictor of outcome in a stroke unit.

Methods: Retrospective analysis of prospective collected data of 165 consecutive patients admitted in a stroke unit, between 1 February 2013 and 30 September 2014 with the diagnosis of ischemic stroke. We divided them in 2 groups: patients with left atrial volume <34ml/m² (group A: n=71; 43%; 50.7% men) and patients with left atrial volume ≥ 34 ml/m² (group B: n=94; 67%; 48.9% men). We compared demographic and clinical characteristics, therapeutic, and prognosis evaluated through neurological and functional evaluation scales at admission and hospital discharge (Glasgow Coma Scale (GCS), National Institute of Health Stroke Scale (NIHSS) and Barthel scale) and mortality.

Results: there were no statistically significant differences between the groups in terms of prognosis when evaluated by total mortality (A: 1.4% Vs B: 2.1%; $p=ns$) but group B presented a worse prognosis when evaluating by GCS <9 (A: 1.5% Vs B: 15.4%; $p<0.05$), NIHSS ≥ 5 (A: 19.1% Vs

B: 42.2%; $p < 0.05$) and Barthel scale < 61 (A: 27.9% Vs B: 48.7%; $p < 0.05$). Evaluating baseline characteristics group B presented older age (A: 60.6 ± 16.3 Vs B: $67.6 \pm$), but no differences were found regarding gender, previous history of hypertension, dyslipidemia, obesity, valvular heart disease, chronic kidney disease, diabetes, alcohol abuse or stroke. Group B presented a higher previous history of AF (A: 1.4% Vs B: 19.1%; $p < 0.01$) and less smoking (A: 25.4% Vs B: 8.5%; $p < 0.01$) and were more medicated with antiarrhythmic drugs (A: 0.0% Vs B: 8.5%; $p < 0.05$), digitalis (A: 0.0% Vs B: 12.8%; $p < 0.01$), non-steroids anti-inflammatory (A: 0.0% Vs B: 7.4%; $p < 0.05$), and oral anticoagulation (OAC) (A: 0.0% Vs B: 8.5%; $p < 0.05$). Group B presented more cardioembolic stroke subtype by TOAST classification (A: 7.0% Vs B: 35.1%; $p < 0.01$) and were more frequently in AF at admission (A: 5.6% Vs B: 39.4%; $p < 0.01$). At discharge group B was more medicated with OAC (A: 15.5% Vs B: 33.0%; $p < 0.05$) and less with aspirin (A: 56.3% Vs B: 33.0%; $p < 0.01$).

Conclusions: Although, in this study, mortality had no difference, and enlarged left atrium is associated with a worse outcome when evaluated through neurological and functional evaluation scales. This is probably due to the association with AF.

P528

Dabigatran Vs. Warfarin and the postcardioversion thromboembolic risk

P Serpytis,¹ R Palsauskaite,¹ G Navickas,¹
T Tamosiunas,¹ R Serpytis,¹ V Skromovas²
and D Kaciurinas³

¹University Hospital Santariskiu Klinikos, Vilnius, Lithuania
²Siauliai Hospital, Siauliai, Lithuania ³Alytus Hospital, Alytus, Lithuania

Background: Electric cardioversion may cause ischaemic thromboembolic complications. The main aim of our study was to establish the safety of new anticoagulant agents in electric cardioversion.

Methods and Results: We analyzed 424 patients with atrial fibrillation who received electric cardioversion. Patients were divided into two groups: 1. warfarin or 2. dabigatran. We prescribed 1. Group patients with warfarin for 3 weeks before cardioversion with INR range 2-3. There were 204 patients, average age 58 ± 11 years. 78% had hypertension and 18% diabetes.

Accordingly, 2. group patients were prescribed with dabigatran 150mg twice a day for 21 days. There were 210 patients, average age 60 ± 12 years. 80% had hypertension and 21% diabetes.

After 21 days electric cardioversion was performed.

Precardioversion transesophageal echocardiography was performed in dabigatran group patients. No intracardiac thrombus were observed.

Electric cardioversion was performed with general propofol anesthesia.

In warfarin group sinus rhythm was converted in 189 patients (92,6%), whereas in dabigatran group 205 patients (97,6) accordingly. There were no thromboembolic or bleeding complications observed in both groups.

Conclusion: Dabigatran is a safe medication before cardioversion and the transesophageal echocardiography is not indicated.

Biomarkers

P529

The thyroid stimulating hormone could improve prognosis in acute coronary syndromes?

A Soeiro,¹ EAC Roque,² FCM Pedroti,² TACT Leal,¹
AS Bossa,¹ MCFA Soeiro,¹ CV Serrano Jr¹ and
MT Oliveira Jr¹

¹Emergency Unit - Heart Institute (InCor) - University of Sao Paulo Faculty of Medicine, Sao Paulo, Brazil ²Hospital Metropolitan, Unidade Coronariana, Serra, Brazil

Purpose: To analyse the outcomes of patients with acute coronary syndromes related with the value of thyroid stimulating hormone (TSH) at admission.

Methods: This was a observational and prospective study with 505 patients (446 in the group I [TSH < 4 mUI/L] and 59 in the group II [TSH > 4 mUI/L]) with acute coronary syndromes included between May 2,010 and May 2,014. The following data were obtained: age, sex, diabetes, systemic arterial hypertension, smoke, dyslipidemia, familial history of precoces coronary artery disease, previous coronary artery disease (percutaneous coronary intervention or coronary artery bypass graft), hemoglobin, creatinine, higher troponin, left ventricle ejection fraction, medication used at hospital and coronary definitive treatment. The primary endpoint was all cause of in-hospital death. The secondary end point was combined events (death, non-fatal unstable angina or myocardial infarction, Killip IV, bleeding and stroke). Comparison between groups was made by Anova and Q-square. Multivariate analysis were determined by logistic regression and was considered significative when $p < 0.05$.

Results: Were observed significant differences in prevalence of use of enoxaparin (75.2% x 57.63%, $p = 0.02$), use of statins (84.08% x 71.19%, $p < 0.0001$) and previous

stroke (5.83% x 15.25%, $p=0.007$), respectively between groups I and II. Significant difference was observed between groups I and II in combined events (14.80% x 27.12%, $OR=3.05$, $p=0.004$), cardiogenic shock (4.77% x 6.05%, $OR=4.77$, $p=0.02$) and bleedings (12.09% x 15.25%, $OR=3.36$, $p=0.012$).

Conclusions: In patients with acute coronary syndromes and TSH > 4 mUI/L at admission were observed worse prognosis with higher in-hospital combined events, cardiogenic shock and bleedings.

P530

Impact of inflammation on adverse cardiovascular events in patients with ST-elevation myocardial infarction

T Al-Maimoony¹¹Cairo University, cardiovascular, Cairo, Egypt

Impact of inflammation on adverse cardiovascular events in patients with ST-elevation myocardial infarction

Aims: The aim of the present study was to evaluate inflammatory markers in patients with ACS as predictors for major adverse cardiovascular events .

Methods: This study included 81 patients with STEMI. Tumor necrosis factor alpha (TNF- α), white blood count (WBC), and their subtypes were analyzed during hospitalization. Receiver operator characteristic (ROC) and Kaplan-Meier survival curves were used to assess the predictive value and MACE .

Results: Patients were then divided into two groups according to the cut-off TNF- α level detected from the ROC curve analysis. An optimized cut-off point of TNF- α level >1774 pg/ml showed 94% sensitivity and 75% specificity yielded the best sensitivity and specificity. AUC is.959 and An optimized cut-off point of WBCs >14,05 showed 70.6% sensitivity and 84.4% specificity yielded the best sensitivity and specificity. AUC is.832 .Patients with a TNF- α \leq 1.776 were classified into the low TNF- α level group ,and those with a circulating level Forty Nine (44.9%) patients had high TNF- α level and Three patients had low TNF- α level . Regarding the laboratory data, there were statistically significant differences between both groups, the WBCs count [9.9 ± 3.3 versus 14.9 ± 4.5 (103 cells/ml), respectively; $P = 0.001$), Troponin [17.8 ± 6 versus 39 ± 18 respectively; $P = 0.006$]. TNF- α [$1,343 \pm 2,70$ pg/ml versus $2,667 \pm 1,02$ pg/ml), respectively; $P = 0.000$] CK-MB(Mass) (ng/mL) (99 (15-106) versus 201 (50-246) $P = 0.007$)

there were statistically significant differences between patients who have high TNF and those who did not, the

LVEDD [5.2 ± 0.7 versus 5.6 ± 0.7 cm, respectively; $P < 0.05$), LVESD [3.6 ± 0.9 versus 4.1 ± 0.8 cm, respectively; $P < 0.03$], LVEF [55.4 ± 9.4 versus $47.1 \pm 13.3\%$, respectively; $P < 0.04$].

there were statistically significant differences among both groups .the atrial fibrillation was higher in group 2 compared to that of group 1 [3(100%) versus 0(0%), respectively; $P = 0.001$], Re-Infarction [(100%) versus 0(0%) , respectively; $P = 0.001$]. HF [12(37.5%) versus 1(2%)], respectively; $P = 0.000$] Mortality (5(15.6%) versus 1(2%) $P = .022$ There was a statistically significant negative correlation found between TNF- α level and EF ($r = -.449^{**}$, $P = 0.000$) and a statistically significant correlation found between TNF- α level and Troponin I ($r = .527^{**}$, $P = 0.003$) and TNF- α level and CK-MB ($r = .560^{**}$, $P = 0.000$)

Conclusion: Inflammatory markers such TNF- α and WBCs counts are independent predictors of outcome in patients with ACS.

P531

Circulating microRNAs: miR-1, miR-21 and galectin-3 in patients with symptomatic heart failure and left atrium enlargement

MT Tomaniak,¹ G Sygitowicz,² KJ Filipiak,¹ O Blaszczyk,³ L Koltowski,¹ K Malesa,¹ D Puchta,¹ J Kochanowski¹ and D Sitkiewicz²¹Medical University of Warsaw, 1st Department of Cardiology, Warsaw, Poland ²Medical University of Warsaw, Department of Medical Laboratory Diagnostics, Warsaw, Poland ³Medical University of Warsaw, Department of Pharmacogenomics, Warsaw, Poland

Purpose: Recent studies suggests that microRNAs (miRs) demonstrate altered expression in failing myocardium and are involved in cardiac fibrosis, hypertrophy, apoptosis and cardiac fibroblast differentiation. miR-1, miR-21 and galectin-3 (gal-3) have been reported to impact on the process of mal-adaptive cardiac remodeling and gal-3 is emerging as a prognostic biomarker in patients with HF. Left atrium (LA) diameter has been shown to be a significant predictor of cardiovascular outcomes.

We hypothesized that pro-apoptotic miR-1 and pro-fibrotic miR-21 may be dysregulated in HF patients with enlarged LA. This study aimed to evaluate the expressions of miR-1, miR-21 and gal-3 serum concentrations in patients with post myocardial infarction HF and different degrees of LA enlargement.

Methods: Of 59 consecutive patients hospitalized due to ischaemic HF exacerbation (mean left ventricle ejection fraction $33.9 \pm 13.8\%$), 52 subjects (79.2% males; 69.5 ± 12.1 years) with enlarged LA (>38mm for women and

>40mm for men) were included to the study. All patients underwent standard echocardiographic examinations and were divided into two subgroups according to the cut-off point of 48 mm of LA diameter. The expressions of miR-1 and miR-21 were assessed by quantitative real-time polymerase chain reaction (qRT-PCR). gal-3 serum concentrations were evaluated by the automated enzyme-linked fluorescence assay.

Results: In patients with enlarged LA (n=52) there were a significant negative correlation between

NT-proBNP level and miR-1 expression ($R_s=-0.294$, $p<0.05$) and also between interventricular septum diameter (IVSD) and miR-1 expression ($R_s=-0.326$, $p<0.05$). Furthermore, a positive associations between NT-proBNP and gal-3 serum concentrations ($R_s=0.391$, $p<0.05$) and also between miR-1 and miR-21 expressions ($R_s=0.306$, $p<0.05$) were revealed.

In 30 patients with LA diameter >48mm miR-1 expression decreased with the intensity of left ventricle hypertrophy assessed by IVSD ($R_s=-0.453$, $p<0.05$). In this group a negative correlation between NT-proBNP concentration and miR-1 expression ($R_s=-0.388$, $p<0.05$) was also revealed. No significant differences were found for LVEF, NYHA class, HF etiology as well as gal-3 serum levels, miR-1 and miR-21 expressions between patients with LA diameter >48mm and LA \leq 48mm.

Conclusions: LA enlargement in patients with symptomatic HF is associated with miR-1 expression downregulation and increasing gal-3 concentrations in serum.

P532

High-sensitive c-reactive protein in elderly patients with pulmonary embolism independently predicts short-term mortality and improves the clinical pulmonary embolism severity index risk score

R Klingenberg,¹ O Schlager,² A Limacher,³ M Mean,⁴ N Vuilleumier,⁵ N Rodondi,⁴ TF Luescher,¹ D Aujesky,⁴ M Husmann⁶ and CM Matter¹

¹University Hospital Zurich, Cardiology, Zurich, Switzerland ²Medical University Vienna, Angiology, Vienna, Austria ³Institute of Social & Preventive Medicine & Clinical Trial Unit, University of Bern, Bern, Switzerland ⁴University Hospital of Bern, General Internal Medicine, Bern, Switzerland ⁵Geneva University Hospitals, Laboratory Medicine, Geneva, Switzerland ⁶University Hospital Zurich, Angiology, Zurich, Switzerland

Purpose: The role of inflammation and high-sensitive C-reactive protein (hs-CRP) in the development of spontaneous venous thromboembolism (VTE) remains debated. Since hs-CRP has prognostic value in patients with coronary artery disease, hs-CRP may be useful to risk-stratify patients with acute pulmonary embolism (PE).

Methods: We analyzed 600 patients aged \geq 65 years with newly diagnosed PE enrolled into the prospective SWITCO-65+ cohort study. Adjudicated outcomes during 3-month follow-up were VTE recurrence (n=6), overall mortality (n=33), PE-related mortality (n=11), and major bleeding (n=34). Associations between hs-CRP and outcomes were assessed, adjusted for confounders. The discriminative power of the PESI risk score, hs-CRP, hs-TnT, and NT-pro-BNP for 3-month overall mortality was compared and the integrated discrimination improvement (IDI) index determined.

Results: The median patient age was 75 years (IQR 69; 81), 45% (n=272) were women, and 20% (n=117) had a concomitant deep vein thrombosis. Prior VTE was found in 28% (n=169) of patients, 29% (n=172) had a provoked index VTE, and 17% (n=101) had a diagnosis of active cancer. Ninety-one percent (n=543) of patients received vitamin K antagonist therapy, for a median duration of initial anticoagulation of 11.1 months (IQR 5.7; 26.4) and 27% (n=162) received statins. The median PESI risk score was 95 (IQR 81; 113) and the median concentrations of the biomarkers were: hs-CRP 28.9 mg/L (IQR 11.7; 74.2), hs-TnT 14.8 pg/mL (IQR 7.5; 30.4) and NT-proBNP 554.7 pg/mL (IQR 205.3; 1626). The median follow-up was 29.6 months (IQR 18.1; 37.5).

Compared with the lowest hs-CRP quartile, patients in the highest hs-CRP quartile were more likely to die during the first 3 months (adjusted HR 4.84; 95% CI 1.52-15.46). There was no significant association between hs-CRP and VTE recurrence, PE-related mortality, or major bleeding. Compared with the PESI risk score (c-statistic 0.8 (95% CI 0.75 to 0.85), hs-CRP had less discriminative power for overall mortality (c-statistic 0.68 (95% CI 0.59 to 0.78) but provided improved risk stratification when added to the PESI risk score (IDI 0.031, 95% CI 0.012 to 0.050). Combining hs-TnT (c-statistic 0.7 (95% CI 0.61 to 0.79); IDI 0.039, 95% CI 0.001 to 0.078) or NT-proBNP (c-statistic 0.73 (95% CI 0.65 to 0.81); IDI 0.026, 95% CI 0.008 to 0.044) with the PESI risk score also improved risk stratification compared with the PESI risk score alone.

Conclusions: Hs-CRP is associated with short-term overall mortality in elderly patients with acute PE and improves risk stratification when added to the PESI risk score.

P533

Predictive value of the product between creatinine and urea in intra-hospital mortality in patients with heart failure

A Fernandes,¹ L Teles,¹ M Cassandra,¹ M Madeira,¹ I Almeida,¹ F Caetano,¹ M Costa¹ and L Goncalves¹

¹Centro Hospitalar Coimbra, EPE, Coimbra, Portugal

Introduction: Chronic renal disease (CRD) predicts higher cardiovascular morbidity and mortality. Patients (P) admitted with heart failure (HF) frequently develop cardiorenal syndrome causing worst prognosis.

Objective: Determine if the product of maximal creatinine and urea nitrogen (UC) during admittance has prognosis impact in intra-hospital mortality (IHM) in P with HF.

Methods: Retrospective study involving 165P with HF admitted between 02/2012 and 09/2014. We calculate our new variable (UC) and evaluate if it was a predictor in IHM.

Results: Our population was mainly male (75,8%) with 67±14 years (medium age).

IHM was 15,8% (26D). Those P were 73±9 years; male 69,2%, with previous history of hypertension 76,9%, 38,5% diabetes, 65,5% chronic renal disease, pulmonary disease 30,8%. Half of the cases were caused by ischemia.

In univariate analysis age (p=0,018), CRD (p=0,003), pulmonary disease (p=0,009), cardiorenal syndrome (p=0,025), inotrope treatment (p=0,027), invasive ventilation (p=0,001), dialysis (p=0,006), severe left ventricle dysfunction (p=0,003), cystatin C (0,017) and UC (p=0,004) were predictors of IHM.

In multivariate analysis only UC (HR 1,0, CI95%, p=0,022), history of pulmonary disease (HR 3,86, CI 95%, p=0,034) and inotrope treatment (HR 3,35, CI 95%, p=0,029) were IHM predictors.

Conclusions: UC is a simple and cheaper variable to obtain. In our population was a IHM predictor.

P534

Apical lead positioning, and not the number of right ventricular sites tested, is associated with a greater degree of myocardial injury

A Salacata¹ and C Kaczmierzak²

¹Great Lakes Heart Center of Alpena, Alpena, United States of America

²Alpena Regional Medical Center, Alpena, United States of America

Background: Cardiac troponin (Tn) measurement is the standard for diagnosing myocardial infarctions. Tn is also elevated by cardiac procedures, including pacemaker implantation (PMI). In the era of highly sensitive assays, the extent and course of this elevation as well as the factors that can influence the extent of the elevation are not known.

Methods: In consecutive patients with normal LV function, normal renal function and no significant valvular disease

referred for PMI using active fixation leads, troponin I levels (TI) were determined at baseline, and 2-6, 6-12 and 12-18 hours post PMI using a commercially available assay (Siemens Vista high sensitivity assay, normal range <0.015-0.44 ng/mL). The frequency of an abnormal rise in TI post PMI (ATI) and the peak TI (PTI) were then analyzed according to the site of right ventricular lead placement (septal (SE) or apical (A) by Chi-square statistic) and the number of sites tested (single (S) or multiple (M) by student's t-test).

Results: Of 78 patients referred for PMI, 64 (42 male, age 75.5 ± 9.1 years, CAD=22%, DM=28%, HTN=81%) had normal TI levels at baseline. 77% (49/64) developed ATI post PMI with the peak levels occurring by 12 hours in 85% of cases and achieving levels significantly higher compared to baseline (0.0179 ± 0.0165 v. 0.1267 ± 0.1304 ng/mL, p < 0.001). ATI was significantly more frequent with A than SE (24/26 (92%) v. 25/38 (66%), $\chi < 0.001$). The PTI was lower for SE than A (0.0961 ± 0.1336 v. 0.1717 ± 0.0261, p < 0.05). There was no difference in incidence of ATI with S compared to M (12/51 (24%) v. 3/13 (23%), $\chi=0.81$). There was likewise no difference in the PTI between S and M (0.1548 ± 0.1937 v. 0.1306 ± 0.0965, p = 0.53). At discharge and at 30 days, there were no complications noted.

Conclusion: Using a high sensitive Tn assay, a significant rise in TI is seen in a majority of elderly patients referred for PMI. Our report is the first to demonstrate that the incidence of and extent of myocardial injury post PMI is dependent on lead placement location. Surprisingly, the extent of injury appears to be unrelated to the number of pacing sites tested. While PTI levels post PMI can meet the definition for a myocardial infarction, it does however peak earlier, and is not associated with adverse outcomes. This should be taken into account when evaluating patients post implant.

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Kidney microinjury post coronary angiography: any difference between radial and femoral approach?

H Yagoub,¹ GS Ahmed,¹ M Elsayed¹ and TJ Kiernan¹

¹University Hospital Limerick, Department of Cardiology, Limerick, Ireland

Background: Acute kidney injury is a well recognized complication of coronary angiography. Although many factors have been shown to impact kidney function post procedure, the role of vascular access remains yet to be established. In this study we explored the association of the vascular access and changes in the parameters of kidney function.

Methods: We prospectively studied a random sample of 44 patients who underwent coronary angiography through

either femoral or radial approach (n= 22 & 24 respectively). Serum Neutrophil Gelatinsae Associated Lipocalin (NGAL) and creatinine were measured pre and 4 hours post procedure as parameters of kidney function and injury. Student t test was used to compare differences in means between the two groups. We used multiple regression analysis to assess the relationship between type of vascular access and changes in kidney function parameters adjusting for possible confounders. Ethical approval was granted from University of Limerick Ethics Committee.

Results: Mean Age was 62.5(±12.5) years. There were no differences between the 2 groups in baseline characteristics, volume of contrast used Pre procedural kidney function parameters. However, there was significant difference between the two groups in mean Creatinine change Pre and post procedure favoring the radial access group [$\Delta\mu$ Femoral- $\Delta\mu$ Radial =7.875 95%CI (2.884, 12.866), P<0.00031]. Surprisingly, NGAL didn't follow the changes in serum creatinine nor its changes were significant. Multivariate analysis showed that the type access (P<0.0003), Use of Diuretics (P=0.008) and baseline creatinine(P<0.005) are the main predictors of creatinine change pre-post procedure.

Conclusion: Femoral access for coronary angiography could pause a risk for renal dysfunction independent of other patient and procedural variables. Larger studies with longer follow up are needed to further evaluate the clinical significance over time and the effect on MACE outcomes.

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Markers of endothelial dysfunction in 30-month prognosis after acute myocardial infarction

D Stanojevic,¹ S Apostolovic,¹ S Salinger-Martinovic,¹
V Mitic,¹ M Pavlovic,¹ D Djordjevic-Radojkovic,¹
R Jankovic-Tomasevic¹ and L Todorovic¹

¹Clinic for Cardiovascular Diseases, Nis, Serbia

Introduction: Acute myocardial infarction (AMI) is associated with increasing production of reactive oxygen species which are key mediators of signaling pathways that underlie vascular inflammation and endothelial dysfunction.

Purpose and methods: We wanted to determine an increase and interdependence between markers of endothelial dysfunction in AMI measured on the 3rd day after the initial event, compared to healthy matching group. Second aim was to investigate theirs' association with short and long term (30-month) prognosis.

We included 108 patients with AMI in experimental and 50 participants in control group. Endothelin-1 (ET-1) and nitric oxide degradation products (NOx) -nitites and nitrates were endothelial dysfunction biomarkers we investigated.

Results: Average age was 62.44±10.42 years in experimental and 59.37±9.46 in control group, 74.1% being males in experimental and 68.8% in control group. In 74.1% of patients STEMI was diagnosed, and 25.9% of patients had NSTEMI. During 30 months, 27 patients (25%) were re-hospitalized due to cardiovascular causes and 13(5.6%) patients died, of whom 3 (1.3%) died during initial hospitalization. Except one patient who died due to major gastrointestinal bleeding associated with dual antiplatelet therapy, all others died due to cardiovascular causes. Endothelin-1 and NOx levels were 3.45±1.92 pg/ml and 139.70±35.72 μ mol/l in experimental and 3.16±0.67 pg/ml and 88.82±13.15 μ mol/ml in control group, with significant difference between NOx levels among two groups (p<0.001). Higher ET-1 levels [OR=2.218, 95% CI (1.171-4.202), p=0.015] increased the risk for 30-month mortality and intrahospital mortality [OR=1.398, 95% CI(1.054-1.854), p=0.02]. In the binary logistic analysis lower NOx levels [OR=0.984, 95% CI (0.969-1.000), p=0.044] and lower LVEF [OR=0.958, 95% CI(0.918-1.000), p=0.047] increased the risk for re-hospitalizations.

Conclusions: Markers of endothelial dysfunction were increased on the 3rd day after AMI and they were predictors of cardiovascular morbidity. Also, markers of endothelial dysfunction measured in the subacute phase of AMI were predictors for in-hospital and 30-month mortality unlike conventional predictors: troponin I, high sensitive C reactive protein and brain natriuretic peptide with whom they positively correlated. Increased ET-1 levels increased the mortality risk, while lower NO degradation products increased the risk for re-hospitalizations. Theirs' measurement could help in risk stratification in AMI patients which could have therapeutic implication.

Cardiac shock

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Cardiogenic shock - current picture

R Ferreira,¹ J Martins,¹ T Adrega,¹ A Gonzaga¹
and J Santos¹

¹Centro Hospitalar do Baixo Vouga, Cardiology, Aveiro, Portugal

Background: Cardiogenic shock (CS) is a severe complication of acute coronary syndrome (ACS). We aimed to analyze the natural history, therapeutic approach and possible prognostic factors in patients with CS complicating ACS.

Methods: Observational retrospective study of 508 patients admitted in the coronary care unit for ACS for 3

consecutive years. The initial sample included 508 patients, 72.3% male, mean age 66 ± 13 years, 2.4% of these patients progressed in CS. In this study we analyzed only patients developing CS.

Results: 12 patients progressed in CS, 58.3% male, mean age 77 ± 11 years; intra-hospital mortality rate was 50%. 67% of these patients were hospitalized for ST-elevation myocardial infarction (STEMI) and 33% for non-ST-elevation myocardial infarction (NSTEMI). 67% were hypertensive, 33% diabetic, 17% were obese, 17% smokers and 33% had dyslipidemia. 8% had right bundle block in the admission electrocardiogram. In 33% of cases there were mechanical complications (mitral valve regurgitation in 25% and cardiac rupture in 8%). For the inotropic and vasopressor support, dopamine has been the amine most commonly used (67%), followed by dobutamine (42%). Levosimendan and norepinephrine were used less frequently (8% each). The intra aortic balloon was used in 8% of patients. 57% of patients were revascularized (all for percutaneous coronary intervention), in 17% of cases an inhibitor of glycoprotein IIb/IIIa was used in addition to antiplatelet agents and anticoagulation. During the acute phase 25% of patients had an episode of ventricular fibrillation. 25% of patients had anemia at admission and 66% had renal dysfunction.

The division of patients into 2 groups according to sex showed that women who developed CS were older than men (81 years vs 74). The intra-hospital mortality rate was higher in males as well as the number of mechanical complications. Glycemia at admission, initial and maximum troponin, B-type natriuretic peptide and hemoglobin A1c were higher in women. Men had higher values of hemoglobin, creatinine and LDL cholesterol. Severe depression in left ventricular ejection fraction was more prevalent in females (60% versus 43%).

Conclusion: This study shows that the mortality of patients with CS remains very high, it is essential the early identification of patients most at risk of progression to CS in order to define the best strategy to reduce mortality and morbidity.

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Prognostic predictors of cardiogenic shock in acute myocardial infarction.

I Sukmanova¹

¹Altay region cardiologist hospital, acute infarction, Barnaul, Russian Federation

Methods: The study involved 55 patients with acute myocardial infarction at the age of 56-85 years, divided into

2 groups. The first group included 29 patients (14 men and 15 women) aged $66,8 \pm 1,2$ years with AMI complicated by cardiogenic shock, the second - 26 patients (15 men and 11 women) aged $66,4 \pm 1,0$ years with AMI without cardiogenic shock.

Result: More than 60% (62.2%) patients in group with SH and 61.5% in the group without CABG revascularization ISA was performed. Time "symptom-to-balloon" in the CABG group with STEMI when it was 2 times longer and was 420 minutes than in the group without KS (210, $p < 0,05$), which was an important factor in determining the development of complications. Thrombolysis held 10 (52.6%) patients with STEMI in group 1 and 6 (37.5%) patients of the second group. PCI performed 18 (62%) patients in the first group and 14 (53.8%) in the second. Pharmacoinvasive strategy (TLT + PCI) was applied in 5 (27.2%) patients of the first group and 4 (15.4%) of the second. The majority of patients in Group 1 MI developed in the first day, when you receive CABG were signs in 8 (27.5%) patients. SAD in the first group at admission was lower than in the second (96,5% versus 138,4, $p < 0,01$). To predict the development of shock from the data was applied stepwise discriminant analysis, linear equations made up discriminant functions for each group. In order to predict the outcome of new patients have calculated the equation 2:

$$\text{shock (+)} = -308.4 + 0.22 * \text{BP (n)} + 4,47 * \text{Sat} + 0,44 * \text{GFR} - 0.32 * 0.61 * + \text{troponin creatinine} - 0.0011 * \text{time receipts} + \text{potassium} + 6.37 * 0.37 * 0.32 * + \text{glucose hemoglobin};$$

$$\text{shock (-)} = -288.0 + 0.16 * \text{BP (n)} + 4,21 * \text{Sat} + 0,49 * \text{GFR} - 0.22 * 0.66 * + \text{troponin} - 0.0014 * \text{time receipts} + \text{potassium} + 7.66 * 0.28 * 0.29 * + \text{glucose hemoglobin}.$$

Each patient can be attributed to the group corresponding to the maximum value of the function, with a probability of 83.6%. As a result, the predictors were identified, the most significant determining the dependent variable (shock). These include: the level of saturation revascularisation admission.

Conclusions: Thus, the created multidimensional mathematical model based on the method of discriminant analysis to predict the development of shock.

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INTERMACS profile as predictor of in-hospital mortality in cardiogenic shock

I Sousa Casasnovas,¹ X Li,¹ M Juarez-Fernandez,¹ F Diez-Delhoyo,¹ A Ayesta-Lopez,¹ A Alonso-Garcia,¹ H Bueno-Zamora¹ and F Fernandez-Aviles¹

¹University Hospital Gregorio Maranon, Madrid, Spain

Background: Mortality in the setting of cardiogenic shock (CS) is high, but some patient characteristics can stratify this risk. INTERMACS profiles are useful in the characterization of advanced heart failure before ventricular assist device implantation. This classification could be useful as mortality predictor among the patients with CS due to medical conditions admitted to the Cardiovascular Intensive Care Unit (CICU).

Methods: We performed a retrospective analysis of all the patients with CS due to medical conditions in our CICU from March 2013 to July 2014. We collected base-line characteristics and shock, treatment and mortality data. INTERMACS profile at 24 hours of CS diagnosis was assigned by two cardiologists independently, in case of discrepancy the case was discussed

Results: We enrolled 114 patients during the study period. Etiology: Acute coronary syndrome 57%; Acutely decompensated heart failure 29.8%; Arrhythmias 10.5%; other etiologies 2.6%. Men 66.7%. Age 67.7 (SD 14.3). After INTERMACS classification the groups resulted: INTERMACS1 20.2%; INTERMACS2 25.4%; INTERMACS ≥ 3 54.4%. The overall in-hospital mortality rate was 35.1%. Regarding to INTERMACS profile, the mortality rate was resulted: INTERMACS1 87%; INTERMACS2 57.1%; INTERMACS ≥ 3 6.5%. Comparison with univariate logistic regression showed significant differences among the groups ($p < 0.001$). After analysis with multivariate logistic regression and adjusting with traditional predictors (blood pressure, LVEF, glycemia, diabetes, chronic renal insufficiency and age) the significance persisted with worse prognosis as INTERMACS profile decreased: INTERMACS2 vs INTERMACS ≥ 3 ($p < 0.001$; OR 18.4 [5.0-68.3]); INTERMACS1 vs INTERMACS ≥ 3 ($p < 0.001$; OR 90.4 [16.6-493.7]).

Conclusion: INTERMACS profile at 24h of CS diagnosis was strongly associated with in-hospital mortality. We suggest that it can be a valuable tool in order to stratify the risk of the patient suffering from CS, and thus it can help to guide the need for more aggressive therapies.

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Acute myocardial infarction complicated with cardiogenic shock: is it treatment guideline guided?

M Madeira,¹ F Caetano,¹ I Almeida,¹ M Costa¹ and L Goncalves¹

¹Hospital and University Center of Coimbra; Faculty of Medicine, University of Coimbra, Department of Cardiology, Coimbra, Portugal

Purpose: 5 to 8% of acute coronary syndromes (ACS) are complicated by cardiogenic shock (CS) and, despite

advances in treatment, in-hospital mortality remains high. Early diagnosis and prompt treatment are crucial. The evidence supporting current guidelines is sparse and controversial and it may lead to different therapeutic strategies. Our aim was to characterize a population of patients (P) admitted with ACS in CS. We also compared the population, in two different time points, aiming to assess the degree of compliance to European Society Cardiology (ESC) guidelines and determine the prognostic impact of different therapeutic strategies.

Methods: From 10268 P included in a national multicenter registry of ACS, P with clinical criteria of CS at admission were studied. The population was divided according to admission date (G1 - October/2010 to August/2012; G2 - August/2012 to October/2014).

Results: CS incidence was 2% (59% male; 69 ± 13 years). 79% of P presented with ST elevation myocardial infarction (STEMI), with anterior location in 50% cases.

At admission, mean arterial pressure was 72 ± 24 mmHg; 22% had left ventricle ejection fraction $< 30\%$.

85% of STEMI and 18% of NSTEMI P underwent reperfusion therapy, being primary angioplasty the most common strategy (89%). In STEMI, the time between symptom onset and reperfusion was 262 minutes (165-400). Radial approach was used in 31% of P. Left anterior descending artery was the culprit in 35% and left main in 8%. Multivessel disease was present in 59% of P and complete revascularization was done in 16% of those.

Inotropes were used in 71% of P, intra-aortic balloon pump (IABP) in 19%, ventricular assist devices in 1% and invasive mechanical ventilation in 38%. During hospital stay, 33% of P developed cardiorenal syndrome and 64% had a drop in hemoglobin > 1 g/dL; 52% had dysrhythmic complications and 29% cardiac arrest. In-hospital mortality was 37%. In multivariate analysis, no therapeutic strategy predicted better prognosis.

Comparing P admitted before and after August/2012, there were no differences in treatment strategies, namely in vascular access, reperfusion strategy or use of IABP. In-hospital mortality was also similar (37.3% vs 37.2%, $p = 0.989$).

Conclusion: CS incidence and related in-hospital mortality in our country are similar to published international series. This work highlights both the low compliance to ESC guidelines and the absence of change in therapeutic strategy after new guidelines have been published. Reperfusion strategy and the remaining medical therapy must be optimized to improve, the otherwise, dire prognosis of CS.

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Long-term prognostic impact of intra-aortic balloon pump use in cardiogenic shock

L Almeida Morais,¹ L Ferreira,¹ A T Timoteo,¹ P Rio,¹ P Daniel,¹ I Rodrigues,¹ S Aguiar Rosa¹ and R Cruz Ferreira¹

¹Hospital de Santa Marta, Lisbon, Portugal

Purposes: Intra-Aortic Balloon Pump (IABP) use in acute coronary syndromes (ACS) complicated with cardiogenic shock (CS) was recently downgraded in European guidelines, in light with the IABP-SHOCK II trial results, which reported no benefit in 30-days mortality with its use. Nevertheless, frequently there is no available, efficient and safe alternative to ensure hemodynamically stability in this acute setting.

The aim of the present study was to retrospectively evaluate the prognostic impact of IABP use in the CS in ACS, as well as its safety.

Methods: From 2007 to 2011 consecutive patients included in the ACS registry in one university centre were retrospectively analyzed. In-hospital, 30-days and 12-months all cause mortality rates were calculated and independent predictors for mortality were determined using multivariable analysis. For safety analysis, reported adverse event rates were also evaluated.

Results: From the 1870 patients included in the registry (70.1% male, 63.4 ± 13.2 years old) there was 1124 (60.1%) ST - elevation myocardial infarction (STEMI) and 34.7% ACS with an anterior location. From the 120 patients (6.4%) presenting with or developing CS, 30% were treated with IABP support. In-hospital mortality rates were not statistically different between those supported and non-supported by IABP (44.4% vs. 50%, p=0.69). IABP utilization was not found to be an independent predictor for 30-days mortality (OR 1.23 95% CI 0.38 – 3.94, p= 0.73) or 12-months mortality (OR 0.85 95% CI 0.06 – 11.89, p= 0.90). Nonetheless, in those supported by IABP there were inferior rates of acute kidney lesion, although not statistically significant (13.9% vs. 28.6%, p= 0.105). Adverse events as stroke (8.3% vs. 4.8%, p= 0.42) or transfusion requirement (27.8% vs. 15.5%, p= 0.13) were not significantly different between those treated with or without IABP.

Conclusion: The management of ACS presenting or evolving into cardiogenic shock remains challenging in our era, without efficient, safe and accessible strategies in most cases. Despite not being associated with an improved long-term prognosis, IABP use was considered a safe procedure to preserve hemodynamic stability.

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Culprit lesion PCI vs. multivessel PCI in patients with emergent PCI of left main coronary artery presented with cardiogenic shock

V Kanic,¹ M Vollrath,² I Balevski,³ Z Kanic³ and A Sinkovic³

¹University Medical Centre Maribor, Cardiology, Maribor, Slovenia

²Herzzentrum Leipzig, Leipzig, Germany ³University Medical Centre Maribor, Maribor, Slovenia

Purpose: Our purpose was to establish the possible difference between ad-hoc multivessel percutaneous coronary intervention (PCI) and target vessel revascularization in patients who underwent emergent PCI of left main coronary artery (LMCA) presented with CS.

Methods: The present study was an analysis of 43 patients with acute coronary syndrome with LMCA stenosis as a culprit lesion, who were brought to hospital in CS from 2009-2014. The group with PCI of target lesion only [28 (65.1%)] was compared with the group with multivessel PCI = PCI of LMCA and PCI of at least 2 major coronary arteries [15 (34.9%)]. In-hospital mortality, long-term mortality and time-to-death were compared between the groups. Angioplasty strategy, route of arterial access, predilation devices was at the discretion of the operator. The only goal at the time of index PCI was patient's survival. After patients' stabilization we tried to treat all significant lesions and suitable revascularization was attempted. A >70% stenosis was defined as significant. Median follow-up was 19 days (25th, 75th percentile; 2, 873). Distributions of continuous variables in both groups were compared with the 2-sample t test or the Mann-Whitney test according to whether data followed the normal distribution. Distributions of categorical variables were compared with the chi-square test. All p values were two-sided and values less than 0.05 were judged statistically significant.

Results: In the hospital 19 (67.9%) patients with target lesion PCI only and 5 (33.3%) with multivessel PCI died; p=0.052. Long-term mortality was similar in both groups [23 (82.1%) in culprit PCI only vs. 12 (80.0%) in multivessel PCI]. Time-to-death was significantly shorter in culprit lesion only group 5.5 days (2.0, 3.0) vs. 232.0 days (5.0, 1559.0); 0.019.

Conclusion: In-hospital and long-term mortality rate were similar in patients with target lesion only PCI and multivessel PCI. There was a strong trend to lower in-hospital mortality in the multivessel PCI group and they lived significantly longer despite the fact that long-term mortality at the end of the observation period was similar. Although a small number of patients were involved our result suggests ad-hoc complete revascularization should be attempted in this special subset of patients whenever technically feasible. A randomized trial is needed to clarify the potential benefit of this strategy in these critically ill patients, though the clinical picture may preclude such study.

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Intraaortic balloon pump in patients with cardiogenic shock: the end of an era?

MT Nogales-Romo,¹ B Terol,² C Ferrera,¹
C Fernandez-Perez,³ MJ Perez-Vizcayno,¹
P Martinez-Losas,¹ G Tirado,¹ A Freitas-Ferraz,¹
A Fernandez-Ortiz¹ and A Viana-Tejedor¹

¹Hospital Clinic San Carlos, Department of Cardiology, Madrid, Spain

²University Hospital Severo Ochoa, Department of Cardiology, Madrid, Spain ³Hospital Clinic San Carlos, Madrid, Spain

Purpose: Intraaortic balloon pump (IABP) has been downgraded in the last clinical practice guidelines of the European Society of Cardiology, following the IABP-SHOCK II trial results. However, there is a discrepancy between these results and the positive perception that professionals working at critical cardiac-care units (CCU) have of IABP. Our aim is to compare baseline characteristics, mortality and clinical outcomes observed in this study with those obtained in our institution.

Methods: Retrospective data were collected from patients admitted in the CCU of a tertiary hospital undergoing IABP implantation between June 2003 and January 2015. We selected for the analysis only those patients whose indication for IABP implantation was cardiogenic shock. Baseline characteristics of these patients were compared to those of the studied population in the IABP branch (301 patients) of the IABP-SHOCK II trial in addition to their inhospital evolution.

Results: Data from 194 patients who underwent IABP inserction were recorded, 121 of which were implanted for cardiogenic shock. These patients represent our target population. Median age was 71 years old (61-79) and 67,8% were male. The baseline characteristics were well balanced between the two groups, except for a higher prevalence of diabetes and dyslipidemia in our population and a lower prevalence of smokers. Regarding inhospital evolution, a higher reinfarction incidence (10,1% vs 3%, $p=0,006$) and stent thrombosis (5,9% vs 1,3%, $p=0,022$) were observed in our population. Nevertheless, there were no significant differences in the rates of mortality (41,7% vs 39,7%, $p>0.05$) or complications related to IABP: stroke ($p>0.05$), bleeding ($p=0,378$) and vascular complications ($p=0,158$).

Conclusions: Our population baseline characteristics are comparable to those of the patients included in the IABP-SHOCK II trial. Our results are also similar in terms of mortality and clinical inpatient events. Therefore, conclusions obtained from this trial may be applicable to our population. Further studies are warranted to evaluate the potential benefit of IABP in selected populations.

Coronary reperfusion

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Effects of renal function on coronary flow and left ventricular systolic function in patients with acute ST elevation myocardial infarction (STEMI) undergoing primary angioplasty

D Sharif,¹ J Abu-Rizq,² Y Sharif,² A Sharif-Rasslan²
and U Rosenschein¹

¹Bnai Zion Medical Center, Haifa, Israel ²Technion, Haifa, Israel

Abnormal renal function is associated with worst outcome in patients with acute ST elevation myocardial infarction (STEMI). Estimated creatinine clearance (eCCT) or glomerular filtration rate (eGFR) are used to assess renal function before percutaneous primary coronary intervention (PPCI).

Aim: Evaluate the effect of renal function at admission in acute anterior STEMI and PPCI on coronary and myocardial flow and left ventricular systolic function.

Methods: One hundred thirty four patients with anterior STEMI treated by PPCI were studied. TIMI and myocardial blush (MBG) grades before and after PPCI, ST elevation resolution, left anterior descending coronary artery (LAD) flow parameters, left ventricular ejection fraction (LVEF), wall motion score index (WMSI) and LAD-WMSI were evaluated early after PPCI and before discharge.

Results: Patients with renal dysfunction were younger and with less risk factors. Post- PPCI, TIMI and MBG were similar between the groups, however before PPCI the distribution was variable according to the formula applied (eGFR or eCCT). More ST elevation resolution occurred with eCCT or eGFR between 60 and 30ml/min (42% vs. 25%, $p\text{ value}<0.05$). In patients with better renal function, LAD-diastolic deceleration time tended to be longer (635.9 ± 412 vs. 472 ± 220 msec, $p\text{ value}<0.05$). While early and late LVEF and LV WMSI were similar between the groups, LAD WMSI was lower in moderate renal dysfunction according to eGFR. Change in LAD-WMSI was larger in normal renal function. Creatinine and urea did not reveal differences in LAD flow and LV-function parameters.

Conclusions: Mild and moderate renal dysfunction did not affect PPCI outcome in anterior STEMI.

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Myocardial bridging: clinical and angiographic profile in patients undergoing coronary angiogram for chest pain in acute setting

S Biradar,¹ G Jimmy,¹ P C Sreeranga,¹ M Ravi¹
and C N Manjunath¹

¹Sri Jayadeva Institute of Cardiovascular Sciences and Research, cardiology,
Bangalore, India

Aim: The aim of this study is to determine the frequency clinical, angiographic characteristics anatomical aspects clinical manifestations and possible associations of myocardial bridging in adults undergoing coronary angiogram in acute setting in our center

Methods: The angiographic data of 9000 adult patients who underwent angiography in 2014 were retrospectively analyzed for the diagnosis of myocardial bridge. Quantitative analysis of coronary angiogram was done.

Results: Myocardial Bridging was present in 32(0.35%) of 9000 angiograms. The location of the bridge was in the LAD in 30(93.75%) cases and LCX in 2 (6.25%) cases. Of the 32 patients with bridging 16 (50%) had STEMI and 8 (25%) had TMT positive. 30 (93.25%) had presented with angina alone and 2 (6.25%) with dyspnea and angina. 26 (81.5%) had moderate severity of bridging and 4 (12.5%) had severe one. In 26 (81.5%) bridging involved Mid vessel and in 5 (15.6%) distal vessel

Conclusion: Chest pain was the common reason for angiography with myocardial bridging. It was more frequent in LAD and middle segments. Myocardial bridging can accelerate atherosclerosis and precipitate acute myocardial infarction.

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Left ventricular function evaluation after complete revascularization in primary pci versus culprit-only revascularization.

A Mowafy,¹ H Ghawaby,¹ H A Atroush,¹ KM Mashour¹ and WO Omar¹

¹Cairo University, Kasr Al-Ainy Hospital, Critical Care Medicine Department, Cairo, Egypt

Background : The presence of multi-vessel disease has been found to be associated with worse prognosis in patients with STEMI. (14) Identification of optimal strategies for treating these patients is the subject of considerable interest and controversy.

Objective: Our aim is to compare in-hospital, long-term outcomes and LV EF (6 months) between complete revascularization(CR) and culprit - only revascularization(COR) in STEMI patients with MVD undergoing p-PCI.

Methods: A total of 40 patients with recent STEMI and MVD undergoing p-PCI were alternatively randomized to

CR (group A) or COR (group B) during p-PCI and followed for 6 months for completion of PCI in group B after 1 month. Patients were followed for incidence of MACE (in-hospital, at 1&6 months), CIN and EF improvement at 6 months.

Results: forty pts (mean age 55.2 ± 9.1 years, 33 Males, 7 Females) with comparable risk factors between both groups. In gp. A, LV EF improved significantly after 6 months [54.3 ± 9.1 to 58.4 ± 6.2 (P value 0.002)] compared to gp. B [54.9 ± 5.2 to 55.7 ± 6.7 (P value 0.55)]. This improvement was more observed in patients with anterior wall myocardial infarctions. Incidence of MACE in both groups was comparable during hospital stay and at 1and 6 months follow up. Two cases in group B, while no MACE in group A at 1 and 6 months follow up (P value 0.14). Safety of aggressive strategy for complete revascularization is comparable for culprit- only strategy as regard incidence of CIN [2 cases in gp. A, while 1 case in gp. B (P value 0.54)] and Vascular complications [no cases in gp. A, while only one case in gp. B (P value 0.31)]. Patients with Door to balloon time less than 90 minutes are associated with better EF in comparison to more than 90 minutes (57.1 ± 6.3 versus 50.5 ± 7.3 P value 0.005)

Conclusion: complete revascularization is safe during p-PCI and associated with better LV EF at 6 months especially in anterior MI.

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Multivessel disease in patients with ST-segment elevation myocardial infarction: 8 years' monocentric experience

MT Grillo,¹ T Bisceglia,¹ G Bernardi,¹ L Spedicato,¹ A Proclemer,¹ G Nucifora¹ and D Zanuttini¹

¹University Hospital Santa Maria della Misericordia, Cardiology, Udine, Italy

Background: Multivessel disease (MVD) occurs in about 40% of patients presenting with STEMI, and it's associated with a worse outcome compared to single-vessel disease. The optimal treatment of patients found to have MVD while undergoing primary percutaneous coronary intervention (pPCI) for ST-segment elevation myocardial infarction (STEMI) is still uncertain and of continuing interest in the era of drug-eluting stents (DES).

Purpose: The purpose of this study is to examine the differences in long-term mortality for STEMI patients with MVD as a function of whether they underwent culprit-only pPCI or multivessel PCI.

Methods: This is an observational, retrospective study, which considered 378 STEMI patients with MVD undergoing pPCI in our hospital between January 2007 and December 2014. They were subdivided in two groups: 1)

305 patients (80.7%) who underwent culprit-only pPCI; 2) 73 patients (19.3%) who underwent pPCI and then completed the revascularization during index admission. The primary endpoint at 5 years was a composite of death from cardiac causes, acute coronary syndromes, or need to repeat revascularization on target lesion or target vessel (TLR/TVR). Mean follow-up was 29±27 months.

Resultats: At 5 years follow-up, the primary endpoint occurred in 24.4% of the patients in the culprit-only group and 18.7% of the patients in the complete-revascularization group ($p=0.21$). There was no difference in mortality among the two groups (5.1% vs 3.2%, $p=0.69$). Patients who underwent culprit-only revascularization had a higher incidence of acute coronary syndromes during follow-up (18.0% vs 7.9%, $p=0.041$). On the other hand, at 1 year, those who completed revascularization had more TLR/TVR (2.4% vs 10.5%, $p=0.004$), even though these events were extremely rare in our population (12 TLR and 11 TVR, respectively 3.2% and 2.9% of the global population). At multivariate analysis, the use of bare-metal stents (BMS) and 1st generation DES was associated with a worse outcome in these patients. Most of the TLR were caused by in-stent restenosis of BMS (9 cases = 75% of all TLR).

Conclusions: we didn't find any significant difference in the occurrence of primary endpoint between the two treatment strategies. Patients undergoing culprit-only PCI were at higher risk of acute coronary syndromes during long-term follow-up, while those who completed revascularization had a higher recurrence of TLR/TVR at 1 year. The use of 2nd generation DES was associated with a minor incidence of TLR/TVR.

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Working hours vs non-working hours. Different timings?

A Correia,¹ B Silva,¹ R Rodrigues,¹ M Neto¹
and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Purpose: The time between the onset of symptoms and the performance of percutaneous transluminal coronary angioplasty (PTCA) is directly related with the outcome of patients with ST-elevation myocardial infarction (STEMI). This study aims to evaluate the prognosis between the patients admitted at the hospital with STEMI arriving in labor hours and non-labor hours.

Methods: Retrospective study of 360 consecutive patients admitted for NSTEMI-ACS between October 2009 and October 2012. We defined labor hours: period between [8:30; 15:30], and non-labor hours: period

between]15:30 – 08:30[. We divided in 2 groups: patients arriving at labor hours (group L: n=101, 31.2%; 66.3% men), and patients arriving at non-labor hours (group NL: n=223, 68.8%; 74.9% men). The groups were compared regarding primary composite endpoint (death, MI, or stroke), secondary objectives (death, MI, or stroke isolated) and mortality in patients aging over more than 75 years during hospital stay.

Results: Most of the patients arrived at the hospital in non-labor hours (L=31.2% vs NL= 68.8%). No differences in age, BMI or sex. Group L had more prior stroke (L=10.9% vs NL=4.0%; $p=0.018$) and no prior cardiovascular pathologies. No differences in medication, time between onset of symptoms and admission to the hospital or door-to-balloon time (L=1.19 (interq=1.19) vs NL=1.09 (interq=1.05); $p=ns$). No differences were registered at the admission values of creatinine, blood glucose, BNP, hemoglobin, Killip class, therapy implemented or rate of complications. No differences in primary composite endpoint. In secondary objectives, group NL showed higher mortality in individuals over 75 years (L=8.0% vs NL=26.5%; $p=0.06$).

Conclusions: Despite arriving at hospital in non-labor hours implies the need to call hemodynamics team, this did not implicate further delay in perform

Fibrinolytic Therapy

P549

Ticagrelor seems to be safe for the treatment of STEMI with thrombolysis with streptokinase

G Jans,¹ M Farfan,¹ C Pulmari,¹ O Simonovich,¹
E Costantini,¹ S Zunino,¹ P Czerniuk,¹ S Waldman²
and H Cohen Arazi¹

¹Hospital Dr. Raul F Larcade, Cardiología, Buenos Aires, Argentina

²FLENI Institute, Buenos Aires, Argentina

Introduction: In our hospital access to primary angioplasty is limited; some patients initially treated with ticagrelor end up treated with streptokinase. The objective of this analysis is to evaluate the safety of this strategy.

Methods: We performed a prospective study including patients with STEMI who could not be derived for primary angioplasty; one group was treated with ticagrelor and streptokinase, and the other group with clopidogrel and streptokinase. Antiplatelet was selected depending on the availability of the drug in the hospital. We evaluated the safety of the treatment and the differences in hospital mortality and morbidity between patients treated with ticagrelor or clopidogrel.

Results: We included 49 patients during 2014; 27 patients were treated with ticagrelor (loading dose of 180 mg and maintenance dose of 90 mg twice daily) and 22 treated with clopidogrel (300 mg loading dose and then 75 mg daily). 80% were male; 59 + 10 years; 52 % had a history of hypertension; diabetes 25 %; 31 % dyslipidemia; and 61 % were smokers (with no differences between the two groups). Eight patients (16 %) had ST elevation in anterior leads in the ECG; 78% were admitted with Killip and Kimball I, during hospitalization 5 patients had shock criteria. Door to needle time was 70 (40-135) minutes for patients with clopidogrel and 75 (48-145) for patients with ticagrelor (p 0.06), the pain to needle time was 190 (90-345) and 200 (90-440) minutes, respectively (p 0.7). 57% had criteria for positive reperfusion, without differences between 2 groups (p 0.17). One patient was treated with rescue angioplasty, 12 were performed delayed angiography; 8 received angioplasty (no differences between the 2 groups).

Echocardiogram was performed in 35 patients, 8 patients showed severe ventricular dysfunction, more frequent in patients with negative reperfusion criteria (p 0.007). Four patients had post infarction angina (two of each group); 1 patient suffered a stroke, and one had bradycardia, both in the clopidogrel group. There were no major bleeding complications. One patient treated with ticagrelor presented a tongue haematoma, and another one in the puncture site which did not require the interruption of the treatment.

There were 5 deaths during hospitalization, 2 with ticagrelor and 3 with clopidogrel.

Conclusion: Treatment with ticagrelor and streptokinase seems safe, similar to treatment with clopidogrel. There were no episodes of major bleeding. The previous evidence of superiority of ticagrelor over clopidogrel in other clinical settings requires evaluating this strategy in larger studies.

General intensive care

P550

The hemodynamic impact of internal versus external therapeutic hypothermia

S Wiberg,¹ J Bro-Jeppesen,¹ C Hassager,¹ J H Thomsen,¹ M C J Wanscher,² J Lund³ and J Kjaergaard¹

¹Rigshospitalet - Copenhagen University Hospital, Heart Centre, Department of Cardiology, Copenhagen, Denmark ²Rigshospitalet - Copenhagen University Hospital, Heart Centre, Department of Anaesthesia, Copenhagen, Denmark ³Rigshospitalet - Copenhagen University Hospital, Heart Centre, Department of Thoracic Surgery, Copenhagen, Denmark

Purpose: Therapeutic hypothermia (TH) by surface cooling targeting 33 degrees is associated with decreased cardiac

output and increased systemic vascular resistance. It remains unknown whether these hemodynamic effects are different when applying surface cooling versus internal cooling.

Methods: After informed consent, we randomised patients undergoing open elective heart surgery to a course of 45 minutes of internal or external cooling after sedation and before sternotomy. Invasive hemodynamics and echocardiography were performed at baseline and every 15 minutes. A variance component model was applied to correct for baseline characteristics and temperature.

Results: Thirteen participants were randomized to internal (n=6, mean age 69 years, 4/6 men) or external (n=7, mean age 69 years, 6/7 men) cooling. The temperature decreased from 36.1 to 34.4 °C, with a lower temperature being reached by internal cooling (diff. 1.2°C, p=0.01). During the period of TH we observed a significant drop in heart rate (63 bpm to 54 bpm, p=0.02) combined with a decreased cardiac output (2.6 L/min to 2.3 L/min, p<0.01). There were no significant hemodynamic differences between internal and external cooling (table).

Conclusions: Therapeutic hypothermia was associated with a decrease in heart rate and cardiac output, as expected. We observed no differences in hemodynamic parameters between internal and external cooling.

Table 1. Hemodynamic differences.

Difference from 0 to 45 minutes	Internal cooling	External cooling	p*
	(mean ± SD)	(mean ± SD)	
Δ Cardiac output, echocardiography (L/min)**	-0.4 ± 0.3	-0.3 ± 0.4	ns
Δ Cardiac output, invasive (L/min)**	-0.1 ± 0.8	-0.2 ± 0.4	ns
Δ Pulmonary capillary wedge pressure (mmHg)	1.8 ± 3.3	-0.1 ± 5.1	ns
Δ Systemic vascular resistance (dyn*s/cm ⁵)	240.0 ± 340.0	168.2 ± 564.2	ns
Δ Heart rate (bpm)	-10.2 ± 7.6	-6.0 ± 12.4	ns
Δ Mean arterial pressure (mmHg)	5.3 ± 15.2	-1.9 ± 17.8	ns

Table showing the hemodynamic differences between internal and external cooling from 0 to 45 minutes.* Repeated measures statistics adjusted for baseline values and temperature** Cardiac output, echocardiography correlated to cardiac output, invasive (r=0.6, p<0.01).

P551

Treatment with statins following an acute coronary syndrome. What are we doing exactly with our patients?

JC Gomez Polo,¹ P Martinez Losas,¹ L Nombela Franco,¹
C Ferrera,¹ T Nogales Romo,¹ A Freitas Ferraz,¹
G Tirado,¹ B Terol,¹ A Fernandez Ortiz¹
and A Viana Tejedor¹

¹Hospital Clinic San Carlos, Madrid, Spain

Purpose: Treatment with statins is one of the basic pillars in order to prevent new events in patients who have suffered an acute myocardial infarction (AMI), regardless of age, gender or LDL cholesterol levels. In fact, several clinical trials have demonstrated that high intensity statins represent the most effective strategy in secondary prevention, which has been defined in the latest american guidelines about dyslipidemia management. However, different records in real population show the existence of several factors that determine the probability of prescription of high intensity statins, as gender, race or educational level. Our aim was to analyse the factors who can have an impact in the statins prescription after an AMI.

Methods: We studied retrospectively a cohort of 284 patients admitted sequentially in an Acute Cardiac Care Unit with the diagnosis of acute coronary syndrome with ST segment elevation, from January of 2013 to July of 2014. We registered analytical, echocardiographic and clinical features, performing a 6 months since the cardiovascular myocardial infarction follow-up. We considered high intensity statins doses of 40-80 mg of atorvastatin and 20-40 mg of rosuvastatin.

Results: Among the 284 patients, 221 (77,8%) were men, with an average age of 64 years old. 265 (93,3%) received statins at discharge, of which 191 (72,1%) were high intensity statins. An uni and multivariate analysis was performed, in order to study elements associated with a major probability of high intensity statins prescription. Only total cholesterol basal levels (OR 1,01; CI 95% 1,00-1,02; p= 0,026), and increased values in CRUSADE score show a relation with an incremented propability of receiving high intensity statins at discharge. On the other hand, different condicionant factors as age, diabetes mellitus, weight or previous statin dose did not show any statistically significant differences.

Conclusion: Our cohort demonstrates an elevated percentage of patients that received any kind of statins at discharge, however, the rate of high intensity statins was under the expected values. Despite the number of factors studied, only total cholesterol basal levels and increased results in CRUSADE score show to have an impact in choosing treatment with high intensity statins at discharge. These results underline the fact that another difficult quantification elements, as fragility or other subjective variables may have an influence in the prescription of statins. Due to the demonstrated relevance, dose adjustment and treatment protocols may be implemented in patients admitted for AMI.

P552

Iccu organized as I level of intensity ' care: case study of a year and hospital outcome

E Salvetti,¹ F Bonechi,¹ F Calabro,¹ F Spezia,¹
F Mazza,¹ A Cecchi,¹ A Monopoli,¹ M Sansoni¹
and A Zipoli¹

¹Ospedale San Giuseppe, Cardiologia, Empoli, Italy

Introduction: In Hospitals based on intensity of care, Intensive care units are classified as level 1 (high-intensity care) while medical areas are classified as level 2 (medium intensity care). Within this organization, the Coronary Care Units (CCU) are considered as level 2 A (sub-intensive areas). Consequently patients with very complex diseases must be transferred to the Department of anesthesia – resuscitation . Since July 2008, USL 11 of Empoli (FI) is organized as Intensity level 1 and can hospitalize patients that need mechanical ventilation and hemodiafiltration. A group of cardiologists-intensivists were trained to treat patients with resuscitation problems, as well as nutritional and sepsis problems. The operating protocols regarding the hospitalization selection between the two departments (CCU and ICU) were shared. In the case of hospitalization in the CCU, the anesthesiologist had the role of consultant. With this model, we have already documented a reduction of mortality with respect to the previous years (G. Ital. Cardiol. 13, suppl 2, 112S, 2012). However, due to the limited availability of fans and other systems of advanced assistance, the risk is that not appropriate hospitalizations occur when the capacity of the intensive care unit is saturated. We analyzed the hospitalization cases of 2014 to evaluate their typology and the intrahospital outcome.

Methods: and materials The features and the intrahospital outcome of patients hospitalized in the CCU have been evaluated. At this purpose, the data collected in the hospital medical records were analyzed.

Results: In 2014, 619 patients with average age of 73.0+ 14.1 were hospitalized (62,3% males). The global mortality was of 5.1%. The acute coronary syndrome (ACS) represented the 66.0 % of the admissions . The PTCA cases were 128 with a mortality of 2.3 % . Patients affected by STEMI in sub-acute phase showed a mortality of 23.1% (3 out of 13 patients) . Patients admitted with non-cardiac disorders or not appropriate for admission were 23 (3.7 %) . Table 1 shows the diagnosis and the related mortality.

Conclusion: The analysis of the data collected in 2014 shows a few cases of inappropriate hospitalizations when clear indications regarding the admission typologies were given.

Furthermore, hospitalization of critically ill patients in the CCU of intensity care level 1 showed a good outcome with low mortality rate.

This model could be proposed to the scientific community as a new cardiologic organization of the CCUs.

P553

Urgent and elective heart transplantation: experiences and realities

G Morales Varas,¹ MA Corres Peiretti,¹ M Valiente Fernandez,¹ H Marin Mateos,¹ I Montilla Padilla,² J Gutierrez Rodriguez,¹ J Perez Vela,¹ J Delgado Jimenez,² E Renes Carreno¹ and J Montejo Gonzalez¹

¹University Hospital 12 de Octubre, Cardiac ICU. Service medicine intensive, Madrid, Spain ²University Hospital 12 de Octubre, Cardiology Service, Madrid, Spain

Introduction: Heart transplantation is a therapeutic option for patients with terminal chronic heart failure and refractory cardiogenic shock, where the urgent or elective priority can influence results. The goal is to understand the variability of results between heart transplants performed elective and urgently.

Material and methods: descriptive and retrospective study of patients undergoing heart transplant since March 2010 to February 2015. Analyzed variables demographic and clinical, including degree of priority (elective/urgent), type of mechanical support: intra-aortic balloon pump (IABP) and extracorporeal membrane oxygenation (ECMO), major complications after transplantation, ICU and hospital stay and mortality. Statistical study using SPSS 22. Data are expressed as mean, standard deviation, or percentage.

Results: 83 patients, were analyzed. 79.5% males, with a median age of 48 ± 14 years and a global average stay in ICU of 11 ± 14 days (8 in elective and urgent 16, $p < 0.01$). The most frequent underlying pathology was cardiomyopathy dilated (DCM) idiopathic with 39.8% followed by the ischemic DCM (26.5%). 59% was transplanted electively (49 patients) and 41% (34 patients) urgently, of the latter 41% (14 patients) were supported with ECMO and 59% with BCIA. 11% presented surgical bleeding requiring reoperation: 10% on elective vs. 11% in urgent ($p > 0.05$). 17% presented acute renal failure requiring renal replacement therapy: 8% (elective) vs 30% (urgent) ($p < 0.01$). They presented sepsis 19.5%: 6 (elective) vs. 39% (urgent) ($p < 0.001$). Failure multiorgan (FMO) 22%: 14 (elective) vs. 32% (urgent) ($p < 0.05$). Global mortality in the ICU was 6%. In elective transplantation was 8% vs. 0% in the urgent with IABP and 7% with ECMO ($p > 0.05$). Overall survival a year was 85.5%: 82% elective and urgent 92% ($p > 0.05$).

Conclusions: In our series, mortality at discharge from the ICU and survival in the follow-up to the year of cardiac transplantation presents no significant differences between the elective and those done urgently, independently in the latter one with IABP or ECMO. However, urgent transplants had higher incidence of renal failure, sepsis and FMO, as well as an average stay in ICU that duplicates to the elective.

P554

Vasospastic angina pectoris during post-operative period of non-cardiac surgery

S Taniai,¹ S Yamasaki,¹ T Yorozu,² T Satoh¹ and H Yoshino¹

¹Kyorin University, Second department of Internal Medicine, Mitaka, Japan

²Kyorin university, anesthesiology, Mitaka, Japan

Cardiovascular complication during the peri-operative period of non-cardiac surgery would cause the critical patient's situation. For the safety of clinical practice, we developed a screening system for non-cardiac surgery based on the ACC/AHA guidelines on peri-operative cardiovascular evaluation and care for non-cardiac surgery in 2007. We experienced four cases with vasospastic angina (VSA) that occurred just after non-cardiac surgery among 10138 consecutive planned operations from October 2013 to December 2014 after we started new screening system.

Case 1: 69 y.o. woman underwent adipose tumor excision by planned general anesthesia. At midnight the day after operation, she developed chest pain in ICU and ECG showed negative T wave in chest lead. We started calcium channel blocker (CCB). Computed tomography coronary angiography (CTA) showed normal coronary artery.

Case 2: 76 y.o. woman underwent urgent colon excision and stoma formation due to perforation of descending colon. She felt chest pain in the 3POD. Echocardiogram showed hypokinetic wall motion in antero-septal area. Although chest pain withdrew with a use of nitroglycerin tablet (NTG), ECG showed negative T wave in the chest lead next day. Although we started CCB, chest pain occurred again on 1POD because of absence of CCB for reconstructive operation.

Case 3: 58 y.o. woman underwent urgent operation for ileus. Chest pain occurred in midnight after operation. ECG showed negative T wave in the chest lead. NTG effected for the chest pain. The CTA showed normal coronary on 10POD.

Case 4: 85 y.o. woman underwent rectum cancer excision. Chest pain, hypotension and ventricular tachycardia occurred in the midnight after surgery. ECG showed ST elevation in I aVL, V4~V6 lead. After beginning of nitroglycerin, chest pain never occurred again and ST elevation in ECG improved. VT and chest pain had not occurred after starting of CCB.

According to the guidelines on peri-operative cardiovascular evaluation and care for non-cardiac surgery, acute ischemic event due to organic coronary lesions would be under control. However, we have to pay an attention to the patients who suffered myocardial ischemia due to functional coronary stenosis, such as vasospastic angina, especially just after non-cardiac surgery.

P555

A curious case of coronary atherosclerosis in a young woman with systemic lupus erythematosus.

R Brezeanu,¹ L Gheorghiu,¹ L Luchian,¹ C Stoicescu,² M Florescu² and D Vinereanu²

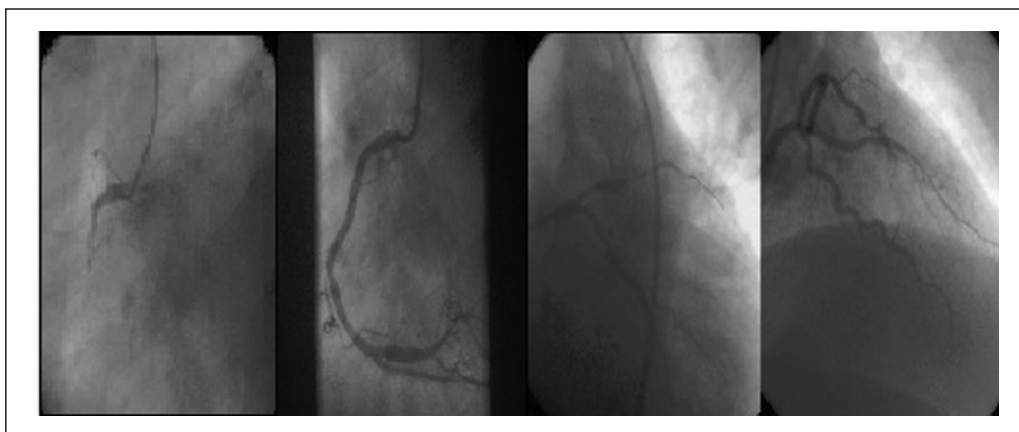
¹University Emergency Hospital, Bucharest, Romania ²University of Medicine and Pharmacy Carol Davila, Bucharest, Romania

Systemic lupus erythematosus (SLE) is often associated with an increased risk for cardiovascular acute events. Although SLE may produce coronary arteritis, accelerated atherosclerotic coronary artery disease is the main cause of cardiac mortality in this disease.

Case report: A 41 years old woman, diagnosed with SLE and antiphospholipid syndrome in the last 10 years, with moderate renal impairment and severe adverse reactions secondary to corticotherapy - obesity, diabetes mellitus, dyslipidemia, premature menopause and depression, was admitted to our hospital with intense interscapular pain. The

ECG and troponin I level were diagnosed for an inferior ST elevation myocardial infarction. Coronary angiography demonstrated thrombotic closure of the mid RCA, chronic occlusion of the mid LAD artery and significant stenosis on the D1 (figure). PCI with BMS on the RCA was performed with good results. After 72 hours, intense pain reoccurred, a thoracic computed tomography excluded aortic dissection and repeated coronary angiography showed acute closure of the D1 vessel (figure). PCI with DES was performed with no recurrent angina. Immediately after, she developed acute renal failure, post procedural puncture site hematoma with severe anemia and pulmonary infection. Hemodialysis was performed, erythrocytes mass substitution and antibiotics were given. The patient was discharged with no signs of cardiac ischemia, mild anemia and mild renal impairment.

Conclusions: The combination of traditional risk factors, chronic systemic inflammatory state and corticotherapy may generate premature atherosclerosis in LES patients. Awareness must be raised when optimal medical treatment is restricted by comorbidities, furthermore drug side effects must be carefully monitored in this fragile patients.



Angiographic aspect of coronary arteries.

Haemodynamics

P556

A device and method for measuring left ventricular end diastolic pressure non invasively

A Marmor,¹ M A Marmor² and G M Menaged²

¹Bar-Ilan University, Safed, Israel ²The Hebrew University of Jerusalem, Jerusalem, Israel

LVEDP is one of the most important parameters in treatment of heart failure. Although there are some attempts to

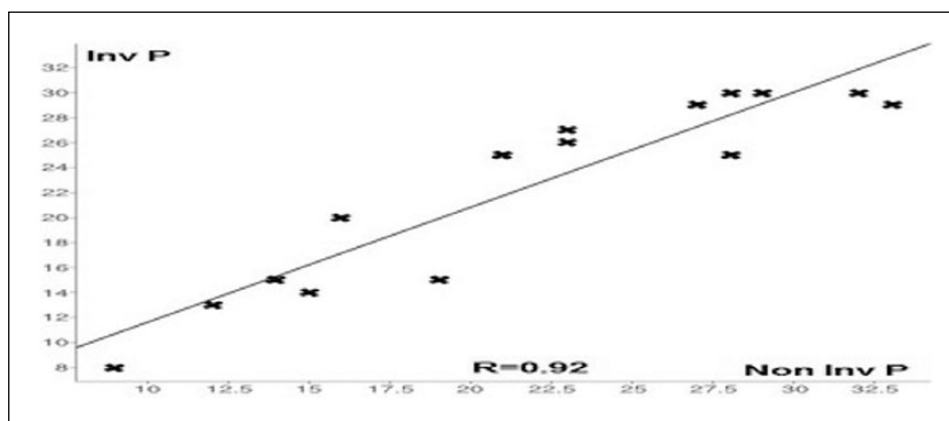
estimate LVEDP noninvasively their complexities preclude them to enter the routine clinical practice. We developed an easy blood pressure (BP) type device which can give the LVEDP in less than a minute. By inflating the BP a temporary standing fluid column is created in which the rising intracavitary pressure is transmitted to the periphery. The time intervals needed for the aortic pressure wave to overcome a given occlusive brachial pressure is equal with the time interval needed to reach the same pressure in the central aorta plus a propagation time to the brachial point which is constant in the same patient. Application of multiple successive occlusive pressures on the brachial artery beginning from peak systole to diastole and plotting their values against their respective time intervals results in the

reconstruction of central aortic pressure. This method was validated extensively and published. Using the composite central aortic pressure curve thus obtained we were able to obtain the isovolumetric contraction time and max Dp/dt and thus calculate the LVEDP using a proprietary formula based on experimental data.

The device(D) consists from a BP cuff a microphone for detecting Korotkoff sound and an electronic stethoscope

for detecting the heart sounds. The time from the 1st sound to the korotkoff sound was recorded and plotted against the respective pressure.

In 16 patients undergoing routine catheterisation LVEDP was measured in the LV and almost simultaneously by the D. a correlation of $r=0.92$. was documented. Thus it is feasible to measure LVEDP noninvasively using a simple easy to use method and device.



Validation LVEDP.

P557

An appropriate drug for rate control in atrial fibrillation based on ventricular contractile mechanisms analyzed by using impedance cardiography

S Ushiroda¹

¹Ushiroda Medical Clinic, Iwaki-shi, Japan

Background: Rate control in atrial fibrillation (AF) is important for preventing heart failure. However, appropriate drugs for rate control in AF remain controversial. The aim of this case study was to determine an optimal drug for rate control in AF based on ventricular contractile mechanisms analyzed by using impedance cardiography.

Methods: A two-dimensional scatter plot with a regression curve (i.e., ventricular function curve) fitted to the data was created by applying (dZ/dt)min value representing the peak

velocity of aortic blood flow obtained from impedance cardiography to y-axis against preceding RR interval (RR1) on x-axis. Heartbeats involved in postextrasystolic potentiation (PESP) were defined by $RR1/\text{pre-preceding RR interval } (RR2) > 1$ [HP (+)]. Heartbeats not involved in PESP were defined by $RR1/RR2 \leq 1$ [HP (-)]. In the scatter plot, a regression curve fitted to the data of HP (-) represents the Frank-Starling mechanism (FSM) and mechanical restitution (MR), and that of HP (+) represents FSM, MR, and PESP. Furthermore, the contribution of PESP was represented by a slope of regression line between the $RR1/RR2$ ratio (where $RR1/RR2 > 1$) and the corresponding (dZ/dt)min value. To determine a proper drug for rate control in a 60-year-old man with AF and dilated cardiomyopathy (EF: 38%, NYHA I), the effects of carvedilol, bisoprolol, and diltiazem were evaluated, respectively, based on the ventricular contractile mechanisms.

Results: (1) After administration of diltiazem, the ventricular function curve and the regression curve representing FSM+MR shifted upward compared with

Table 1.

Drug	Carvedilol 5mg	Bisoprolol 1.25mg	Bisoprolol 2.5mg	Diltiazem 100mg	Diltiazem 200mg
Heart rate (beats/min)	103	90	83	82	68
Slope of FSM+MR curve	0.45	0.55	0.52	0.65	0.89
Slope of PESP line	0.39	0.25	0.16	0.27	0.16

carvedilol and bisoprolol, (2) the slope of those curves increased with increasing dose of diltiazem in contrast to that of bisoprolol, and (3) the slope of the regression line representing the contribution of PESP decreased with increasing dose of diltiazem similarly to that of bisoprolol.

Conclusions: In this case, according to the ventricular contractile mechanisms, especially in FSM+MR, diltiazem was considered to be the most appropriate drug for rate control in AF.

P558

The reliability of Non-Invasive Cardiac System (NICaS) haemodynamic monitoring in the Cardiac Intensive Care Patient requiring mechanical circulatory support

G Tavazzi,¹ A Fernandez-Gasalla,² A Barradas-Pires,³ Y Mebrate⁴ and S Price⁵

¹Foundation IRCCS policlinico San Matteo Department of Intensive Care University of Pavia, Pavia, Italy ²Hospital del Mar, Cardiology Unit, Barcelona, Spain ³Autonomous University of Barcelona, Cardiology Unit, Barcelona, Spain ⁴Royal Brompton Hospital, Clinical Engineer, London, United Kingdom ⁵Adult Intensive Care Unit, Royal Brompton & Harefield NHS Foundation Trust, London, United Kingdom

Following concerns regarding the safety of the pulmonary artery catheter to measure cardiac output (CO), there has been extensive development of non-invasive devices, based on a number of different physical and physiological principles, including revisiting the potential of bioimpedance technology. These devices are based on the principle that the conductivity of a high-frequency, low magnitude alternating current passed across the thorax changes as blood flow varies with each cardiac cycle. This is then used to calculate cardiac output (CO) from generated waveforms. The theoretical benefit of such a device in patients receiving mechanical circulatory support is that they might provide an early indicator of the increasing stroke volume during myocardial recovery, and therefore be a potentially useful tool in predicting response to weaning from mechanical circulatory support.

Objective: We undertook a pilot study to determine whether the newest such device, the Non-Invasive Cardiac System (NICaS®), correlated with continuous monitoring of ventricular function and CO in the full range of patients requiring support on the cardiac intensive care unit, including those being weaned from mechanical circulatory support.

Methods: We performed echocardiography (echo) and NiCAS® on 11 patients (2 weaning trial from circulatory mechanical support (CMS); 4 post-cardiac surgery undergoing pacemaker optimisations and 5

simple monitoring of post cardiac surgery patients on inotropic support). The two measurements were carried out simultaneously on the same patient. Two experienced physician echocardiographers performed and interpreted the studies.

Results: Both the Pearson correlation coefficient and linear regression demonstrated an excellent correlation between CO measured by echo and NiCAS® in all the patients without CMS ($p < 0.001$ CI 95% 0.50-0.98). However, in the patients with CMS NiCAS® CO evaluation both at the baseline and during blood flow manipulation didn't correlate with the values obtained by echo and the ones maintained by the CMS ($p = .22$ CI 95%-.25 - .96). Table 1 shows the linear regression for the two populations.

Conclusion NiCAS® looks to be a reliable non-invasive CO monitoring in ICU patients, also providing direct changes in CO during pacemaker optimization, however, in patients with CMS, where sudden changes in load condition, circulatory instability and total blood flow partitioning occur, it is not clinical acceptable.

P559

R-R interval and modification of cardiac output following cardiac surgery: the importance of heart rate optimisation

G Tavazzi,¹ N Bergsland,² A Martinez - Naharro,³ D Gibson,⁴ F Guarracino⁵ and S Price³

¹Foundation IRCCS policlinico San Matteo Department of Intensive Care University of Pavia, Pavia, Italy ²Foundation Don Carlo Gnocchi Onlus, IRCCS, Milan, Italy ³Adult Intensive Care Unit, Royal Brompton & Harefield NHS Foundation Trust, London, United Kingdom ⁴Royal Brompton Hospital, Cardiology, London, United Kingdom ⁵Azienda Ospedaliero-Universitaria Pisana, Anesthesia & Intensive Care, Pisa, Italy

Positive inotropic agents and volume resuscitation are frequently used in ICU to reverse low cardiac output (CO), which is associated with poor outcome especially in patients following cardiac surgery where temporary epicardial pacing (TEP) is frequently utilized. The potential impact of determining the optimal R-R interval in the critically ill has largely been ignored.

Objectives: To determine the impact of the R-R interval on cardiac electromechanics (total isovolumic time; t-IVT), CO and stroke volume (SV) in patients following cardiac surgery.

Methods: 24 sequential patients with TEP underwent transthoracic echocardiography (TTE) within 4 hours of returning to ICU. Baseline pacing settings were configured on clinical evaluation by the treating anesthesiologist. Echo data included: LV/RV systolic & diastolic function, Doppler

assessment of SV, CO and total isovolumic contraction/relaxation time derived by ejection time (ET) & filling time (FT). tIVT was calculated as 60-(total ET+total FT); t-IVT > 14 s/m is associated with LV mechanical dyssynchrony(1). TTE was performed at the baseline RR interval and at heart rates from 70 to 110bpm in increments of 10bpm. Time Pearson correlation coefficients were used.

Results: Results are shown in Table1. There was no correlation between changes in HR and SV, CO or CI in the overall population except in patients following mitral valve surgery. Linear negative correlation was found between

LV t-IVT and SV, CO and CI in all the groups regardless the Ejection Fraction.Lowest LV t-IVT value always corresponded with the best CO. The mean increase using echo-directed pacemaker optimisation was: CO +2,21 (\pm 0,97) and CI+1,2 (\pm 0,52) and it led to pacemaker settings changes in 79% patients.

Conclusion: This report underlines that clinical assessment of the optimal HR is suboptimal. Echocardiography using t-IVT is a potentially useful way to optimise the hemodynamic and electromechanical profile in this patient population.

1.Duncan A. et al JACC Vol. 41, No. 1, 2003

Table 1.

Surgery	RR vs CI	LV t-IVT vs CO	LV t-IVT vs CI	LV t-FT vs HR	LV t-ET vs HR
Aortic 11 pts	p 0.065 r -0.28	p <.0001 r -.83	p <.0001 r -.69	p <0.001 r -0.53	p <0.001 r 0.72
Mitral 4	p 0.006 r -0.63	p <.0001 r -.86	p <.0001 r -.60	p <0.46 r -0.18	p <0.001 r 0.83
CABG 6	p 0.47 r -0.16	p <.0001 r -.91	p <.0001 r -.77	p <.021 r -0.5	p <0.09 r 0.37
Right 3	p 0.81 r -0.07	p <.0001 r -.77	p <.0001 r -.92	p <0.001 r -0.86	p <0.005 r 0.77

P560

Incidence, management and prognosis of spontaneous coronary dissection in our center from 2003 to 2015

M Garcia Bermudez,¹ H Tizon Marcos,¹ F Miranda Guardiola,¹ N Salvatella Giralt,¹ R Millan Segovia,¹ AB Perez,¹ D Bueno,¹ LL Recasens Gracia¹ and J Marti¹

¹Hospital del Mar Medical Research Institute (IMIM), Barcelona, Spain

Purpose: Spontaneous coronary artery dissection (SCAD) is a rare cause of acute coronary syndrome (ACS). Clinical management and treatment are still controversial.

Methods: Retrospective series of 10,492 coronary angiography (from 2003 to April 2015). The baseline and

angiographic characteristics, treatment and outcomes of the SCAD are analyzed.

Results: In the whole period 17 cases were diagnosed, the first in 2009. The annual incidence has increased to 0.54% in 2014. 93% were women (mean age of 56 \pm 10 years). The presentation was non-STEMI(81%),STEMI(13%) and stable angina(6%). The coronary involvement: circumflex artery (35%), right coronary (35%), left anterior descending (18%) and left main (12%). Angiographic parameters described in the literature are shown at the table. In addition, 41% had a sudden change in caliber. No coronary fibromuscular dysplasia was observed.6.3% had multivessel disease involvement. During admission, 41% received anticoagulation and 76% antiplatelet treatment. 13% of patients had reinfarction. 19% required revascularization due to persistent ischemia. One of them required urgent CABG and underwent cardiac transplant.

Table 1.

BASELINE CHARACTERISTICS (%)		ANGIOGRAPHIC(%)		FOLLOW UP (%)	
Hypertension	40	Initial TIMI 3	58,8	Coronary angiography	6.3
Diabetes mellitus	6,7	Vessel tortuosity index	76,5	Computedtomography	25
Dyslipidemia	33,3	Intravessel/multivessel simmetry	58,8/88,4	MACE	6.3
Migraine	20	Microaneurysms/ corckscrew sign	0/11,8	Reinfarction	6,3
Use of ergotaminic	6,7	Image evaluation (IVUS)	11,8	New lesion (same/ different vessel)	0/6.3
Peripartum	0	Intimal flap/haematoma	23,5/76,5		

The treatment at discharge was antiplatelet therapy in 100% (50% dual) and 93% statins. None of the patients were treated with oral anticoagulation. At follow-up 6% were readmitted for ACS and a new coronary dissection was diagnosed. All patients survived during the follow up period. Connective tissue studies are performed in just 20% of cases.

Conclusions: SCAD is a rare aetiology of ACS predominantly diagnosed in women and progressively more frequently diagnosed. Medical treatment confers good prognosis if there is no persistent ischemia. There are useful angiographic parameters that may increase awareness about this odd aetiology of ACS.

Interventional Cardiology

P561

External mechanical compression after implantation of vascular closure devices in patients undergoing cardiac catheterization by femoral access: an overkill?

N Pinilla-Echeverri,¹ A Jurado Roman,²
F Lozano Ruiz-Poveda,² I Sanchez Perez,²
M Marina Breysse,² MT Lopez Lluva,²
M Memoli Aranda,² J Benitez Peyrat,²
J Piqueras Flores² and A Moreno Arciniegas²

¹McMaster University, Department of Medicine, Cardiology Division, Interventional Cardiology Service, Hamilton, Canada

²Hospital General de Ciudad Real, Ciudad Real, Spain

Background: Cardiac catheterization is an established diagnostic and therapeutic procedure and increased use of this technique requires planning safety and efficient strategies for rapid discharge post-procedure. Vascular closure devices (VCD) allow rapid ambulation and discharge after catheterization using femoral access. Despite VCD use, the incidence of vascular complications (VC) remains clinically significant. The objective of this prospective single-center registry was to compare the rate of VC in consecutive patients undergoing cardiac catheterization receiving either a VCD or VCD with additional external mechanical compression (EMC).

Methods: Overall 1.344 consecutive patients undergoing cardiac catheterization using femoral access were included. In-hospital, 6 and 12 month outpatient outcomes were collected from January 2010 to November 2013. The primary end point was the presence of VC defined as a composite of: hematoma > 6 cm, recurrent bleeding, pseudoaneurysm, arteriovenous fistula, arterial thrombosis or retroperitoneal bleeding.

Results: 303 (22.5%) patients received Angio-Seal® alone, 417 (31%) Angio-Seal® plus EMC, 147 (11%) Exo-Seal® alone and 477 (35.5%) Exo-Seal® plus EMC. Overall 87 (6,5%) patients had a VC with comparable rates between both VCDs, 15 (5%) Angio-Seal® alone, 27 (6.5%) Angio-Seal® plus EMC, 12 (8.2%) Exo-Seal® alone and 33 (7,2%) Exo-Seal® plus EMC (p=0.8). There was a trend for VC as follows Angio-Seal alone Vs Angio-Seal plus EMC: OR 1.3 (CI95% 0.4-4.09, p=0.7) respectively, Exo-Seal alone Vs Exo-Seal plus EMC: OR 0,83 (CI95% 0.2-2.7, p=0.7) and Angio-Seal alone vs. Exo-Seal alone OR 1.7 (CI95% 0.4-6.6, p=0.4).

Conclusions: This study suggests that added compression on VCDs does not provide any additional safety and may potentially increase VC. VCDs should be used as indicated by their labels i.e. no EMC. The use of EMC does not decrease discharge or ambulation time, and may be potentially harmful.

P562

Prognostic utility of the syntax score in an all comers population treated by coronary angioplasty

G Yanes Bowden,¹ F Bosa Ojeda,¹ M Vargas Torres,¹
A Sanchez Grande Flecha,¹ JJ Ferrer Hita,¹ E Gonzalez Cabeza,¹
MI Padilla Perez,¹ A Rodriguez Gonzalez,¹
A Casajuana Perez² and M Llabres De Prada²

¹University Hospital of Canary Islands, Cardiology, La Laguna, Spain

²University of La Laguna, La Laguna, Spain

Introduction: Syntax Score (SS) is able to predict major adverse cardiovascular events after coronary angioplasty (PTCA) in patients with multivessel or left main coronary artery disease. Lately, several retrospective studies, which analyzed the prognostic value of SS in “all-comers” populations treated with drug eluting stents, also showed its ability to predict major adverse cardiovascular events. **Porpouse:** Analyze in our series if the SS predicted MACE (composite of death, Myocardial infarction (MI) and any revascularization) in an “all-comers” population, regardless of the clinical setting, percutaneous revascularization procedure and type of stent.

Methods: Retrospective analysis of 549 consecutive patients treated with PTCA in our center, between January 2011 and May 2012. Patients with previous surgical revascularization were excluded. We analyzed the baseline clinical characteristics of patients. The SS was obtained by two independent observers, and in case of discrepancy it was analyzed by a third physician. 3 groups were established according to the value of SS: low (0-8 points), intermediate

(9-16 points) and high (> 16 points), and follow-up at 1 and 2 years was obtained. The qualitative variables were analyzed using the chi-square test or the Fisher's exact test and quantitative variables with the T-student test.

Results: in baseline clinical characteristics there was a higher percentage of men (p 0,04) in the 3 groups and a higher percentage of diabetics (p 0.046) and elderly (p 0.049) in higher SS groups. There was a trend to higher MACE at 1 and 2 years follow-up in the highest SS groups, but statistically not significant (p 0,082-1 year; p 0,046-2 years). In a separate analysis of the components of MACE, statistically significant differences between the 3 groups of SS were obtained regarding to repeat revascularization at 1 year (p 0.006) and 2 years (p 0.037) due to more frequent TVR (1 year p 0.032 ; 2 years p 0.041) and revascularizations in other vessels (1 year p 0.001; 2 years p 0.02). No statistically differences in TLR, CABG, MI, Heart failure (HF), death from any cause and cardiac death were observed.

Conclusions: Our results confirm the usefulness of the SS to identify patients at an increased risk of MACE in an "all comers" population, noting a strong association between higher values of SS and new revascularizations.

Results: Demographics, clinical, and lesion characteristic were comparable between two groups. Notably, no difference was observed between the BP-BES and DP-EES groups in terms of occurrence of the composite primary end point of cardiac death, all-cause mortality and spontaneous MI (Relative risk [RR]= 1.15 95% Confidence Interval [CI]: 0.70-1.91, p=0.537, RR=1.37 CI: 0.7114-2.619, p=0.348, RR=0.91 CI: 0.4108-2.050, p=0.99, respectively). Clinically driven TVR was similar in these groups (Hazard ratio [HR] 0.73, 95% 0.5108-1.061, p= 0.74), even though a non-significant trend for higher TLR was observed in the group of DP-EES (RR=0.74 CI: 0.5815-0.9536, p=0.11). Subgroup analysis in the Primary PCI group (DP-EES, n=46, BP-BES n=74) showed a possible signal in higher risk for cardiac death in BP-BES group (RR = 2.1, CI 0.79-5.36, p=0.089], however patient numbers were not large enough for safe conclusions.

Conclusions: BP-BES and DP-EES appear similar with respect to MACE. In spite of a trend in favour of the BP-BES in TLR, long-term efficacy and safety did not differ significantly for both stents in this setting. Larger datasets are needed from multicenter studies to confirm this.

P563

Efficacy and safety of biodegradable polymer biolimus a9-eluting stent vs. durable polymer everolimus-eluting stent in patients with coronary artery disease

T Christophides,¹ I Vasiliadis,¹ E Androulakis,¹ S Koganti¹ and R Rakhit¹

¹Royal Free Hospital, Cardiology, London, United Kingdom

Purpose: Newer drug-eluting stents (DES) have revolutionized the treatment of coronary artery disease but there is still an ongoing debate on clinical outcomes of second and third generation DES. We compared the safety and efficacy of biolimus A9-eluting stent with biodegradable polymer (BP-BES) with the current reference durable polymer everolimus-eluting stent (DP-EES).

Methods: This prospective non-randomized single-centre long-term comparison study included 451 patients with coronary artery disease (CAD), who presented with similar clinical and peri-procedural characteristics. 278 patients underwent percutaneous coronary intervention (PCI) with DP-EES and 173 with BP-BES. The study objective was the composite of major adverse cardiac events (MACE), consisting of all-cause mortality, myocardial infarction (MI), target vessel revascularization (TVR) and target lesion revascularization (TLR), at 3-year clinical follow-up.

P564

Percutaneous Mitral Valvuloplasty With Inoue versus Balt Single Balloon. Results, in-hospital evolution and cost effectiveness.

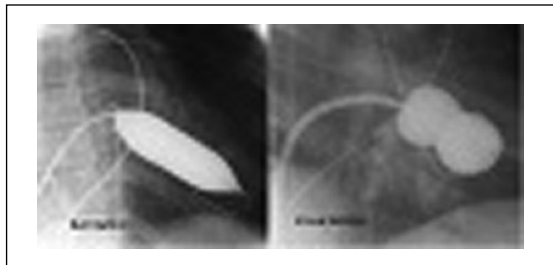
I P Borges,¹ RTS Peixoto,² RTS Peixoto³ and RTS Peixoto⁴

¹State University of Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil
²Fluminense Federal University, Rio de Janeiro, Brazil
³Polícia Militar do Rio de Janeiro, Rio de Janeiro, Brazil
⁴Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil

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

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

Results: Within-group comparison IG and BG, respectively: Pre-PMBV: mean pulmonary pressure (MPP) 33.9 ± 13.5



and 38.6 ± 14.3 mmHg ($p=0.007662$); mitral gradient (MG) 17.3 ± 6.4 and 19.8 ± 7.0 mmHg ($p=0.013180$); MVA Gorlin pre-PMBV 0.90 ± 0.20 and 0.91 ± 0.21 cm² in BG ($p=0.8228449$). Post-PMBV: MPP 25.3 ± 8.6 and 27.2 ± 10.6 mmHg ($p=0.261415$); MG 5.9 ± 3.1 and 5.5 ± 3.7 mmHg ($p=0.083664$); MVA Gorlin 1.98 ± 0.46 and 2.04 ± 0.40 cm² ($p=0.419208$). Complications: 5 cardiac tamponade in BG: 3 treated by surgery with 2 deaths, 2 with pericardial drainage without death. 1 stroke in BG. Severe mitral regurgitation (MR) 1 patient of each group, treated by surgery. Calculated cost of both technique 2 consecutive years with reuse and price of acquisition at current prices demonstrated: IB technique US\$1,286,32 and SBB US\$309.94 for procedures.

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

P565

Prior Surgical Mitral Commissurotomy And Echocardiographic Score Influence In Mitral Balloon Valvuloplasty. Immediate post procedure results

I P Borges,¹ ECS Peixoto,² RTS Peixoto³ and RTS Peixoto⁴

¹Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Fluminense Federal University, Rio de Janeiro, Brazil ³Polícia Militar do Rio de Janeiro, Rio de Janeiro, Brazil ⁴Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil

Objective: to evaluate prior mitral surgical commissurotomy (PMC) and echocardiographic score (ES) in the results and complications of mitral balloon valvuloplasty (MBV).

Methods: From 1987 to 2013, 526 procedures with Inoue balloon, double or single Balt balloon technique; 480 without PMC named primary MBV group (PMBVG) and 46 that have been submitted to PMC, the PMC group. The PMCG was older than PMBVG (42.7 ± 12.4 vs 36.9 ± 12.5 years,

$p=0.0030$). Gender, atrial fibrillation and NYHA functional class were similar. In PMBVG and PMCG, respectively, ES were 7.2 ± 1.4 and 7.7 ± 1.5 points ($p=0.0158$) and mitral valve area (MVA) 0.94 ± 0.21 and 1.00 ± 0.22 cm² ($p=0.0699$).

Results - Pre-MBV: mean pulmonary artery pressures (MPAP) were 37.8 ± 14.2 and 37.6 ± 14.4 mmHg, $p=0.9515$; mean gradient (MG) 19.6 ± 6.9 and 18.3 ± 6.9 mmHg, $p=0.2342$; MVA 0.90 ± 0.21 and 0.93 ± 0.19 cm², $p=0.4092$, respectively, when compare PMBVG and PMCG. Post-MBV: MPAP were 26.8 ± 10.2 and 26.6 ± 10.9 mmHg, $p=0.9062$; MG 5.4 ± 3.5 and 6.3 ± 4.2 mmHg, $p=0.1492$; MVA 2.04 ± 0.42 and 1.92 ± 0.41 cm², $p=0.0801$, respectively. Mitral regurgitation (MR) were similar pre and post-MBV. Severe MR post-MBV in 10 patients: 8 in PMBVG and 2 in PMCG, $p=0.2048$. As there were not found significant differences, the total group were divided in $ES \leq 8$ and >8 groups: Pre-MBV: MPAP 37.5 ± 13.9 and 39.3 ± 16.6 mmHg, $p=0.4041$; MG 19.7 ± 6.8 and 18.3 ± 7.3 mmHg, $p=0.1753$; MVA 0.90 ± 0.21 and 0.94 ± 0.20 cm², $p=0.0090$ respectively. Post-MBV: MPAP 26.7 ± 10.1 and 28.0 ± 10.6 mmHg, $p=0.3730$, MG 5.5 ± 3.6 and 5.5 ± 3.3 mmHg, MVA 2.06 ± 0.42 and 1.90 ± 0.40 cm², $p=0.0090$.

Conclusions: The groups with and without prior mitral commissurotomy in MBV were compare and no differences were found in pre- and post-procedure, as mean pulmonary artery pressure, mean mitral gradient, mitral valve area, and mitral regurgitation. Although PMCG was older, with higher ES, its hemodynamics datas were similar. When the entire group was divided based on echo scores, those with echo scores >8 had highse MV ($p=0.0090$), and smaler mitral valve areas post-valvuloplasty. The valve anatomy were more important than prior commissurotomy.

P566

Facilitation of stent delivery with the GuideLiner catheter: the RUHL study.

H Yagoub,¹ A Brenan,¹ D Cahill¹ and TJ Kiernan¹

¹University Hospital Limerick, Department of Cardiology, Limerick, Ireland

Introduction: The GuideLiner is a 25 cm guide extension connected to a rapid-exchange push rod by collar transition. It is used primarily in complex percutaneous coronary intervention for extra support, selective contrast delivery but primarily for protected distal stent delivery and deployment.

Methods: The RUHL study evaluated 30 consecutive patients and 45 complex coronary lesions to assess safety, feasibility and use of "anchor-balloon technique" in terms of distal stent delivery.

Results: We prospectively recorded patient and procedural details, technical success, and in-hospital outcome of 30 consecutive patients undergoing complex coronary PCI using the GuideLiner catheter in 45 target lesions. 82% (37/45) had Heart Association/College of Cardiology (AHA/ACC) lesion types B2/C; 33% (15/45) were distally located; and 58% (26/45) were heavily calcified. The primary indication in all cases was to facilitate stent delivery. The use of the “anchor-balloon technique” to facilitate deep intubation and stent delivery was 60% (18/30). Device success rate was 97% (29/30). There were no major complications and three minor complications: one coronary dissection and two cases of stents damaged at the transition zone. They were all managed without clinical sequelae.

Conclusions: GL-use with “anchor-balloon technique” resulted in increased back-up and guide catheter alignment for stent delivery in unfavourable tortuous coronary anatomies and complex, heavily calcified, and often distally located lesions, which otherwise may have been considered unsuitable for PCI. Procedural success rate was high and there were no major complications.

fraction (DEf) ($p < 0.001$) and present a lower prevalence of dyslipidaemia ($p = 0.004$). After adjustment by binary logistic regression, only male sex (OR 1.5, 95% CI 1.1-1.9), severe CKD (OR 2.0, 95% CI 1.4-3.0), previous MI (OR 1.3, CI 95% 1.1-1.6), valve surgery OR 2.0; 95% CI 1.4-2.8) and DEf (OR 1.5, 95% CI 1.2-1.9) were independent predictors of SI.

147 deaths (3.9%) occurred at 2 years. The absolute mortality was numerically higher in patients with SI compared to the symptomatic (5.7% vs. 3.7%; HR 1.3, 95% CI 0.89-1.9, $p = 0.15$), reflecting the adverse impact of the clinical features associated with it (DEf, severe CKD, previous valve surgery and MI).

Conclusions: Patients with silent ischemia undergoing PCI gather a range of comorbidities, which increase their risk of mortality. It is important to recognize these patients in order to minimize the impact of ischemia in an already high-risk population.

Myocardial and pericardial diseases

P567

Characterization of a population of patients undergoing percutaneous coronary intervention who present with silent ischemia.

S Madeira,¹ N Vale,¹ J Brito,¹ R Rodrigues,¹ L Raposo,¹ R Teles,¹ P Goncalves,¹ A Tralhao,¹ M Almeida¹ and M Mendes¹

¹Hospital de Santa Cruz, Lisbon, Portugal

Aim: Silent ischemia is a phenomenon likely to be under diagnosed with a prognosis at least similar to symptomatic ischemia. This study aims to characterize a population of high-risk patients with silent ischemia (SI).

Methods: and Population

It is a retrospective analysis of 3690 consecutive patients undergoing percutaneous coronary intervention (PCI) in the context of stable coronary artery disease (SCAD), prospectively included in a tertiary centre registry between January 2003 and January 2013. We evaluated the differences between patients who present with SI and those with symptoms. The independent predictors of silent ischemia were assessed by binary logistic regression.

Results: Patients with SI were slightly younger (64.4 ± 10.7 years vs 65.5 ± 10.4 $p = 0.03$); more often male ($p < 0.001$), smokers ($p = 0.007$); had higher prevalence of previous myocardial infarction (MI) ($p = 0.001$) and valve surgery ($p = 0.001$), severe chronic kidney disease (CKD) ($p < 0.001$), congestive heart failure (CHF) ($p = 0.01$), depressed ejection

P568

Predictors of in-hospital left ventricular systolic function recovery after admission with takotsubo cardiomyopathy - portuguese multicentre study

R A Pontes Dos Santos,¹ M Oliveira,² P Magalhaes,³ K Domingues,⁴ B Marmelo,⁵ AR Almeida,⁶ J Almeida,⁷ L Reis,⁸ R Faria⁹ and N Marques¹⁰

¹Hospital Centre do Tamega e Sousa, Penafiel, Portugal ²Alto Ave Hospital Center, Guimaraes, Portugal ³Hospital Center of Tras-os-Montes and Alto Douro, Vila Real, Portugal ⁴Hospital of Santarem, Santarem, Portugal ⁵Hospital Sao Teotónio, Viseu, Portugal ⁶Hospital Garcia de Orta, Almada, Portugal ⁷Hospital Center of Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal ⁸University Hospitals of Coimbra, Coimbra, Portugal ⁹Medio Ave Hospital Center, Famalicão, Portugal ¹⁰Faro Hospital, Faro, Portugal

Introduction: Takotsubo cardiomyopathy (TC) is characterized by a transient left ventricular (LV) systolic dysfunction. The speed of recovery of LV dysfunction is variable. There are no studies determining the predictors of recovery of LV systolic function during hospitalization.

Aim: To identify predictors of in-hospital complete LV systolic function recovery of TC.

Methods: A multicentre study involving 12 hospitals with inclusion of all patients diagnosed with TC in the last 10 years. Demographic, clinical, electrocardiographic and echocardiographic data were analyzed to find which factors are associated with in-hospital LV systolic function recovery in TC patients. Multivariate analysis

was performed to establish the independent predictors of early recovery of LV systolic function in patients with TC.

Results: We included 165 patients with TC, predominantly women (89.1%). The mean age was 66 ± 14 years.

Complete in-hospital LV systolic function recovery occurred in 44.8% of patients with TC (mean length of stay 6.9 ± 6.6 days).

In patients with TC the following factors were associated with complete recovery of LV systolic function during hospitalization: male gender (16.2% vs 6.6%, $p = 0.049$), absence of a history of angina (98.6% vs 82.4%, $p = 0.001$), the absence of menopause (36.5% vs 20.9%, $p = 0.026$) and the absence Q-waves in the initial ECG (89.2% vs 74.7%, $p = 0.018$).

In multivariate analysis the absence of a history of angina ($p = 0.022$) were identified as independent predictor of complete LV systolic function recovery during hospitalization in patients with TC.

Conclusion: Complete in-hospital LV systolic function recovery in patients with TC occurs in nearly 45% of the cases. This study revealed the absence of a history of angina as predictor of complete LV systolic function recovery during hospitalization in patients with TC.

P569

Heart involvement in systemic sclerosis: recognizing etiology and therapeutic options.

A case report

C Goena Vives,¹ L Quintas Ovejero,¹ I Lluís Serret,¹
R Garcia Martin,¹ E Montero Aparicio,² C De La Guerra Acebal,²
G Ruiz Irastorza,³ A Ugarte Nunez,³
M Cobos Belaustegui⁴ and MC Barrera Portillo⁵

¹Mendaro's Hospital, Cardiology, Mendaro, Spain ²Mendaro's Hospital, Internal Medicine, Mendaro, Spain ³Cruces University Hospital, Internal Medicine, Baracaldo, Spain ⁴University Hospital Marques de Valdecilla, Heart Transplantation Unit, Cardiology, Santander, Spain ⁵Ostak, Cardiac Resonance Imaging Unit, Donostia, Spain

Case: A 57-year-old female admitted to hospital on January 2014 for 2 week predominant left-sided heart failure. Her medical history included a primary hypothyroidism and Systemic Sclerosis. She had also been studied for a Left Bundle Branch Block with normal Echocardiogram and SPECT.

An echocardiogram showed a dilated cardiomyopathy with severe left ventricle dysfunction (EF 25%) and moderate of the right ventricle, diastolic dysfunction, a severe functional Mitral regurgitation and no pericardial effusion. A right cardiac catheterization excluded pulmonary hypertension and a coronary angiography relevant atherosclerosis.

The Magnetic Resonance showed severe left and moderate right ventricle dysfunction with patchy edema and subendocardial delayed enhancement suggestive of a subacute phase myocarditis. During 4 months, apart from support heart failure the patient was treated with intensive immunosuppression therapy: Cyclophosphamide, high dose methylprednisolone, Hydroxychloroquine. Subjective improvement was seen with little improvement in left ventricular function (EF 37%) and a control MRI with no edema and less severe intramyocardial enhancement suggesting chronic myocarditis and residual cardiac damage without acute myocardial inflammation. Later on worsening came up with dyspnea NYHA III/IV, proBNP levels > 10.000 pg/ml and no pulmonary involvement, neither gastrointestinal nor renal impairment were documented. A CRT-CDI was implanted with no response due to severe hemodynamic deterioration, failing inotropic and mechanical heart assistance she underwent orthotopic cardiac transplantation without complications.

Problems: The pathogenesis of cardiac damage is still controversial and poorly understood. The inflammatory and autoimmune nature of the disease suggests that myocardial inflammation may play a crucial role. The prevalence of chronic smoldering myocarditis and its role in fibrotic remodeling is not established.

Conclusions: Cardiac Resonance as it can potentially change the therapeutic options and so clinical development may be considered in acute phase; as well as the possibility of being a candidate to cardiac transplantation if refractory symptoms appear and clinical deterioration is attributed to residual fibrotic heart damage.

P570

Hypertrophic cardiomyopathy: heart failure and transplantation

A S Lazaro Mendes,¹ AR Ferreira,¹ J Moura Ferreira,¹
S Costa,¹ F Franco,¹ D Ramos¹ and M Pego¹

¹Coimbra University Hospital, Coimbra, Portugal

Background: Hypertrophic Cardiomyopathy (HCM) is a rare form of cardiomyopathy (occurs in 0.02-0.23% of adults) in which the walls thickness ≥ 15 mm in one or more left ventricular segments (or ≥ 13 mm in a first degree relative of someone with HCM) measured by any imaging technique. In up to 60% of patients, the disease is an autosomal dominant trait caused by mutations in cardiac sarcomere proteins genes, but also can be caused by other genetic disorders like metabolic and neuromuscular diseases.

Objective: We aimed to assess a population of patients from a single center with the diagnosis of HCM.

Methods: We retrospectively analyzed 13 patients with HCM who were hospitalized for heart failure in a single advanced heart failure unit, between June 2009 and August 2013. Median follow-up time was 2 years. Data regarding echocardiogram, radionuclide angiography, clinical and blood tests parameters, cardiovascular mortality and heart transplantation were collected in all patients.

Results: During follow-up time were hospitalized 13 patients (6 (46.2%) males) with HCM. The mean ages of the patients were 53 ± 18.8 years. About 54% of the patients had family history of cardiovascular disease and 46% had Implantable Cardioverter-Defibrillator (ICD). At admission, 46.2% of the patients were in IV/IV NYHA class, with a mean ejection fraction $32 \pm 13.7\%$ and BNP 500 ± 228 pg/ml. The mean hospitalization time was 12 ± 11 days.

During the follow-up time, approximately 5 patients with HCM received a heart transplant. The long-term mortality was about 38.5%.

Conclusions: HCM is a rare disease with a variable prognosis and a high mortality rate. Although in those patients a heart transplant is not routinely performed, this treatment can be useful for those who have medically refractory ventricular arrhythmias and refractory heart failure with good results.

P571

Takotsubo cardiomyopathy in two patients with microvascular angina

H Takahashi,¹ S Tani,¹ N Matsumoto,¹ T Ashida¹ and A Hirayama²

¹Nihon University Hospital, Department of Cardiology, Tokyo, Japan

²Nihon University School of Medicine, Division of Cardiology, Department of Medicine, Tokyo, Japan

Introduction: We present two cases in which Takotsubo cardiomyopathy (TC) developed immediately after a diagnosis of microvascular angina had been established.

Case1: A 76-year-old woman presented to the emergency room with chest pain and palpitation. She was admitted to the hospital because of suspected angina pectoris. She underwent coronary angiography, which revealed no signs of significant atherosclerosis; an acetylcholine (ACH) provocation test was subsequently performed to assess coronary vasoconstriction. During the administration of ACH into the left coronary artery, the patient reported chest pain, and an electrocardiogram (ECG) showed ST-segment elevation in the inferior leads, which gradually extended to the precordial leads. A coronary angiography revealed no evidence of epicardial spasm, but “to-and-fro” phenomenon was observed distal to the left anterior

descending coronary artery (LAD). The patient was diagnosed as having endothelium-dependent microvascular angina (microvascular spasm).

Three weeks later, she suffered from worsening chest pain. An ECG showed T wave inversions with prolonged QT intervals in leads I, II, III, aVF, and V2 to V6. An echocardiography showed apical hypokinesis with preserved basal function, consistent with TC.

Case2: A 83-year-old woman was referred to our hospital because of chest pressure. She was admitted to the hospital because a 99mTc-tetrofosmin myocardial single photon emission computed tomography demonstrated transient ischemic dilatation and reduced uptake in the LAD territory. She underwent coronary angiography, which showed no apparent epicardial obstruction. To assess the underlying etiology, the coronary microcirculation was evaluated in the LAD, where the values of coronary flow reserve (CFR) and index of microcirculatory resistance (IMR) were 1.6 and 23, respectively. She was diagnosed as having endothelium-independent microvascular angina (decreased coronary flow reserve).

Four months later, she was admitted to our hospital because of the recurrence of chest pressure. Her ECG showed T wave inversions with prolonged QT intervals in leads II, III, aVF, and V3 to V6. An echocardiography revealed apical ballooning, supporting a diagnosis of TC.

Conclusions: These are the first cases of TC spontaneously occurring in patients with microvascular angina. Recently, many researchers have reported the impairment of coronary microcirculation during the acute phase of TC. Above findings suggest that microvascular dysfunction is one of the plausible mechanisms underlying the pathophysiological findings of TC.

P572

Systemic transthyretin amyloidosis in patients with refractory chronic heart failure

A Goodkova,¹ E N Semernin,¹ NA Grudinina,² K V Solovyov,³ MM Shavlovsky³ and E V Shlyakhto¹

¹V. A. Almazov Federal Heart, Blood & Endocrinology Center, I. P. Pavlov Federal Medical University, Saint Petersburg, Russian Federation

²FSBSI Institute of Experimental Medicine, genetic, Saint-Petersburg, Russian Federation ³FSBSI Institute of Experimental Medicine, genetic department, Saint-Petersburg, Russian Federation

The main goal of our investigation is to study clinical pattern of heart pathology in systemic amyloidosis caused by mutations in the transthyretin(TTR) gene.

Materials and methods: 257 patients with chronic heart failure were examined. Mutations in the TTR gene were revealed by methods of single strand conformational polymorphism and sequencing. All mutation carriers were carefully examined.

Results: Mutations in TTR gene were found in 12 persons (Table 1). 7 probands with mutations had one of the following diagnoses: restriction, dilated or hypertrophic cardiomyopathy. Symmetric concentric hypertrophy of the left ventricle (LV) was found in 4 patients with V30M. Asymmetrical hypertrophy of LV and hypertrophy of the interventricular septum were identified in two cases and eccentric hypertrophy of the LV in one patient. Atrial dilation, pronounced hypertrophy of LV, symptoms of 1 degree pulmonary hypertension and diastolic dysfunction were revealed in 5 patients with TTR mutations. All patients had supraventricular and ventricular high grade arrhythmias and in 3 patients it was associated with atrio-ventricular and sino-atrial blockade of 2-3 degrees in combination with paroxysmal atrial fibrillation. They needed installation of a pacemaker. Sudden death occurred in 3 cases. Systolic function in the early stages has been saved, then observed its decline. Heart failure along with peripheral and autonomic polyneuropathy with various severity were leading clinical symptoms in patients with M30V. Non-amyloidogenic mutation G6S was detected in the heterozygous state in 2 patients. In all patients the disease was accompanied by hypotension and progressive orthostatic hypotension. In the group of our patients there are individuals with mutations in TTR but without clinically significant peripheral and autonomic neuropathy. The relationship between defects in TTR and clinical disease has not been identified yet.

Conclusion: Neurologic symptoms in ATTRV30M amyloidosis are a cause of early disability of patients and for a long time mask symptoms of the cardiovascular system.

P573

Prevalence of fabry disease in patients with hypertrophic cardiomyopathy in the Russian population

AA Polyakova,¹ EN Semernin,¹ AYA Gudkova² and EV Shlyakhto¹

¹Federal Heart, Blood and Endocrinology Centre, Saint-Petersburg, Russian Federation ²St.Petersburg State Pavlov Medical University, Saint-Petersburg, Russian Federation

Purpose: To describe the results of a selective screening aimed at identifying patients with nonsarcomeric hypertrophic cardiomyopathy (HCM), in particular Fabry disease, in patients with left ventricular hypertrophy of unknown origin.

Methods: The study included 135 symptomatic patients with left ventricular hypertrophy ≥ 13 mm. A clinical - laboratory and instrumental methods of diagnosis were applied (electrocardiography, ECG monitoring, echocardiography, chest x-ray, subcutaneous fat biopsy, determination of kappa and lambda chains in serum and urine, serum protein electrophoresis, sternal puncture, endomyocardial biopsy, determination the activity of the enzyme alpha-galactosidase A in blood serum, sequencing 1-7 exons and adjacent intronic regions of the GLA gene and 4 exons of the transthyretin gene).

Results: The diagnosis of HCM is installed according to the ESC Guidelines on diagnosis and management of Hypertrophic Cardiomyopathy, 2014. Of the 135 studied patients: sarcomeric HCM was diagnosed in 107 cases, in 7 - nonsarcomeric HCM (in 3 cases - sarcoidosis of the heart, in 3 cases - systemic forms of amyloidosis, 1 patient - Danon disease), in 21 cases there was a left ventricular hypertrophy of unknown origin. 18 patients (12 men and 6 women) in which HCM combined with lesions of other organ systems, particularly with renal (microalbuminuria, proteinuria, decreased glomerular filtration rate), peripheral (acroparesthesia, pain in the limbs) and central nervous system (stroke at a young age), the skin (angiokeratoma), having an X-chromosome-linked disease, carried out screening for Fabry disease. The data obtained didn't show the reduce enzyme activity, mutations leading to disease is not established. At 4 patients found polymorphisms of the GLA gene. One patient K., 48 years old had a rare polymorphism, resulting in the disruption of protein function (rs3027584). Three patients (64, 41 and 75 years old) were heterozygous for two polymorphisms of the GLA gene (rs2071397, rs2071228).

Conclusions: sarcomeric HCM especially in the early stages of the disease can be a mask storage diseases and infiltrative disease of the myocardium. Only a comprehensive assessment of involvement in the pathological process of different organ systems can lead to the correct diagnosis. Search nonsarcomeric HCM needs to continue, as timely diagnosis will lead to the beginning of the developed etiopathogenetic treatment. Influence of this polymorphisms on the clinical course and the presence of extracardiac manifestations in the examined patients requires further clarification.

Nursing in Acute Cardiovascular Care

P574

The effect of the level of dyspnea and quality of sleep of breathing exercise training in patients with heart failure

H Alkan,¹ H Uysal,¹ N Enc¹ and Z Yigit²

¹Istanbul University, Florence Nightingale Nursing Faculty, Medical Nursing Department, Istanbul, Turkey ²Istanbul University Cardiology Institute, Istanbul, Turkey

Background: One of the most important causes of sleep disorders in patients with heart failure is dyspnea.

Objective: This study was performed in patients with heart failure to determine the effect of the level of dyspnea and quality of sleep of breathing exercise training.

Methods: This study was performed with 29 experiments and 27 controls, a total of 56 patients as randomized controlled trial. To collect data, general information form, Baseline Dyspnea Index (BDI) and Pittsburg Sleep Quality Index (PSQI) were used. Gathered data was assessed through frequency, percentage, mean, standard deviation, Pearson's chi-square test, Mann Whitney U test and Wilcoxon signed rank test. The patients in the study who participated in experimental and control groups underwent general information form, BDI and PSQI on the first call. Patients in the experimental group were given training breathing exercises and they were asked to perform breathing exercises for 30 minutes a day. The patients in the experimental and control groups were performed BDI and PSQI again at the end of week 12. Results: While there was no difference in the level of dyspnea and quality of sleep between the experimental and control groups before training, level of dyspnea of breathing exercises training given group was determined low than control groups ($p < 0.001$). While 12 weeks at the end of both experiments ($p < 0.001$) and the control group ($p < 0.039$) were observed improvements in sleep quality, sleep quality improvement in the experimental group were found to be much more.

Conclusions: Breathing exercise training in patients with heart failure patients were found that the improvement in level of dyspnea and quality of sleep in the study.

P576

Comorbidity and dependency indexes in acute cardiac patients: linear association with complementary information.

B Samaniego Lampon,¹ JC Garcia Rubio,¹ T Gonzalez Sanchez,¹ I Valverde Andre,¹ D Mateo Fernandez,¹ N Silva Fernandez,¹ R Mesa Gonzalez,¹ A Sanchez Castro,¹ M Diaz Gonzalez¹ and E Segovia Matinez De Salinas¹

¹Hospital de Cabuenes, Cardiology Department, Gijon, Spain

Purpose: Population ageing and improvements in acute treatment of diseases have led to chronification of illness. Elderly and pluripathological patients are often admitted to Acute Cardiac Units. Assessing comorbidity and dependency is the first step in facing the challenge of meeting their needs and expectations.

Methods: Charlson comorbidity index and Barthel dependency index were calculated by the nurse after an interview at admission and the review of medical records in 100 patients, from January to May 2015. Demographic and clinical data, length of hospital stay and invasive procedures were also recorded.

Results: Mean age was 68.9 years (SD=12.6), 68% were male. Main reason for admission was acute coronary syndrome in 68%, arrhythmia in 18%, acute heart failure in 7%, valvular disease in 3% and other acute cardiac disease in 4% of patients. Mean length of hospital stay was 8.3 days (SD=5.6). Invasive procedures were carried out in most patients (89%). The decision to undergo an invasive procedure doesn't seem to be related to the degree of comorbidity or dependency.

Comorbidity was evaluated as absent in 55% of patients with Charlson score 0-1, low in 26% with score=2 and high in 19% with score ≥ 3 . Barthel index classified dependency as total in 5% of patients (score 0-20), severe in 18% (21-60), moderate in 23% (61-90), slight in 7% (91-99) and absent in 47%.

We found a significant linear association between Charlson and Barthel indexes, with a Pearson correlation coefficient $r_{XY} = -0.441$ ($p = 0.001$) that means a $r_{XY}^2 = 19.5\%$ of common cause variation. Taking the age adjusted Charlson index, the correlation was higher: $r_{XY} = -0.551$ ($p < 0.001$) and $r_{XY}^2 = 30.4\%$ of common cause variation. The two indexes are related, but each one offers complementary information about the patient.

To analyse the length of hospital stay, we split up patients in two groups according to Charlson score 0-1 versus ≥ 2 and applied Student's T-Test. Mean stay tended to be longer in the group with more comorbidity (7.4, SD=4.2 versus 10.1, SD=5.9 days; $p = 0.068$). We divided patients in two groups according to Barthel score 0-90 versus 91-100. Mean stay was significantly longer in the group with higher dependency (10.6, SD= 6.2 versus 6.7, SD=3.0 days; $p = 0.007$).

Conclusions: Patients admitted to Acute Cardiac Unit have a certain degree of comorbidity and dependency, only 55% do not have any comorbidity and 47% are independent. Charlson and Barthel indexes show a significant linear association with 20-30% of common variability. Comorbidity and dependency are related to extended hospital stay.

Pre-Hospital care

P577

One year assessment of adherence to a regional management protocol for STEMI patients in prehospital setting

S Parisse,¹ S Faille,¹ S Measso,¹ E Honold,¹ C Cazenave,¹ J Moro,¹ F Boutot¹ and Y Lambert¹

¹Versailles Hospital, SAMU 78, Versailles, France

Purpose: According to 2012 ESC guidelines prehospital management of STEMI patients should be based on predefined management protocols. In our region, a management protocol for STEMI within 12 hours of onset symptoms excluding cardiac arrest was implemented on February 2014 in collaboration with all the con-cerned cardiology departments, cath-lab, Emergency Departments and Mobile Intensive Care Unit (MICU). To optimize reperfusion delay in accordance with the geographic specificities of our region a pharmacoinvasive strategy was the preferred reperfusion strategy for early presenters within the first 2 hours of symptom onset. As the quality of care should also be measured and compared at regular intervals we performed a yearly assessment of our protocol.

Methods: In a database cohort of STEMI patients, all patients managed by a MICU were included. Data

Table 1.

	2012	2014	P
	N=75	N=94	
Sex ratio, M/W	55/20	77/17	NS
Age, yrs, median	61	60	NS
Early pharmacoinvasive strategy, %	24	38	0.047
In hospital mortality, %	6.8	4.3	NS
Stroke, %	1.4	0	NS
Transfusion, %	0	0	NS

on demographic features, onset symptoms to first medical contact delay, choice of reperfusion, in hospital mortality, stroke, major bleeding were collected. The pre-implementation protocol period (2012) was compared to the post-implementation period (2014) focusing on the reperfusion strategy using a Chi2 test.

Results: From 2012 to 2014, early pharmacoinvasive strategy increased from 24% to 38% ($p<0,05$), with no impact on mortality or major bleeding. In 2014, according to the protocol for early presenters, 25% more pharmacoinvasive strategy were expected. No difference was observed for women. Main results are shown in table below.

Conclusion: Our regional STEMI management protocol implementation increases early pharmacoinvasive strategy, without impact on adverse events. Interventions are still needed to optimize reperfusion delay for early presenters.

P578

Adherence to regional guidelines for STEMI : MICU better than non PCI-capable hospital ED

S Faille,¹ S Parisse,¹ C Chevrier,² J Moro,¹ S Measso,¹ J Amani,¹ MC Bembaron,¹ C Cazenave,¹ F Boutot³ and Y Lambert³

¹Versailles Hospital, MICU, Versailles, France ²Rambouillet Hospital, SAMU 78, Rambouillet, France ³Versailles Hospital, SAMU 78, Versailles, France

Background: To minimize reperfusion delays, according to 2012 ESC guidelines, optimal treatment of STEMI should be based on the implementation of shared protocols in defined geographical areas. In our region, to optimize reperfusion strategies, a management protocol was implemented on February 2014 in collaboration with all the cardiology departments, cath-labs, Emergency Departments (ED) and Mobile Intensive Care Units (MICU). The preferred reperfusion strategy within the first 2 hours of symptom onset should be pharmacoinvasive to fit with the preferable FMC-reperfusion delay of 60 minutes. As quality of care should also be measured at regular intervals and appropriate measures taken to bring about improvement, we performed a yearly adherence assessment.

Purpose: To assess the adherence of MICU and ED physicians in non PCI-capable hospitals to our regional protocol one year after its implementation.

Methods: Patients presenting with chest pain and ECG evidence of STEMI within 12 hours of symptoms onset were included in a database study between February 2014 and February 2015. The chosen strategy and administered treatment were compared to our protocol. Four groups of patients were identified: recommended strategy and recommended treatment, strategy deviation, 1 treatment deviation and 2 or more treatment deviations.

Results: Main results are shown in the table below.

Conclusion: One year after implementation of our regional STEMI protocol, 61% of STEMI patients managed by a MICU benefited from the recommended reperfusion strategy. Only 11% of patients presenting to a non PCI-capable hospital receive the recommended reperfusion strategy. MICU management appears as the lucky way to decrease total ischaemic time.

Table 1.

	All	MICU FMC	ED FMC	≥ 75y	Women
All	161	114 (71%)	47 (29%)	33 (20%)	30 (19%)
Recommended strategy	74 (46%)	69 (61%)	5 (11%)	14 (42%)	16 (53%)
Reperfusion strategy deviation	36 (22%)	24 (21%)	12 (25%)	9	7
1 treatment deviation	33 (21%)	19 (17%)	14 (30%)	4	4
≥ 2 treatment deviations	18 (11%)	2	16 (34%)	6	3

P579

Gender differences in prehospital delay during STEMI: a possible explanation for worse outcomes in women

R Martin Asenjo,¹ B Diaz Anton,¹ B Rubio Alonso,¹ J Molina,¹ J Nucho,¹ R Salguero,¹ R Tello,¹ JJ Parra,¹ C Iborra¹ and F Arribas¹

¹University Hospital 12 de Octubre, Madrid, Spain

Cardiovascular disease (CVD) is the major cause of premature death in Europe. The early treatment in ST-elevated myocardial infarction (STEMI) is essential for long-term outcomes. Due to improved organization in-hospital delay has shortened in recent years. However, the time between the onset of chest pain and the call for medical help is still too long. Previous studies have reported poorer outcomes in women with STEMI and less use of revascularization therapy. The aim of this study was to evaluate the clinical impact of the time between the beginning of symptoms and the first contact with the health system and the presence of premonitory symptoms the days before and to compare difference between men and women.

Methods: We performed a prospective and observational study including patients admitted to a coronary care department with confirmed STEMI during one year. We analyzed the epidemiological variables, the pain-to-first medical contact delay, the presence of previous symptoms

and whether they had sought medical advice because of them.

Results: We included a total of 277 patients (74% men and 26% women). The average age was $63,6 \pm 13,6$ years. The time between the onset of symptoms and the call for medical help ranged from 5 to 4320 minutes. The median of that delay was 90 minutes (90 minutes in men and 120 minutes in women). 55% presented symptoms the days before (54% men and 57% women) but only 29% had sought for medical advice (32% men and 22% women).

Conclusion: Prehospital delays in patients with STEMI remain unacceptably long, particularly among women. This could explain the previously reported less use of revascularization therapy in the females group. Major emphasis is needed in the design of strategies that reduce this delay. Education programs to enhance symptom recognition are still necessary and should be a top priority when trying to improve the prognosis of patients with STEMI

P580

How far is too far?

A Correia,¹ M Neto,¹ R Rodrigues,¹ B Silva¹ and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Purpose: The time between symptoms onset and the performance of a percutaneous transluminal coronary angioplasty (PTCA) is directly related with the outcome of patients with ST-segment elevation myocardial infarction (STEMI). This study aims to evaluate the in-hospital prognosis of patients living in the county and outside it.

Methods: Retrospective study of 286 consecutive patients admitted with STEMI between the 1st October 2009 and 31st October 2012. They were divided in 2 groups: Patients living in hospital county (group H: n=161, 56.3%; 75.8% men) and patients living in other counties (group NH: n=125, 43.7%; 66.4% men). They were compared them regarding extra-hospital delays and primary composite endpoint (death, MI or stroke), secondary objectives (death, MI or stroke isolated) and mortality in patients over 75 years old during in-hospital stay.

Results: Symptoms onset and arriving at the hospital was shorter in group H [H=2:01h (interq=3:56) vs NH=3:11h (interq)=5:29; p=0.005]. Most of the patients lived in the hospital county (H=56,3 vs NH=43,7). Group NH was older [H=62 (interq=19) vs NH=66 (interq=21); p=0.063]. No differences regarding BMI, cardiovascular diseases, hypertension, cardiac failure, diabetes or chronic kidney failure. Group H had higher smoking habits (H=46.0% vs NH= 36.8%; p<0.05). No statistically differences in prior medication. Group NH presented at the admission higher creatinine H=1.16 (interq=0.76) vs NH=1.05 (interq)=0.47; p<0.0] but no difference in blood glucose, BNP or hemoglobin. No differences in the implemented therapy, Killip class, clinical evolution, rate of complications, vessel disease or the strategy. No differences regarding primary composite endpoint, secondary objectives or in mortality over 75 years old.

Conclusions: This study concludes that people living in non-hospital county took more time between onset of symptoms and arrival at the hospital. Although they needed more time it did not change their prognosis.

Renal Replacement Therapy (Dialysis, Hemofiltration)

P581

Continuous renal replacement therapy in acute coronary syndrome in intensive cardiovascular care unit: data from RAICOM study (registry of acute and intensive cardiovascular outcome)

D Tobing,¹ AH Putro,¹ M Silalahi,¹ I Firdaus,¹ D Juzar,¹ D Zamroni,¹ S Danny¹ and I Irmalita¹

¹Harapan Kita Hospital, National Cardiovascular Centre, Jakarta, Indonesia

Purpose: Acute Kidney Injury (AKI) is associated with high cardiovascular mortality. The prognostic importance of degrees of renal impairment in patients who have had Acute Coronary Syndrome (ACS) with Continuous Venovenous Hemodialysis (CVVH) is less well defined. The aim of the study was to know the characteristic of patients diagnosed of ACS with AKI performed CVVH who admitted to intensive cardiovascular care unit at National Cardiovascular Centre Harapan Kita (NCCHK)

Methods: We studied all ACS patients data diagnosed of AKI and performed CVVH, enrolled from Registry of Acute and Intensive Cardiac Outcome (RAICOM) at ICVCU NCCHK during 2014.

Results: Of 681 ACS patients, only 12 patients had performed CVVH. Most patients are male (75%) and mean age are 60.5 ± 0.52. 16.6% patients was diagnosed of Chronic Kidney Disease, while 8.3% with AKI differential diagnosis (DD) of CKD stage 2, 25% with AKI DD of CKD stage 3, 25% with AKI DD of CKD stage 4, and 41.7% with AKI DD of CKD stage 5. Serum Creatinine level >1.2 mg/dl were 91.7% of patients. Most patients are diabetes patients (58.3%) followed by hypertensive (50%). Clinical diagnoses were STEMI (33.3%), NSTEMI (33.3%), cardiogenic shock (16.7%), myocarditis (8.3%), and septic shock (8.3%). All of NSTEMI patients had high risk GRACE score and also high TIMI risk score for STEMI patients (>5/14). 25% patients died during index hospitalization.

Conclusion: Mortality of ACS patients with renal failure is still high and the use of continuous renal replacement therapy especially in high risk ACS patients has showed a promising outcome. Further researcher are needed to know more detail how much each risk factor affect outcomes

Risk Stratification

P582

Galectin-3 in assessment of severity of coronary atherosclerosis in patients with ST-elevated myocardial infarction

N Fedorova,¹ VV Kashtalap,¹ OL Barbarash¹ and ON Hryachkova¹

¹Research Institute for Complex Issues of Cardiovascular Diseases, Kemerovo, Russian Federation

The problem of myocardial infarction (MI) does not lose its relevance worldwide. This condition is characterized by high morbidity and mortality of adult population. In recent years various biomarkers which are involved in the pathogenesis of MI are actively studied. Galectin-3 is one of such markers which is used in heart failure and neoplastic aberration. The role of this biomarker in MI is not studied completely yet.

Purpose: To estimate the differences in galectin-3 concentration in blood serum depending on the severity of coronary atherosclerosis in patients with ST-elevated MI.

Materials and methods: 87 patients (65 –males, 22 – females; mean age - 58.9 ± 9.6) admitted with ST-elevated MI were examined. Clinical and anamnesis data were collected, standard laboratory and instrumental methods were performed, including angiography. In all patients galectin-3 level was measured by enzyme-linked immunosorbent assay (ELISA) on the first day after disease onset. The studied biomarker level was measured in 81 patients on the 10th -14th days after MI onset. The baseline serum values of galectin-3 were 0.0-2.28 ng/ml.

Results: Galectin-3 levels, measured in MI patients on the first day after disease onset, were elevated as compared to the baseline values (9.5 [3.3, 11.9] ng/ml). On the 10th -14th days after MI, elevated galectin-3 levels (15.6 [9.9; 37.4] ng/ml) were observed ($p < 0.01$). Patients were divided into three groups, according to the results of angiography: patients with single-vessel lesion – 46 (53.48%); with two-vessel lesion - 20 (23.26%) patients; and three-vessel lesion - 20 (23.26%) patients. When determining the relationship between galectin-3 level and the severity of coronary atherosclerosis it was found out that the concentration of the biomarker in patients with three-vessel coronary artery disease is higher than in single vessel disease patients (35.8 [13.2; 43.0] ng/ml vs 11.1 [9.5, 31.5] ng/ml, $p = 0.02$). Correlation analysis confirms this relationship ($r = 0.29$, $p = 0.01$). In the groups with two or three-vessel lesions galectin-3 level increases dynamically by the 10th-14th days of MI ($p < 0.01$).

Conclusions: The possibility of using galectin-3 in estimating the severity of coronary atherosclerosis in patients with ST-elevated MI is shown.

P583

An increased incidence of short-term adverse cardiovascular outcomes were found in the elderly with stable coronary artery disease after hospitalizing for acute lower respiratory tract infection

XQ Zhao,¹ LM Luo,¹ P Ye,¹ RX Du¹ and TH Xiao¹

¹China PLA General Hospital, Department of Geriatric Cardiology, Beijing, China, People's Republic of

Purpose: The aim of this study was to investigate the incidence and relative factors of cardiovascular events (CVEs) and all-cause mortality in the elderly with stable coronary artery disease (sCAD) after hospitalization 90 days for acute lower respiratory tract infection (ALRTI).

Methods: This is a prospective, controlled cohort study. Participates were collected from the elderly patients with sCAD and hospitalized for ALRTI and sCAD without ALRTI as the controls. The CVEs and all-cause mortality after admission were followed up and recorded during 90 days.

Results: The researchers compared 257 cases (infection group) with 169 age-matched controls (No infection group), mean age 88 ± 5 years. In the subsequent 90 days, of 257 subjects in infection group, 83 CVEs (31.9 %) and 34 all-cause death (13.2%) were occurred; of 169 controls in no infection group, 23 CVEs (13.6 %) and 3 all cause mortality (1.8%) were recorded. The incidences of CVEs in infection group were significantly higher than those in no infection group in follow-up period of D7 (10.9% vs 2.4%, $p = 0.001$), D30 (20.6% vs 6.5%, $p < 0.001$) and D90 (31.9% vs 13.6%, $p < 0.001$); The all-cause mortalities were also significantly higher than those in non infection group in follow-up period of D30 (3.9% vs 0.6%, $p = 0.021$) and D90 (13.2% vs 1.7%, $p < 0.001$), except for D7 (1.2% vs 0%, $p = 0.028$). Within 90 days, sCAD patients with ALRTI had a 2.3 fold increased risk for CVEs (31.9% vs 13.6%, $p < 0.001$), and 7.6 fold increased risk for all cause mortality (13.2 % vs 1.8%, $p < 0.001$) compared with controls. The risk of CVEs was highest during the first 2 weeks in infection group, but not in no infection group. The association

between ALRTI and subsequent risk for CVEs and all cause mortality was adjusted for multiple potential confounders, ALRTI (OR 3.907, 95% CI 2.316–6.591) is an independent risk factor for the increment of CVEs and all-cause mortality.

Conclusion: Hospitalization for ALRTI was associated with an increased risk for CVEs and all cause mortality in elderly patients with sCAD during 90 days. ALRTI should be considered an independent risk factor for adverse outcome after respiratory infection. So, monitoring and stratifying for future risk of CVEs and all cause mortality in elderly patients with sCAD after ALRTI were of important clinic meaning. Adding pneumonia and flu vaccination to elderly patients with sCAD, may help to prevent CVEs and decrease death rate as well as acute infection.

P584

Myocardial infarction type 4a: prevalence, risk factors and 1-year prognosis.

O Mironova¹ and M YA Ruda¹

¹Cardiology Research and Production Center, Institute of Clinical Cardiology, Moscow, Russian Federation

Purpose: The purpose of our study was to assess the prevalence of myocardial infarction (MI) type 4a and myocardial damage due to planned PCI in patients with stable coronary artery disease (CAD) and 1-year prognosis.

Material and methods: 281 patients were screened before the enrollment. 183 patients with stable CAD were included in the study whose levels of cardiac troponin I and MB-KK were studied both before and after PCI. We included male and female aged 18-80 with stable CAD with indications for revascularization having normal or stable level of cardiac troponins before the procedure. The exclusion criteria were ACS in previous 6 months, recent revascularization, severe comorbidities affecting the prognosis. 98 patients had only coronary angiography performed and no PCI due to the absence of indications for PCI, severity of CAD or other technical reasons. All the patients had EKG, Echocardiography performed before PCI, as well as all the clinical studies needed including the initial levels of cardiac troponin I, MB-KK, high-sensitivity troponin I, serum creatinine, hs-C-reactive protein and BNP. The MI type 4a was diagnosed according to Universal definition of MI (2007).

Results: All the patients were divided into 3 groups according to their levels of cardiac troponin I after PCI

(group I - no elevation, group II - elevation 1-3 upper limits of normal (ULN), group III - more than 3 ULN) and MB-KK (group I - no elevation, group II - 1-3 ULN, group III - more than 3 ULN).

The prevalence of MI type 4a was 11% and periprocedural myocardial damage – 16% respectively. No death or MI were registered during mean observation period of 1,2 years. The MI type 4a and myocardial damage due to PCI do not influence the 1-year prognosis and do not increase the probability of decompensation of chronic heart failure. After performing the discriminant analysis we sought to build a prognostic model and calculate the formula of periprocedural myocardial damage probability: $0,871 * \text{gender (male = 0, female = 1)} + 0,516 * (\text{angina pectoris functional class}) + 0,022 * \text{age (years)} - 0,011 * \text{eGFR (MDRD)} + 0,27 * (\text{number of diseased coronary arteries}) \geq 2,731$. The overall area under the curve (AUC) for our prognostic model is 0.711 (95% confidence interval (CI) 0,62-0,801). The odds ratio for the formula result $\geq 2,731$ is 3,22 (95% CI 1,58-6,49).

Conclusion: Women with low eGFR, multivessel disease and angina pectoris class 3-4 NYHA have the highest risk of MI type 4a. Periprocedural MI rates are highest in the group of circumflex artery PCI. 3 ULN cardiac troponin elevation has no clinical and prognostic significance according to our data.

P585

Evaluation of qt dispersion in patients of grade I left ventricular diastolic dysfunction without cardiovascular symptoms

A Oliveira Blackman,¹ JSN Sobral Neto² and OMG Moreira Gomes¹

¹Fundação Cardiovascular São Francisco de Assis, Belo Horizonte, Brazil

²Centro de avaliação cardiológica Centrocárd, Brasília, Brazil

Introduction: Grade I left ventricular diastolic dysfunction, mechanical abnormality of ventricular relaxation, is highly prevalent in the population and leads to heart failure. QT dispersion (≥ 80 ms), is an electrical phenomenon related to significantly increased risk of severe arrhythmias and sudden cardiac death.

Objective: Analyze the influence of grade I left ventricular diastolic dysfunction on QT dispersion in patients without cardiovascular symptoms.

Method: Assessment of 26 patients with grade I left ventricular diastolic dysfunction and average age 55.7 ± 5.8 , 73% female and 27% male gender, presenting with: arterial hypertension 34%, type II diabetes mellitus 7%,

sedentarism 27%, smokers 12%, and patients who have no prior knowledge of cardiac disease 20%. Patients underwent a 24 hour ambulatory recording, whilst using a 12-lead Holter device to measure QT dispersion during four periods: morning, afternoon, evening and night during sleep. Additionally, the prevalence of arrhythmias was also evaluated.

Results: Average heart-rate-corrected QT dispersion was 71.7 ± 13.3 ; 69 ± 9.8 ; 68.2 ± 9.6 ; and 65.1 ± 9.6 ms, morning, afternoon, evening and night during sleep respectively. However, in 30.8% of the patients it was found heart-rate-corrected QT dispersion ≥ 80 ms. One patient (3.8%) presented premature ventricular complex greater than 10 per hour.

Conclusion: This research evidenced QT dispersion ≥ 80 ms, in patients without cardiovascular symptoms, with grade I left ventricular diastolic dysfunction.

Table 1. Anthropometric characteristics.

Variables	Maximun	Minimun	Mean \pm SD
Age (years)	65	43	55.5 \pm 5.8
Weight (kg)	90	57	72.3 \pm 10.4
Height (cm)	186	145	162.7 \pm 9.6
BMI (kg/m ²)	35.6	20.4	27.3 \pm 3.2

BMI - Body Mass Index, SD - Standard Deviation.

exercise capacity and clinical risk factors. Patients were classified into 4 categories from C1 to C4; C1 (good exercise capacity > 4 METs), C2 (low exercise capacity ≤ 4 METs with no clinical risk factors), C3 (low exercise capacity ≤ 4 METs with at least 1 clinical risk factors) and C4 (presence of active cardiac conditions). In KCPS, patients of C1 and C2 may undergo surgery without consultation, and patients of C3 and C4 should be consulted to cardiologist before surgery.

Results: Of 1354 cases, KCPS was performed in 924 cases (68.2%), C1: 835, C2: 36, C3: 32, C4: 21 cases. Out of these, 138 cases (17.0%) were consulted to cardiologist and all cases underwent surgery after consultation or non-invasive tests. Events occurred in 15 cases; one sudden death, 3 myocardial ischemia including 2 vasospastic angina, 6 arrhythmia, 3 hypertensive crisis, 2 pulmonary embolism/deep vein thrombosis. In consultation-group (C3 and C4), presence of hypertension ($p < 0.001$), dyslipidemia ($P = 0.024$), diabetes ($p < 0.001$) and CKD ($p < 0.001$), and an abundance of taking statin ($p = 0.017$) and antihypertensive drug ($p < 0.001$) were more frequently observed than in operation-group (C1 and C2). However, there was no significant difference in the event-ratio between two groups (1.5% vs. 3.8%) when KCPS was applied.

Conclusions: Our study shows that KCPS is a useful system for cardiovascular screening before non-cardiac surgery. KCPS would be able to save and concentrate medical resources.

P586

Risk stratification by preoperative cardiovascular screening system for non-cardiac surgery

S Taniyai,¹ S Yamasaki,¹ T Yorozu,² T Satoh¹ and H Yoshino¹

¹Kyorin University, Second department of Internal Medicine, Mitaka, Japan

²Kyorin university, anesthesiology, Mitaka, Japan

Background: We developed a cardiovascular screening as Cardiac Preoperative Screening (KCPS) program for non-cardiac surgery based on AHA/ACC guideline released in 2007. We modified the AHA/ACC guideline to use it easily with keeping usefulness of the guideline. In phase-I, KCPS program was evaluated in patients with plastic surgery, and applied this system to all of the patients with general non-cardiac surgery as phase-II.

Purpose: We distinguish the usefulness of the KCPS program and clarify the pitfall in this system.

Methods: A total of 1354 consecutive patients (233 in phase-I and 1121 in phase-II) were included (male 578, age 56 ± 17 y/o). Patients answered the interview one month before surgery about the presence of active cardiac conditions,

P587

Screening of cardiovascular risk factors on female employees from Rio de Janeiro State Government

I P Borges,¹ VF Marcolla,¹ SA Simoes,¹ T Spritzer,¹ PP Ferreira,¹ M Fidelis¹ and ACB Souza¹

¹Military Undersecretary from Rio de Janeiro State Government, Rio de Janeiro, Brazil

Background: Coronary Heart Disease (CHD) may be clinically different in women when compared to men and, consequently, being underdiagnosed and under treated. Worldwide, heart disease and stroke are the leading cause of death in female gender with 8.6 million death per year, as mentioned by literature. Some risk factors may be modified.

Objective: To identify the CV heart disease and stroke risk factors prevalence in a female employees particular population in order to prevent disease and modify risk factors as possible.

Methods: Observational and cross-sectional study of CV and stroke risk factors prevalence in a female employee population through an one-minute and anonymous

questionnaire with 30 closed questions on self-knowledge of risk factors and CV Health, about age, tobacco smoke, hypertension, dyslipidemia, physical inactivity, obesity, diabetes and family history of CHD. Those women who have had two or more positive answers or the lack of knowledge of any item were encouraged to complete the risk assessment in a healthcare unit, through awareness of educational lecture, as they were considered to be in a high risk group.

Results: 200 women answered, between 09/27/2012 and 10/24/2012, age 25 and 74 years old. Tobacco use 16%; hypertension in 13% (lack of knowledge in 3%); 95% have already measured cholesterolemia (22% with >200 mg/dl, 25% and 62% did not know the blood level of total and HDL cholesterol, respectively); 88% have already measured glycemia (82% denied being diabetic and 14% unaware); 26% family history of CHD and stroke; 51% did not know the Body Mass Index (BMI), after it was calculated 60% with BMI \leq 25, 17% >25 and \leq 30, 8% >30 (9% did not know their body weight); 36% physical inactivity; 94% denied previous CHD. It was established that 74% of the interviewed women obtained \geq 2 positive answer or the lack of any item. It was observed that most of them used to visit the gynecologist (98%) but in contrast only 33% did it to a cardiologist.

Conclusion: About three quarters of the interviewed women demonstrated high risk factors prevalence by achieving \geq 2 positive answers or ignoring the answer of any of the question. They must be warned and encouraged to complete their risk assessment in a healthcare unit.

Table 1.

Total 200 females	
\geq 2 positive answers or lack	74%

P588

Screening of cardiovascular risk and stress level in policewomen of pacifying police units from state government

I P Borges,¹ VF Marcolla,¹ SA Simoes,¹ T Spritzer,¹ PP Ferreira,¹ M Fidelis,¹ ECS Peixoto,² AAB Aragao² and ACB Souza¹

¹Military Undersecretary from Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Military Police from Rio de Janeiro State Government, Rio de Janeiro, Brazil

Fundament: Coronary heart disease (CHD) may be clinically different in women when compared to men being underdiagnosed and treated. Worldwide, heart disease and stroke are the leading cause of death in female gender with 8.6 million deaths per year, as mentioned by literature.

Objective: to identify the prevalence and self knowledge of cardiovascular (CV) and stroke risk factors in policewomen of the Pacifying Police Units (PPU).

Methods: Observational and cross-sectional study, All policewomen answered an one-minute and anonymous questionnaire of 30 questions about age, stress level, tobacco smoke, hypertension, dyslipidemia, physical inactivity, obesity, diabetes and family history of CHD between 05/10/2013 and 10/10/2013. A positive answer or the lack of knowledge were equivalent to a point. Considered high risk group: two or more positive answers or the lack of knowledge. They've attended to encouraged lectures about cardiovascular risk factors.

Results: Total of 32 PPU, 602 policewomen, average age 28.1 years, 31% high stress level; 7% tobacco use; hypertension 7% (lack of knowledge in 7%); 76% have already measured cholesterolemia (87% unknow the level); 76% have already measured glycemia (30% were unaware; 16% of family history of CHD and stroke; 51% unaware body mass index (BMI); BMI was calculated: 59% \leq 25, 23% >25 and \leq 30, 18% without weight and/or height; 53% physical inactivity; 92% denied previous CHD. 90% used to visit gynecologist but only 12% to a cardiologist. It was identified 97% with \geq 2 points.

Conclusions: High prevalence or unknowledge of CV risk factors and stress level activity in this population.

Table 1. Conclusion.

602 policewomen (100%)	
\geq 2 positive answers or unawareness	97% at high risk

Conclusions after assessment of the questionnaires responses.

P589

Screening of cardiovascular risk in bodyguard security team of state government. the obese and overweight group assessment.

I P Borges,¹ SA Simoes,¹ RTS Marcolla,¹ PP Ferreira,¹ T Spritzer,¹ M Ferreira¹ and ACB Souza¹

¹Military Undersecretary from Rio de Janeiro State Government, Rio de Janeiro, Brazil

Background: The bodyguard security staff is a high-risk and stress professional activities.

Objective: This study aims to investigate the obese/overweigh population in bodyguards from security staff of State Government and to identify cardiovascular risk factors and Framingham risk score.

Methods: Between January/2013 and July/2013 a total of 265 bodyguards of security staff from the State Government were assessed as a standard

practice, through the Physician and Odontological Aptitude Test. It was identified 45 (16,98%) obese or overweight (OO group) individuals based on body index mass measurement according to World Health Organization. The group was submitted to cardiovascular risk assessment followed by calculation of Framingham cardiovascular risk score. The entire group was referred to a multidisciplinary health team.

Results: It was identified in the OO group: 67% males; average age 39,4 years old; 39,0% with overweight; 35,0% with obese class I; B 22,0% with obese class II and 4% obese class III after BMI calculation; physical inactivity 48%; tobacco use 7%; alcohol use 63,0%; hypertension 46,0%; diabetes 11,0%; 17,0% with fasting glycaemia >99 mg/dl, lack of information in 20%; dyslipidemia 22,0%, total cholesterol >200 mg/dl was measured in 35% (mean 203 mg/dl) and the lack of information in 20%; LDL cholesterol >100 in 50% (mean 81mg/dl) and the lack 24%; HDL 150 in 17% (mean 128 mg/dl) and the lack 22%; waist circumference >88 cm in 85,71% in female and >102 cm in 83,87% in male. The cardiovascular risk assessment of OO group, through the Framingham risk score, were: 67% of the group demonstrated 10% and 20%) was identified but there were 22% with incomplete data.

Conclusion: It was observed that 17% of the bodyguard staff were obese or overweight. However, according to the Framingham risk score 67% of the group was classified as low risk of cardiovascular event in 10 years. They must be referred to and monitored by a multidisciplinary health team in order to prevent and treat cardiovascular disease.

P591

Assessment of chest pain of recent onset; analysis of the effects of a structured approach.

Table 1.

Likelihood of CAD	No further investigations	ETT	CT Calcium scoring/CT Coronary angiography	Functional imaging	Coronary angiography
>10%	4	7	2	1	1
10-30%	4	7	1	3	0
31-60%	0	13	2	7	4
61-90%	2	12	0	6	11
>90%	2	15	0	1	11

A Ullah¹ and S Osula²¹Royal Blackburn Hospital, Cardiology, Blackburn, United Kingdom²Warrington and Halton hospitals., Warrington, United Kingdom

Purpose: To evaluate the effects of introducing a structured and unified standard approach in the assessment of chest pain of recent onset.

Methods: Retrospective observational study of the current practice of assessment of chest pain of recent onset in the cardiology department of our local hospital and compared the current practice with guidelines suggested by NICE.

National Institute of clinical excellence (NICE) in the United Kingdom updated their guidelines for assessment of stable angina in 2010. It recommended major changes to the way chest pain of recent onset is assessed.

Results: A total of 87 patients were assessed in the six weeks period of the study. These patients were risk stratified as per the NICE guidelines. 13 patients had likelihood of CAD less than 10 % and did not need any further cardiac investigations for coronary artery disease as per guidelines. 7 patients in this group in our study had various investigations the results of which were normal. Patients with a likelihood of 10 to 30 % should have been offered CT calcium scoring. However various investigations in practice studied. Similar were the results in other groups as detailed in the table. The results of these investigations were broadly reflective of the risk stratification done in line with the NICE.

Conclusions: Our study highlights the difficulties still encountered in assessing the stable angina in a standard manner. It also highlights the importance of following an agreed and standard protocol in order to maximize the benefits of such services to the patients and increasing the cost effectiveness of the available services.

A more structured and standardized approach to assessment not only helps in prompt correct diagnosis but also leads to more efficient use of available resources.

ST-elevation myocardial infarction - ACS

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P592

Impact of red blood cell distribution width on short and mid-term mortality in patients with ST-elevation myocardial infarction

T Ellouze,¹ C Hamza,¹ L Abid,¹ B Rekik,¹
A Maaleg,¹ B Jerbi,¹ D Abid¹ and
S Kammoun¹

¹Hedi Chaker University Hospital, Sfax, Tunisia

Introduction: Recent studies have reported increased red blood cell distribution width (RDW), a measure of red blood cell size heterogeneity, has been associated with adverse outcomes in heart failure and stable coronary disease. We investigated the association between RDW and risk of all-cause mortality in patients with ST-elevation myocardial infarction (STEMI).

Methods: We enrolled 147 patients admitted for STEMI within 12 hours of symptom onset in our hospital from september 2012 to august 2013 (mean age 63.1 ± 11.6 years; men 77.6%). According to the median RDW at baseline (13.5%) on admission, the patients were divided into two groups: a low-RDW group (RDW <13.5%, n = 77) and a high-RDW group (RDW ≥ 13.5%, n = 70). All-cause mortality rates were compared between groups. All patients have a follow up at 6 month. The association between RDW and 6-month all-cause mortality was assessed using Cox's proportional hazards analysis.

Results: A higher in-hospital mortality rate was observed among patients with elevated admission RDW (mean 14.96±1.6%) compared with those with non elevated RDW (mean 12.9±0.5%) (17.1% vs. 6.5%, P=0.04). High RDW remained significantly associated with increased risk for major adverse cardiac events and left ventricular dysfunction (FE < 40%) (21.4% vs 10.4% p=0.05 and 39.1% vs 14,3% p=0.001 respectively).

Twenty-two patients (15%) died during follow-up. The cumulative incidence of all-cause death was significantly higher in the high-RDW group than in the low-RDW group (hazard ratio: 3.12; 95% confidence interval: 1.22-7.97; p = 0.018). The area under the receiver-operating characteristic curve of the RDW was 0.678 (0.548-0.809, P=0.008).

Conclusion: RDW value above 14 is independently associated with increased mid-term all-cause mortality and MACEs in patients with STEMI.

Management of ST-elevation myocardial infarction according to European guidelines in a university hospital in Tunisia Results of RESCAS registry

T Ellouze,¹ C Hamza,¹ S Charfeddine,¹ R Hammami,¹
L Abid,¹ M Hentati¹ and S Kammoun¹

¹Hedi Chaker University Hospital, Sfax, Tunisia

Background: Expert guideline committees have defined recommendations to improve the management of patients with STEMI and decrease their mortality rates. Our Registry of ST-Segment-Elevation Myocardial Infarction (STEMI) was designed to assess the situation in Sfax regarding the clinical profile, diagnostic and therapeutic management and medium-term prognosis, as well as to evaluate compliance with contemporary clinical guidelines.

Methods: RESCAS registry was a 1-year, single-centre, prospective, multidisciplinary study, conducted between september 2012 and August 2013 in Sfax hospital, including 215 consecutive patients with STEMI of less than 24 hours duration.

Results: Seventy-seven per cent of patients were men; the mean age was 62 years. The most prevalent risk factor was smoking, followed by diabetes. Killip class greater or equal to 2 was observed in 24% of cases. 87% received reperfusion treatment; twenty-nine (13%) patients underwent thrombolysis and one hundred fifty-nine (74%) had percutaneous coronary intervention (PCI). Among patients undergoing primary percutaneous coronary intervention, first medical contact (FMC) to treatment 135 min, symptoms to treatment 300 min. FMC to PCI delay was less than 120 min in 68% of patients residents in Sfax city, while only 39% of patients residents in the delegations within 40 km of the hospital and 12.5% of patients in the delegations of more than 40 km are supported within the 2 hours following the ESC guidelines (p< 0,001). The only factor independently associated with guideline compliance was place of first medical contact. The radial access was used in 83% of patients. Thrombectomy with the use of a manual aspiration catheter was performed in 78 patients (49,5%). In-hospital mortality was 9,3% in all patients. Follow-up after 12 months was obtained for 185 patients (94,8%). Overall 6-months mortality rate was 12,6%. The cumulative incidence of myocardial infarction, stent thrombosis and target-lesion revascularization was 7%, 4,12% and 8,8% at overall follow.

Conclusion: In contemporary community practice, achievement of quality performance measures in patients presenting with ST-segment-elevation myocardial infarction was high, regardless of time of presentation. Most of our patients presenting with STEMI undergo reperfusion therapy

with percutaneous coronary intervention. However an important number of patients did not receive revascularization within the recommended time frame. Efforts should be made to improve the estimation of delay before reperfusion therapy.

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Primary Percutaneous Coronary Intervention and Gender Influence. Independent Risk Factors For Death And Major Events After Immediate And Medium-term Follow-up

I P Borges,¹ ECS Peixoto,² RTS Peixoto³ and RTS Peixoto⁴

¹Military Undersecretary from Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Fluminense Federal University, Rio de Janeiro, Brazil ³Military Police from Rio de Janeiro State Government, Rio de Janeiro, Brazil ⁴Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil

Background: Coronary heart disease is the leading cause of mortality and morbidity. A higher mortality risk for women with acute ST-elevation myocardial infarction has been a common finding in the past, even after acute percutaneous transluminal coronary angioplasty (PTCA). Prior studies have reported worse results after PTCA in women than in men. However, recent data suggest that this difference is less marked.

Objective: To determine gender-related differences and risk factors for death and major events, both in-hospital and at six-month follow-up, of patients that have been admitted within the first twelve hours of ST-segment elevation acute myocardial infarction (AMI) and primary PTCA in order to set out whether there are gender differences in a real-world contemporary treatment and outcome.

Methods: For two consecutive years, 199 consecutive patients were enrolled in the study, with ST-segment elevation AMI and primary PTCA without cardiogenic shock. The immediate outcome, in-hospital and six-month follow-up were studied. Multivariate Cox analysis were performed to identify independent predictors of death and major events.

Results: Clinical characteristics were similar in both groups, except that women were older than men (67.04 +/- 11.53 x 59.70 +/- 10.88, $p < 0.0001$). In-hospital mortality was higher among women (9.1% x 1.5%, $p = 0.0171$), as was the incidence of major events (12.1% x 3.0%, $p = 0.0026$). The difference in mortality rates remained the same at six months (12.1% x 1.5%, $p = 0.0026$). The independent predictors of death in multivariate analysis were: female gender and age >80 years old. Independent

predictors of major events and/or angina were: multivessel disease and severe ventricular dysfunction.

Conclusion: After ST-segment elevation AMI and primary PTCA, the independent predictors of mortality throughout the follow-up were female gender and age >80 years, in both in-hospital and six months follow-up.

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Primary Coronary Percutaneous Intervention In Diabetic Versus Nondiabetic Patients. Outcome And Follow-up. Independent Predictors Of Survival And Event Free Survival

I P Borges,¹ RTS Peixoto,² RTS Peixoto³ and RTS Peixoto⁴

¹Military Undersecretary from Rio de Janeiro State Government, Rio de Janeiro, Brazil ²Military Police from Rio de Janeiro State Government, Rio de Janeiro, Brazil ³Fluminense Federal University, Rio de Janeiro, Brazil ⁴Aloysio de Castro State Institute of Cardiology, Rio de Janeiro, Brazil

Objective: Some studies showed that diabetic patients (D) group (DG) had a worse outcome when compared to nondiabetic (ND) patients group (NDG), after primary percutaneous coronary intervention (PCI). The objectives were to compare mortality and major coronary events (MACE) at 30 days and 1 year of DG and NDG submitted to primary PCI and to study whether another conditions were related to worst outcome of patients in 30 days or one year.

Methods: Prospective study with 450 consecutive patients submitted to PCI from 01/01/2001 to 12/31/2006 (121 D and 329 ND) with ST-segment elevation acute myocardial infarction (AMI) in the first 12 hours of symptoms presentation treated with balloon catheter or bare metal stent and without cardiogenic shock. We used in statistical analysis: Student t test, chi-square test, Fischer exact test, and multivariate analysis: logistic regression and Cox analysis.

Results: DG and NDG had similar age (63.1±10.0 and 62.3 ±11.7 years, $p=0.443$), male gender (63.6% and 69.9%, $p=0.205$) and multivascular disease (66.1% and 60.8%, $p=0.301$). The diabetic group had more dyslipidemia (65.3% x 51.7%, $p=0.009$) and severe left ventricular dysfunction (15.7% x 8.2%, $p=0.019$). The stent implantation rate was (83.5% and 81.1%, $p=0.863$) and glycoprotein (GP) IIb/IIIa inhibitors utilization (79.3% and 82.2%, $p=0.831$) were similar. The mortality at 30 days (2.5% and 2.7%, $p=1.000$) and at 1 year (5.0% and 6.7%, $p=0,650$) and MACE at 30 days (4.1% and 6.4%, $p=0,496$) and at 1 year (19.4% and 15.4%, $p=0,3492$) were similar. The absence of TIMI III flow after the procedure (procedure failure) was the only independent hospital mortality (30

days) predictor ($P < 0,001$, $OR = 8,045$, $CI_{95} 2,327-27,816$). Procedure failure ($p = 0,023$, $HR = 3,364$, $CI_{95} 1,182-9,578$) and age ≥ 65 years ($P = 0,035$, $HR = 3,391$, $CI_{95} 1,091-10,543$) were independent predictors of mortality at 1 year. The multivessel coronary disease ($p = 0,023$, $OR = 4,218$, $CI_{95} 1,223-14,545$) and procedure failure ($P < 0,028$, $OR 3.155$, $CI_{95} 1,132-8,799$) were independent predictors of MACE at 30 days and multivessel coronary disease was independent of MACE at 1 year ($p = 0.034$, $HR = 1.854$, $CI_{95} 1.048-3.280$).

Conclusion: The diabetic patients submitted to primary PCI had mortality rate and MACE similar to none diabetic patients at 30 days and 1 year. The absence of TIMI III flow were predictor of mortality at 30 days and 1 year and age ≥ 65 years at 1 year. Independent predictors of MACE at 30 days were multivessel coronary disease and absence of TIMI III flow (procedure failure) and at 1 year was multivessel coronary disease.

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Differences in mortality after ST-elevation myocardial infarction according to gender: a retrospective study

R Baggen Santos,¹ I Silveira,¹ B Brochado,¹ MJ Sousa,¹ P Rodrigues,¹ A Luz,¹ A Albuquerque¹ and S Torres¹

¹Hospital Center of Porto, Cardiology, Porto, Portugal

Purpose: To detect gender-related differences in baseline characteristics, time-to-treatment and outcome in patients with ST-elevation myocardial infarction (STEMI).

Methods: retrospective analysis of 707 consecutive patients admitted with STEMI between January 2008 and December 2014, who underwent primary percutaneous coronary intervention (PCI).

Results: Women represented 26% ($n = 184$) of all patients included. Most baseline characteristics were unfavorable for the female gender: they were on average 8,5 years older ($68,8 \pm 13,8$ vs $60,3 \pm 12,4$; $p < 0,001$), had a higher prevalence of diabetes ($38,6\%$ vs 21% ; $p < 0,001$), hypertension ($71,0\%$ vs $51,5\%$; $p < 0,001$), renal dysfunction ($24,1\%$ vs $16,7\%$; $p = 0,03$) and lower hemoglobin level at admission ($12,7 \pm 1,6$ vs $14,5 \pm 1,6$; $p < 0,001$). GRACE and TIMI scores were significantly higher. Compared with men, women had a longer total ischaemic time ($395,3 \pm 23,2$ vs $334,1 \pm 13,6$; $p = 0,023$). There were no significant differences between groups concerning left ventricular ejection fraction and pharmacologic treatment prescribed at discharge. In-hospital mortality was significantly higher for women ($12,5\%$ vs $7,3\%$; $p = 0,03$) as was mortality at follow-up ($21,9\%$ vs $14,5\%$ $p = 0,03$). However, after adjusting

confounding factors in a multivariate analysis, female gender was not an independent predictor of mortality.

Conclusion: Women with STEMI presented a higher in-hospital and follow-up mortality than men. This difference may be explained by women's worse baseline characteristics and longer total ischaemic time, since female gender didn't prove to be an independent predictor of mortality.

P597

The kounis syndrome: coronary hypersensitivity disorder management

C Goena Vives,¹ L Quintas Ovejero,¹ I Lluís Serret,¹ R Garcia Martin,¹ M Larman Telletxea,² G Lasa Larraya,² M Telleria Arrieta,² K Gaviria Molinero,² JC Sanmartin Pena² and JJ Artaetxebarria Zuazo³

¹Mendaro's Hospital, Cardiology, Mendaro, Spain

²Donostia University Hospital, Hemodynamic Department,

Donostia, Spain ³Donostia University Hospital, Intensive Care Unit, Donostia, Spain

Introduction: Kounis syndrome is defined as the concurrence of acute coronary syndromes such as coronary spasm, acute myocardial infarction and stent thrombosis, with conditions associated to mast-cell and platelet activation. It involves inflammatory cells in the setting of allergic and anaphylactic insults. When this condition leads to cardiovascular manifestations the result might be the recently defined Kounis syndrome. We report a case in which both coronary spasm and thrombotic lesions at the same time occur.

Case report: We present the case of a 67-year-old man, smoker, with a recent diagnosis of prostatic adenocarcinoma, referred to surgery. Four minutes after receiving a vial of intravenous Amoxicillin/clavulanic, he showed generalized urticaria and chest pain, joined to severe hypotension (systolic pressure: 70 mmHg) and bradycardia (45bpm). The initial electrocardiogram showed auriculoventricular 2:1 blockade with ST elevation in the inferior leads. Treatment began with volume replacement, steroids and intravenous antihistamines. He was also administered dual antiplatelet therapy with acetylsalicylic acid and ticagrelor. The hemodynamics department was required to perform an emergency cardiac catheterization. In 20 minutes, hemodynamic stability and electrocardiogram change was seen with normalization of ST in the inferior leads, but a supradesnivation in V2-V6. The coronary angiography found no lesions in right nor the circumflex coronary arteries but showed a plaque erosion in the proximal anterior descending artery.

The serum creatine kinase, troponin T and pro-BNP peak values were 171 IU/L, 295.1ng/mL and 68.93 pg/mL, respectively. The patient's subsequent clinical course was satisfactory. Diagnosis was supported with positive specific IgE for beta-lactams and Tryptase elevation (73% sensitivity/98% specificity)

Conclusion: A high index of suspicion regarding this syndrome is important. Although it is not rare, diagnosis is sparse and overlooked. Persistent Tryptase elevation helps supporting it. Variants of Kounis syndrome have usually been described separately, but they can happen at the same time as these case shows: artery spasm and plaque erosion. The treatment has no guidelines. This is challenging because it needs to address both cardiac and allergic symptoms simultaneously, and the drugs administered may worsen the allergy and aggravate heart function. As this case illustrates, antiallergic treatment for type I variant derived manifestations and antithrombotic for the ulcerative lesion following the acute coronary syndrome protocol were given with no complications.

P598

Time trends of the presentation, therapeutic approach and prognosis of ST-Elevation Myocardial Infarction.

S Madeira,¹ L Raposo,¹ A Tralhao,¹ N Vale,¹
P Goncalves,¹ R Teles,¹ H Gabriel,¹ M Almeida¹
and M Mendes¹

¹Hospital de Santa Cruz, Lisbon, Portugal

Aim: The aim of this study was to evaluate the time course of the presentation, therapeutic approach and the short and long-term prognosis in patients with ST-Elevation Myocardial Infarction (STEMI) undergoing percutaneous coronary intervention (PCI).

Methods and Results: Retrospective analysis of 1390 consecutive patients with STEMI, prospectively included in a tertiary centre registry between January 2004 and January 2014. We evaluated the differences in clinical presentation, therapeutic management during PCI and in the 30-day and 1-year mortality per biennium, using the following tests: Qui2, t-student and Mann-Whitney.

Most patients (80.7%) underwent primary PCI, 11.3% rescue PCI and 8% facilitated PCI; 75.6% were male, and the mean age was 61.7 ± 12.4 years ($p > 0.1$ for the comparison between biennia). The median time from onset of symptoms to PCI increased between the 1st

(225 [135-456] min) and 3rd biennium (293 [157-562] min), decreasing to 235 [86-375] min in the 5th biennium ($p < 0.001$). The prevalence of patients presenting with Killip-Kimball class > 2 showed a gradual and significant increase over time ($p = 0.003$), while the rate of patients presenting with cardiac arrest, the angiographic extent of the coronary disease and the location of the culprit vessel remained stable ($p > 0.1$ for the comparison between biennia).

Concerning the procedure, there was a progressive increase in the use of the radial approach (from 1% in the 2nd to 81% in the 5th biennium), arterial closure devices when the access was femoral (31% in the 1st to 52% in the 5th biennium), thrombus aspiration ($< 1\%$ in the 1st to 93% in the 5th biennium), inotropic and vasoconstrictor drugs (1.6% in the 1st to 11.6% on the 5th biennium) and drug-eluting stents (DES) (55% in the 3rd to 65% in 5th biennium) (p -values < 0.0001 for all, except for DES $p = 0.03$). Conversely there was a significant decrease in multivessel PCI at the index procedure (since the 2nd biennium, $p < 0.001$), administration of the loading dose of clopidogrel in the catheterization laboratory and in the use of glycoprotein IIb/IIIa inhibitors ($p < 0.001$). The use of intra-aortic balloon pump remained stable over time ($p = 0.15$).

The 30-day and 1-year mortality was 4.3% and 7.5%, respectively and did not differ significantly between biennia ($p = 0.4$).

Conclusion: The expansion of the therapeutic armamentarium and technical improvement allowed a more aggressive treatment of more severe patients without worsening mortality.

P599

Risk factor profile and clinical outcomes in young patients with acute ST-elevation myocardial infarction

I Silveira,¹ MJ Sousa,¹ R Santos,¹ B Brochado,¹ P Rodrigues,¹
M Santos,¹ A Luz,¹ J Silveira,¹ H Carvalho¹ and S Torres¹

¹Hospital Center of Porto, Cardiology, Porto, Portugal

Introduction: There have been few studies performed evaluating young patients with ST-elevation myocardial infarction (STEMI). Coronary disease in young patients is associated with premature mortality and long-term disability, with a substantial personal and social burden. The mechanism and disease course of young STEMI patients are probably different compared to older population.

Methods: Retrospective analysis of 707 consecutive patients admitted with STEMI, who underwent primary

percutaneous coronary intervention (PCI), from January 2008 to December 2014. Clinical characteristics, procedure parameters and outcomes were compared in young patients (age \leq 55 years old) and older patients ($>$ 55 years old).

Results: Young patients represented 31,5% of all patients with STEMI. They had a significantly higher proportion of males (85,2% vs 68,8%; $p<0.001$), smokers (83,8% vs 37,6%; $p<0.001$) and familiar history of premature coronary artery disease (20,5% vs 7,3%; $p<0.001$) than the older STEMI group. Young patients were less likely to have hypertension and diabetes, with same rates of dyslipidemia, obesity and previous myocardial infarction. Compared with the older, young patients had also lower total ischaemic time (304,6 \pm 246,7 vs 371,7 \pm 332,9 minutes; $p=0.003$), less multivessel disease (50,2% vs 60,9%; $p=0.008$), acute kidney injury (11,4% vs 22,6%; $p<0.001$) or presentation in class III/IV Killip (9% vs 14,4%; $p=0.046$). During the primary PCI, radial access and glycoprotein IIb/IIIa inhibitors were used more frequently in the younger group, with less proportion of no reflow phenomenon. There were no significant differences between groups regarding left ventricular ejection fraction or type of therapeutics at discharge, but with a less length of hospitalization in younger patients (6,5 \pm 3,9 vs 8,4 \pm 7,1 days; $p<0.001$). Both, in-hospital and follow-up mortality were significantly lower in young STEMI group (2,7% vs 11,4%; $p<0.001$ and 5,6% vs 21,2%; $p<0.001$).

Conclusion: In our study, young patients with STEMI presented in a less severe form and had better outcomes, than older patients. The most significant risk factors in the younger group were male gender, familial history of coronary artery disease and cigarette smoking (the only modifiable risk factor). Focusing preventable strategies in this patient profile may help reduce the incidence of premature coronary artery disease.

P600

Radial vs femoral approach: the impact of access site in hemoglobin drop in patients with ST-segment myocardial infarction undergoing primary percutaneous coronary intervention

I Silveira,¹ M J Sousa,¹ R Santos,¹ B Brochado,¹ P Rodrigues,¹ M Santos,¹ A Luz,¹ J Silveira,¹ H Carvalho¹ and S Torres¹

¹Hospital Center of Porto, Cardiology, Porto, Portugal

Background: Bleeding has been related to poor outcomes in patients admitted with acute coronary syndromes. The advantages of routine radial approach in reducing bleeding, is still a matter of debate.

Methods and Results: Retrospective study of 655 consecutive patients with ST-elevation myocardial infarction (STEMI) that underwent primary percutaneous coronary intervention, from January 2008 to August 2014. In order to evaluate the impact of vascular access site, we studied the predictors of hemoglobin drop in a multivariate analysis. From a total of 655 patients included, in 54,5% were used radial approach and in 45,5% femoral approach. Compared to radial approach, patients in femoral group were older and had a higher rate of diabetes. They also had significantly greater use of glycoprotein IIb/IIIa inhibitors and intra-aortic balloon insertion (IABP). Patients in femoral approach had higher SINTAX, GRACE and TIMI score, and were more likely to had Class III/IV Killip at admission. There were no significant differences in total ischaemic time and door-to-balloon time between groups. Mean in-hospital hemoglobina drop was lower for radial in comparison to femoral approach (1,85 \pm 1,16 g/dl vs 2,18 \pm 1,30 g/dl; $p=0,002$). Linear regression with hemoglobin variation as dependent variable was performed. After multivariate adjustment for confounding variables, IABP (B=0,878 95% CI: 0,124 to 1,632; $p=0,023$), and glycoprotein IIb/IIIa inhibitors use (B= 0,610 95% CI: 0,385 to 0,834; $p<0.001$) were the only variables related to hemoglobin reduction whereas higher creatinine clearance at admission was inversely correlated (B=-0.04 95% CI:-0.07 to - 0.01; $p=0,005$).

Conclusion: Radial approach didn't translates to reduced hemoglobin drop after adjustment for confounding variables. Patients with renal impairment, with IABP and use of glycoprotein IIb/IIIa inhibitors are more likely to bleed. This analysis suggests that other sites of bleeding beyond of access site should be pursued.

P601

Comparison of 1-year clinical outcomes between invasive and conservative treatment strategies for acute ST-elevation myocardial infarction complicated by cardiogenic shock in elderly patients

K T Jung¹

¹Cardiovascular center Eulji University, Interventional Cardiology, Daejeon, Korea, Republic of

Objectives: We investigated the benefit of an invasive strategy for elderly (\geq 75-year-old) patients with acute ST-segment elevation myocardial infarction (STEMI) complicated by cardiogenic shock (CS).

Background: The benefit of an invasive strategy for elderly patients with STEMI complicated by CS is controversial.

Method: Data from 409 elderly patients with CS out of a total of 6,132 acute STEMI cases enrolled in the Korea Acute Myocardial Infarction Registry between January 2008 and June 2013 were collected and analyzed. In-hospital deaths and 1-month and 1-year survival rates free from major adverse cardiac events (MACE; defined as death, myocardial infarction, and target vessel revascularization) were compared between patients who had received invasive (n = 310) and conservative (n = 56) treatment strategies.

Result: Baseline clinical characteristics were not significantly different between the 2 groups. There were fewer in-hospital deaths in the invasive treatment strategy group (46.4% vs. 23.5%, $p < 0.001$). In addition, the 1-year MACE-free survival rate after invasive treatment was significantly lower compared to the conservative group (51% vs. 66%, $p = 0.001$).

Conclusion: In elderly patients with acute STEMI complicated by CS, an invasive strategy is superior to a conservative one at the 1-year follow-up.

P604

Stress hyperglycemia may carry a worse outcome in patients presenting with acute ST-segment elevation myocardial infarction

Y Yazeed,¹ T Ali,¹ H Elhossary¹ and Z Ashour¹

¹Cairo University Hospitals, Department of Cardiovascular Medicine, Cairo, Egypt

Background: Stress hyperglycemia (admission blood glucose >200 mg/dl in absence of diabetes) is not uncommon in patients presenting with ST-segment elevation myocardial infarction (STEMI) however it is unclear whether it affect prognosis of patients.

Aim: This study aims to evaluate the relation between stress hyperglycemia in patients with acute STEMI and in hospital outcome.

Methods: The study enrolled 54 consecutive patients presenting with acute STEMI. 27 patients had admission stress hyperglycemia, group I (blood glucose >200 mg/dl without diabetes mellitus, confirmed by predischage glycated hemoglobin), while 27 patients had normoglycemia, group II (<200 mg/dl and no diabetes mellitus by predischage glycated hemoglobin). There was no difference between both groups as regard age, gender, smoking status, family history of coronary artery disease, type of reperfusion therapy or infarction site. Patients in group I were more likely to have higher blood sugar level on admission [242 ± 34 versus 118 ± 20 mg/dl; $p = 0.000$], higher troponin I [31 ± 3 versus 15 ± 1 ng/mL; $p = 0.019$], and higher tumour necrosis factor alpha level [2044 ± 77 versus 1387 ± 40 pg/ml; $p = 0.002$]. Patients in group I had higher MACE but that was not statistically significant.

Conclusion: Patients with STEMI and stress hyperglycemia may have worse outcome compared to patients with normoglycemia but this needs a large scale trial.

P605

15 years of therapy and outcome of STEMI patients in a city wide Registry

J-U Roehnisch,¹ B Maier,² S Behrens,³ R Schoeller,⁴ H Schuehlen⁵ and H Theres⁶

¹Vivantes Hospital Hellersdorf, Berlin, Germany ²Berlin Myocardial Infarction Registry at TU Berlin, Berlin, Germany ³Vivantes Humboldt-Klinikum, Berlin, Germany ⁴DRK Kliniken Berlin | Westend, Berlin, Germany ⁵Vivantes Auguste-Viktoria Hospital, Berlin, Germany ⁶Charite - University Medicine Berlin, Campus Mitte, Berlin, Germany

Background: Hospital treatment of patients with STEMI has changed tremendously over the last 15 years. We studied how guidelines were implemented in a big city within the last 15 years under every day hospital conditions.

Methods: Our Registry collects data on hospital treatment of patients with ACS since 1999. In our study we included all 15436 STEMI patients treated in up to 25 hospitals between 1999 and 2013. We looked at changes over time in 3 time periods (1999-03, 2004-08, and 2009-13) and analysed reperfusion therapy, discharge medication, and hospital mortality for different age groups and according to sex.

Results: PCI for men increased over the 3 time periods for =75 yrs. (33% - 75% - 89%). PCI for women increased over the 3 time periods for =75 yrs. (25% - 64% - 81%).

Hospital mortality decreased for men over the 3 time periods for =75 yrs. (21% - 17% - 17%). Hospital mortality decreased for women over the 3 time periods for =75 yrs. (26% - 24% - 22%). Statines upon discharge increased for men over the 3 time periods for =75 yrs. (42% - 90% - 92%). Statines upon discharge increased for women over the 3 time periods for =75 yrs. (34% - 80% - 87%).

ACE-inh./ARBs on discharge increased for men over the 3 time periods for =75 yrs. (83% - 90% - 92%). ACE-inh./ARBs on discharge increased for women over the 3 time periods for =75 yrs. (80% - 89% - 90%).

ASA and Beta-Blockers not listed, because >85% of men and women at all points in time received the two substances upon discharge.

Conclusions: Reperfusion therapy and discharge medication changed tremendously for STEMI patients since 1999. This applies to all age groups and both sexes. At the same time hospital mortality declined, especially for older patients and women. Over the last years the rise in PCI and the decline in hospital mortality have reached a plateau.

P606

Short intraaortic balloon prevents visceral hypoperfusion during counterpulsation

S Gelsomino,¹ F Luca,¹ PWJ Lozekoot,¹ MMJ De Jong,¹
O Parise,¹ F Matteucci,¹ GF Gensini,² M La Mair,³
JG Maessen¹ and R Lorusso¹

¹Cardiovascular Research Institute Maastricht (CARIM), Cardiothoracic Department, Maastricht, Netherlands ²Careggi University Hospital, Florence, Italy ³Brussels Heart Center, Cardiothoracic department, University Hospital of Brussels, Brussels, Belgium

Background: Visceral ischemia is a life-threatening complication of intra-aortic balloon malposition but which, in a non-negligible percentage of cases, is related to excessive balloon length resulting in anatomic-to-device mismatch. To test the hypothesis that a short balloon may preserve splanchnic flow, we compare mesenteric and renal flows using the new 8F 35 mL XEMEX short balloon (total balloon length, 162mm) vs. 8F 35 mL XEMEX long balloon (total balloon length, 214mm) in a swine model of myocardial ischemia-reperfusion.

Methods: Eighteen healthy swine underwent 120-minute ligation of the left anterior descending coronary artery followed by 6 hours of reperfusion, and were randomly assigned to have IABP with short balloon (n=6), long balloon (n=6), or no to undergo IABP implantation (controls, n=6). Visceral flows and hemodynamic parameters were measured at baseline (t0), at 2-hour ischemia (t1), and every hour thereafter until 6 hours of reperfusion (from tR1 to tR6), respectively.

Results: Systolic and diastolic mesenteric flows significantly decreased during ischemia in all Groups (all $p < 0.001$). Flows increased significantly at tR1 in the short-balloon group (both, $p < 0.001$) whereas they remained low in the long-balloon group ($p < 0.001$ vs. short). Mesenteric flows did not show further significant changes but they were constantly higher in the short-balloon group (all, $p < 0.001$). Systolic and diastolic left and right renal flows were significantly higher in the balloon groups than controls at any experimental step (all, $p < 0.001$). Nonetheless these flows were significantly higher in the short-balloon group vs. long-balloon group throughout reperfusion (all, $p < 0.001$). No difference was detected in cardiac output, stroke volume, dP/dT and cardiac cycle efficiency between balloons (all, $p > 0.05$).

Conclusions: The XEMEX short balloon significantly increased visceral flow compared to the long-length balloon which caused stable splanchnic hypoperfusion in an animal model of ischemia/reperfusion myocardial injury. Hemodynamics was comparable. Our findings need to be confirmed before translating experimental results into clinical practice.

P607

Primary angioplasty in patients with chronic oral anticoagulation: modifies the antithrombotic strategy and vascular usual approach? it conditions increased bleeding risk during hospitalization?

MI Barrionuevo Sanchez,¹ JG Cordoba Soriano,¹
J Jimenez Mazuecos,¹ J Navarro Cuartero,¹ MJ Corbi Pascual,¹
A Gutierrez Diez,¹ G Gallego Sanchez,¹
D Prieto Mateos,¹ S Calero Nunez¹ and
C Ramirez Guijarro¹

¹Albacete University Hospital, Cardiology, Albacete, Spain

Introduction: The information regarding antithrombotic strategy, vascular access and common practice in the primary angioplasty (PCI) for STEMI in patients with chronic oral anticoagulation for other reasons (OAC) is scarce. These patients have been traditionally excluded from clinical trials that have established PPCI current recommendations of clinical practice guidelines.

Methods: We evaluated the periprocedural management and major hospital bleeding complications in a cohort of patients undergoing PPCI receiving OAC compared with other patients non-OAC undergoing primary PCI in our center during 2005-2012. Bleeding complications were classified based on three different scales: TIMI, ACUITY and BARC ≥ 3 .

Results: In 918 patients undergoing primary PCI, only 31 (3%) were chronic OAC with Acenocumarol, 3 carriers of mechanical heart valve prostheses, 22 with atrial fibrillation and 6 for other reasons. Antiplatelet strategy was performed with ASA and Clopidogrel in all of them loaded Clopidogrel 600 mg in 70% and 300 mg in 30%. Were used in 92% of cases 5000 IU unfractionated heparin (UFH) and none Bivalirudin (4% in the group of non OAC) and Abciximab was used in 326 patients (35.5%) no OAC group vs 7 patients (22.5%) in the OAC group ($p = 0.2$). Regarding vascular access also no differences between groups (77% Radial access OAC vs 82.3% no-OAC; $p = 0.4$). The rate of TIMI bleeding (1.4% vs 0%, $p = \text{NS}$), ACUITY 12.9% vs 8.2%, $p = \text{NS}$) and BARC (9.7% vs 4.4%, $p = \text{NS}$) in the OAC group they were not higher than in the control group.

Conclusion: Despite the widespread use of OAC in clinical practice, it is rare for patients undergoing primary PCI for STEMI receiving chronic treatment with OAC. Overall management of these patients for antithrombotic and vascular access strategy does not differ from the rest nor more bleeding complications involved in this subgroup.

P608

Primary angioplasty for STEMI in patients with previous aorto-coronary bypass surgery.

MI Barrionuevo Sanchez,¹ JG Cordoba Soriano,¹ J Jimenez Mazuecos,¹ MJ Corbi Pascual,¹ J Navarro Cuartero,¹ A Gutierrez Diez,¹ G Gallego Sanchez,¹ D Prieto Mateos,¹ C Ramirez Guijarro¹ and S Calero Nunez¹

¹Albacete University Hospital, Cardiology, Albacete, Spain

Introduction and Objectives: The presentation of an acute coronary syndrome as STEMI in patients who had undergone previous aorto-coronary bypass (CABG) is uncommon and there is little information about the incidence, characteristics and results of primary angioplasty (PCI) in them. Our goal is to assess these points in a cohort of patients undergoing PPCI and compare their hospital outcome with the global group.

Methods: A retrospective study of 853 patients undergoing primary PCI for STEMI over a period of seven years and where 6 (0.7%) were patients with previous CABG. Clinical and procedural characteristics and the hospital outcome of patients with prior CABG compared to the rest.

Results: 6 patients with prior CABG were all males (77 ± 5 years), 16% diabetics and only 3 of them had prior treatment with aspirin. All had undergone isolated CABG. Electrocardiographic localization was 50% anterior MI and 50% inferior MI, while, curiously, in 3 cases a saphenous graft to the right coronary artery was the culprit vessel, in 2 cases the right coronary native and in one case left anterior descending native artery was the culprit vessel. All cases were performed through left radial approach and 5 direct stent (4 metal and 1 drug) was introduced. The median ischemia time (Symptoms-artery open) was 299 minutes in the CABG group vs. 194 minutes of the global group ($p = 0.025$) while the median door-to-balloon time was 89.5 minutes (CABG) vs 60 minutes (not CABG), p : NS. There were no in-hospital adverse cardiac events in these 6 patients, defined as death, reinfarction and stroke.

Conclusion: The presentation of a SCA as STEMI in patients with previous CABG is very rare and with ECG-arterial territory different from the usual pattern. There is a greater delay to seeking care in these patients and a greater tendency to delay opening until the culprit vessel, but the hospital prognosis is similar to the rest.

P609

Patient factors that influence longer ischemia in a primary angioplasty program.

MI Barrionuevo Sanchez,¹ JG Cordoba Soriano,¹ J Jimenez Mazuecos,¹ J Navarro Cuartero,¹ MJ Corbi Pascual,¹ A Gutierrez Diez,¹ G Gallego Sanchez,¹ D Prieto Mateos,¹ C Ramirez Guijarro¹ and S Calero Nunez¹

¹Albacete University Hospital, Cardiology, Albacete, Spain

Introduction: Time to reperfusion is the main determinant of the benefits offered by primary angioplasty (PCI) in the treatment of STEMI. Different studies have postulated some patient factors that determine a longer delay.

Methods: We evaluated the impact of patient factors classically linked to the delay to reperfusion in a cohort of patients undergoing primary angioplasty during 2005-2012, a period of time during which a PCI regional program was launched. We define the total ischemia time (TIT) as that elapsed between the onset of symptoms and the opening of the responsible artery and door-to-balloon time (DBT) as the time between hospital arrival-opening of occluded artery.

Results: We studied 917 patients undergoing primary PCI (74% male, 65 ± 13 years). The TIT in global group had a median of 260 minutes (IR 25-75, 175-382 minutes) and median DBT was 66 minutes (IR 25-75: 36-116 minutes). The main patient factors that led a significant delay in the TIT were age > 80 years (275 minutes vs 244 minutes, $p < 0.05$) and a history of DM (291 min vs 245 min, $p < 0.05$). Other factors classically linked to the delay to reperfusion as obesity (body mass index > 30), female gender or previous history of heart disease were not decisive increase in TIT. The DBT however did not differ based on any of the factors evaluated. It was also observed that the fundamental TIT delay of diabetic patients occurred before primary PCI activation code (150 vs. 120, $p < 0.05$).

Conclusion: The greatest delay in patients with STEMI reperfusion occurs in the time it takes the patient to seek medical attention. The octogenarian and diabetic patient is one that has more delay. Campaigns and public awareness and alertness to possible atypical symptoms in these patients could help reduce these times.

Non ST-elevation myocardial infarction - ACS

P610

Could we avoid ergometry if the value of high sensitive cardiac troponin T is very low?

P Fluvia,¹ J Pascual,¹ P Loma Osorio,¹ J Aboal,¹
E Badosa,¹ A Fageda,¹ M Nunez,¹ N Coma¹
and G Vazquez¹

¹University Hospital de Girona Dr. Josep Trueta, Girona, Spain

Purpose: Recent studies suggest that due to the high negative predictive value (NPV) of high sensitive cardiac troponin T (TNThs) in patients with acute chest pain the ergometry could be avoided. The aim of this study is to analyse the diagnostic accuracy of a value TNThs <4ng/L.

Methods: Retrospective study with consecutive patients consulting to the emergency department with less 24h of chest pain, negative TNThs, and a interpretable electrocardiogram from January 2013 to December 2014. The gold standard was the presence of coronary events (myocardial infarction, angina, death or revascularization) at 6 months.

Results: 179 patients were included. 41 (23%) had TNThs ≤ 4 ng /L. In this group, 2 positive exercise tests were recorded (4.5%, both with subsequent normal coronary angiography) and one was inconclusive (2.4%, SPECT negative for ischemia). No events were observed during the follow up. In contrast, in the group with TNThs > 4, were identified 12 positive exercise tests (8.7%), 10 not conclusive (7.2%) and 9 events during follow-up (6.5%, 2 AMI and 7 unstable angina). The negative predictive value for this cut value of TNThs in relation to the events of coronary events in the follow-up of 6 month was 100%.

Conclusions: In our population a cut value of TNThs ≤ 4 ng / dL identified patients without events during follow-up of 6 months. Further studies are needed to elucidate if in those cases, we could avoid the stress test.

P611

The diagnostic performance of ergometry in our population.

J Pascual,¹ P Fluvia,¹ P Loma Osorio,¹ D Bosch,¹
A Fageda,¹ E Badosa,¹ N Coma,¹ L Muntaner,¹
G Vazquez¹ and J Aboal¹

¹University Hospital de Girona Dr. Josep Trueta, Girona, Spain

Purpose: The ergometry is a main tool in the evaluation of chest pain in the emergency department. We sought to review the diagnostic performance in a contemporary setting.

Methods: Retrospective study of consecutive patients who consulted to emergency department from January 2013 to December 2014, within 24 hours of chest pain and interpretable ECG and negative high sensitive troponin T, whom ergometry test was indicated. We defined

“event” as death, acute myocardial infarction, angina and revascularization during follow up 6 months.

Results: 179 ergometry tests were done, 15 were positive (8.6%), 13 were inconclusive (7.26%) and 151 were negative (84%). Among positive stress tests, 14 coronary angiographies were performed (4 showing significant coronary artery disease with subsequent revascularization); and 1 SPECT which was unable to demonstrate ischemia. Between 13 inconclusive stress test we completed the study with SPECT. During the follow up we identified 9 events, 7 angina, 2 acute myocardial ischemia and any death. This stress test outcomes represent a specificity of 0.85 and negative predictive value 0.96 for events in the follow up. No complications in ergometry test were seen.

Conclusions: In our population the stress test as a tool for early diagnosis of coronary disease showed a high specificity and a high negative predictive value.

P612

Which is the better percutaneous revascularization strategy in old patients: total or partial percutaneous revascularization?

A Fernandes,¹ M Cassandra,¹ L Teles,¹ M Madeira,¹
I Almeida,¹ F Caetano,¹ M Costa¹ and L Goncalves¹

¹Centro Hospitalar Coimbra, EPE, Coimbra, Portugal

Introduction: Acute coronary patients older than 75 years-old are growing. They have frequently multivessel and complex coronary disease. Nowadays it is recognized that total revascularization is associated with a better prognosis but most of the studies didn't involve older patients.

Objective: Evaluate if, in old patients with acute coronary syndromes (ACS), percutaneous revascularization should be incomplete or total.

Methods: Retrospective study with 1039 patients (P) admitted with ACS between 05/2009 and 05/2012. We selected P aged ≥ 75A (392 P = 37,7%) and excluded P who were medical treated (61 P = 15,6%), with single vessel disease (124 P = 31,6%) and submitted to surgical treatment (14 P = 3,6%). Two groups were created – IR incomplete revascularization (109 P = 74,1%) and CR complete revascularization (38 P = 25,9%). We compared clinical characteristics, cardiovascular risk factors, analytical and echocardiographic data, intra-hospital (IHM) and mortality during follow-up and MACE (24±9M).

Results: The population was 81±4 years with 52% male. Were admitted with STEMI 43,2%, NSTEMI 41,2%, and unstable angina 15,6%.

There were no differences between both groups in age (79±3 vs 80±4, $p=0,213$), gender ($p=0,975$), hypertension (92,1% vs 87%, $p=0,402$), diabetes (36,8% vs 42,6%, $p=0,149$), smoking (13,2% vs 11,1%, $p=0,735$), renal disease (31,6% vs 31,5%, $p=0,991$), history of heart failure (IC) (15,8% vs 25,9%, $p=0,204$) and the type acute coronary syndrome (NSTEMI/UA 57,9% vs 58,3%, $p=0,728$). Patients from the group CR had less dyslipidemia (39,5% vs 69,4%, $p=0,001$) and previous coronary disease (15,8% vs 38,9%).

During hospital stay both groups were similar regarding: cardiorenal syndrome (48,6% vs 50%, $p=0,888$), heart failure (40,5% vs 45,3%, $p=0,617$), hemorrhage (10,5% vs 8,3%, $p=0,683$), IHM (5,3% vs 4,6%, $p=0,875$), maximal troponin (64±96 vs 43±94ng/ml, $p=0,256$), Nt-proBNP (12000±19000 vs 10000±17000pmol/L, $p=0,621$), left ventricle ejection fraction (45±12% vs 41±12%, $p=0,214$). During follow-up there were no differences in mortality (30,6% vs 39,2%, $p=0,355$) and MACE (41,7% vs 57,4%, $p=0,104$).

Conclusion: Older people are a growing population in ACS patients. Mortality was high in this group. More studies are needed in order to establish a revascularization strategy.

P613

Guideline-conforming timing of invasive management in acute coronary syndrome without persistent ST-segment elevation in german chest pain units: comparison of urban university care versus rural care

D Fischer,¹ F Remberg,² D Boese,² M Lichtenberg,² P Kuempers,³ HJ Pavenstaedt,³ J Waltenberger¹ and F Breuckmann²

¹University Medical Center, Cardiology and Angiology, Münster, Germany
²Karolinenhospital, Arnsberg, Germany ³University Medical Center, Internal Medicine, Nephrology and Rheumatology, Münster, Germany

Aim: To analyse guideline-adherence in timing of invasive management in myocardial infarction without persistent ST-segment elevation (NSTEMI) in two exemplary German centres, contrasting supply in an urban university maximum care versus rural regional primary care facility.

Methods and results: All patients encoded as NSTEMI during the year 2013 were retrospectively enrolled in two centres (n=199): site I) centre of maximum care in an urban university setting, site II) centre of primary care in a rural regional care setting. Data acquisition included time intervals from admission to invasive management, risk criteria, rate of intervention and medical therapy.

The median time from admission to coronary angiography was 12.0 hours (site I) or 17.5 hours (site II; $p=0.17$). Adjusted for eligible confounders, guideline-adherent timing was obtained in 88.1% (site I) or 82.9% (site II; $p=0.18$). Intervention rates (percutaneous coronary intervention or coronary artery bypass surgery) were high in both sites (site I – 75.5% vs. site II – 75.3%; $p=0.85$). Surgical revascularisation was significantly more often performed in site II (site I – 3.6% vs. site II – 18.4%; $p<0.01$). Adherence to recommendations of medical therapy was high and comparable between both sites.

Conclusion: In NSTEMI or acute coronary syndromes without persistent ST-segment elevation (NSTE-ACS) of very high risk, guideline-adherent timing of invasive management was performed in about 85% in an all-comers population. Guideline-adherence was independent from location of admission with comparable results between urban maximum and rural primary care.

P614

What is the prognosis of elderly patients with acute coronary syndrome undergoing percutaneous coronary intervention, compared with the general population of their age?

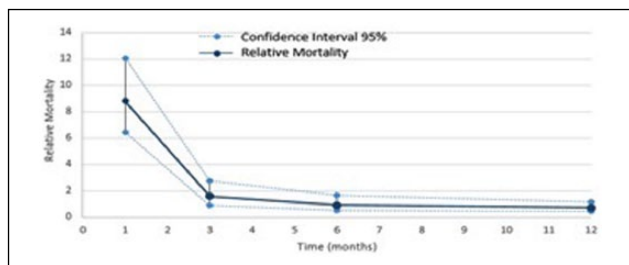
S Guerreiro,¹ MS Castro,¹ RC Teles,¹ J Ferreira,¹ P Goncalves,¹ HM Gabriel,¹ M Almeida¹ and M Mendes¹

¹Hospital de Santa Cruz, Lisbon, Portugal

Purpose: To compare the mortality of octogenarian patients with acute coronary syndrome (ACS) undergoing percutaneous coronary intervention (PCI) against the general population with the same age.

Methods and results: Prospective single center study including all octagenarian patients (≥ 80 years old) undergoing PCI between 2005 and 2012. We calculated the relative mortality dividing the absolute mortality rate of the study population by the mortality rate of the general population of the year of intervention, according to data published by the National Institute of Statistics. In total 422 patients were evaluated (9.8% of all ACS undergoing PCI in this period): mean age of 83.6 years old; 53.8% men. During 1 year of follow up, mortality occurred in 17.5% of cases, the reinfarction rate was 8.8% and the revascularization occurred (percutaneous or surgical) in 16%.

Compared with the general population, the mortality of patients studied was higher in the first months after PCI. However, after this period, the mortality was slightly lower than the general population of the same age group, during a year of follow-up (figure 1).



Conclusions: Octogenarians with ACS who survived initial phase after PCI had a slight improvement in outcome compared with the general population.

P615

Patients with non obstructive coronary artery disease admitted with acute coronary syndrome carry a better outcome compared to those with obstructive coronary artery disease

Y Yazeed,¹ A Bakr¹ and M M Abdelghany¹

¹Cairo University Hospitals, Department of Cardiovascular Medicine, Cairo, Egypt

Background: The characterization of patients who have acute coronary syndrome (ACS) with insignificant coronary stenosis is unclear.

Aim: The present study aimed to investigate the clinical profile, in-hospital and 3-months outcome of ACS patients with insignificant coronary stenosis on a coronary angiography.

Methods: This prospective observational study included 200 consecutive patients admitted with ACS. Group I (100 patients) included patients with insignificant CAD (all lesions <50% stenosis). Group II (100 patients) included patients with one or more lesions > 70% stenosis. Patients with Previous CABG were excluded.

Results: Patients with insignificant CAD were significantly younger (61 vs. 67 years, $p < 0.001$), more likely to be females (41% vs. 23%, $p = 0.006$), less likely to smoke ($p = 0.006$), less likely to have diabetes mellitus ($p < 0.001$), and less likely to have history of CAD ($p = 0.042$) or prior PCI ($p = 0.037$). They were also less likely to have typical anginal pain at presentation (61% vs 91%, $p < 0.001$), less likely to have heart failure at presentation (9% vs 30%, $p < 0.001$), less likely to have ischemic ST-segment changes on presentation, (10% vs 46%, $p < 0.001$), lower peak troponin ($p < 0.001$) and CK-MB levels ($p < 0.001$), with lower LDL-C ($p = 0.006$), and higher HDL-C level ($p = 0.020$). they were less likely to be treated with thienopyridines ($p < 0.001$), statins ($p < 0.001$), b-blockers ($p = 0.002$), ACEI/ARBS ($p = 0.007$), and higher rates of calcium channel blocker

therapy ($p < 0.001$). They had lower prevalence of major adverse clinical events at follow up (readmission for ACS ($p = 0.009$), revascularization ($p = 0.035$), recurrent chest pain ($p = 0.009$), cardiogenic shock ($p = 0.029$).

Conclusion: Patients with ACS and insignificant CAD have different clinical profile and outcome compared to those with significant disease.

P616

Revascularization procedures for late elderly patients with non-st-segment elevation myocardial infarction: in-hospital and 30-day major adverse cardiac events

A Kobayashi,¹ NM Misumida¹ and YK Kanei²

¹Beth Israel Medical Center, New York, United States of America

²Beth Israel Medical Center, Cardiology, New York, United States of America

Background: Advanced age has been shown to predict adverse outcomes among patients with acute myocardial infarction. Although patients with acute myocardial infarction benefit from revascularization procedures including percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG), revascularization procedures may be deferred due to age-related comorbidities and risks associated with procedures. Currently, little is known regarding clinical outcomes of late elderly patients with non-ST-segment Elevation Myocardial Infarction (NSTEMI) who were treated with PCI or CABG.

Methods: We performed a retrospective analysis of 481 consecutive NSTEMI patients who underwent coronary angiography from January 2013 to June 2014. Patients who did not received revascularization procedures during hospitalization were excluded. Patients were divided into following two groups: late elderly group (age ≥ 75) and control group (age ≤ 74). Baseline and angiographic characteristics, and in-hospital as well as 30-day major adverse cardiac events (MACE) including death and recurrent myocardial infarction were compared.

Results: Among 293 patients who were included in final analysis, 84 patients (28.7%) were in late elderly group. Patients in late elderly group were more likely to have chronic kidney disease than control group (46.4% vs. 14.1%, $p < 0.001$). The interval time to coronary angiography from hospital admission was significantly longer in patients in late elderly group than control group (median [interquartile] 1.30 [0.70-2.23] day vs. 0.99 [0.45-1.78] day, $p = 0.023$). Although patients in late elderly group had a significantly higher incidence of left main and/or three-vessel disease than control group (42.9% vs. 29.2%, $p = 0.025$), there was a trend toward a lower incidence of in-hospital CABG in late elderly

group than control group (10.7% vs. 16.3%, $p=0.22$). The incidence of in-hospital MACE was comparable between the two groups (2.4% vs. 1.9%, $p=1$). No statistically significant difference was observed in the incidence for 30-day MACE between the two groups (4.8% vs. 3.3%, $p=0.52$).

Conclusion: In our cohort of patients with NSTEMI treated with PCI or CABG, the incidence of in-hospital and 30-day MACE was comparable between patients in late elderly group and those in control group.

Sepsis and infection

P617

Hospital-acquired infections in an intensive cardiac care unit: epidemiology and prognosis

J F Carvalho,¹ K Congo,¹ D Neves,¹ R Guerreiro,¹ J Pais,¹ B Picarra,¹ A Bento¹ and J Aguiar¹

¹Hospital do Espírito Santo de Évora, EPE, Évora, Portugal

Purpose: Hospital-acquired infections (HAI) are a major public health concern due to increased morbidity and mortality of affected patients (pts). Despite intensive research in intensive care units, less is known about the clinical factors and prognosis of HAI in patients admitted to Cardiac Care Units (CCU). We evaluated HAI's epidemiology and its impact on the pts prognosis in our CCU.

Methods: We performed a prospective study that included all pts admitted consecutively to our CCU during a period of 2 years. Clinical data were analysed with SPSS v.22 by univariate analysis.

Results: A total of 833 pts (65.1% male) were admitted to our CCU, mean age 69.1 ± 14.0 years, mean length of hospitalization of 3.2 ± 2.5 days. Main admitting diagnoses were: acute myocardial infarction (AMI) - 52.8% (non-ST segment elevation - 28.8%; ST-segment elevation - 24.0%); high-grade atrioventricular block (AVB) - 8.3%; heart failure - 7.2%; cardiomyopathies - 3.2%; others - 28.5%. Sixty-one pts (7.32%) developed a HAI: pneumonia - 29 pts (47.5%); urinary tract infection - 10 (16.4%), severe sepsis/septic shock - 10 (16.4%); occult infection - 10 (16.4%). Comparing with pts without infection, there were no differences according to gender (male: 62.3 vs 65.3%, $p=0.22$) with a tendency towards older age (72.4 ± 13.6 vs 68.9 ± 14.0 years, $p=0.058$) in pts who developed HAI. The incidence of HAI was highest in pts admitted due to cardiogenic shock (CS) (46.2%) followed by cardiomyopathies (11.1%), non-ST segment elevation AMI (10.6%) and AVB (10.1%) and lowest in pts diagnosed with ST-segment elevation AMI

(3.5%). Pts diagnosed with HAI had a prolonged length of stay (5.9 ± 3.6 vs 2.9 ± 2.3 days, $p<0.001$) and higher in-CCU mortality (18.0 vs. 3.2%, $p<0.001$). During hospitalization, pts with HAI had greater probability of clinical deterioration to CS (8.2 vs 2.1%, $p=0.012$) or cardiac arrest (18.0 vs. 3.9%, $p<0.001$). They were also more subjected to invasive procedures: central venous catheter (22.9 vs 4.7%, $p<0.001$), arterial line (24.6 vs 3.1%, $p<0.001$), invasive mechanical ventilation (11.5 vs 1.4%, $p<0.001$) or toracocentesis (3.3 vs 0.3%, $p<0.001$).

Conclusions: In our CCU population the incidence of HAI was 7.3%. The most common type of infection was Pneumonia. The incidence of HAI was highest in pts diagnosed with CS. HAI was associated with at least a duplication in the length of hospitalization in the CCU, higher rate of cardiac arrest and a 6-fold increase in-CCU mortality. More studies are needed to establish procedures for earlier HAI detection and to limit its associated morbidity-mortality.

P618

Hospital-acquired infections in an intensive cardiac care unit: predictors of infection

K Hyde Congo,¹ JF Carvalho,¹ D Neves,¹ R Guerreiro,¹ J Pais,¹ B Picarra,¹ AR Santos,¹ A Damasio,¹ P Dionisio¹ and J Aguiar¹

¹Hospital Espírito Santo de Evora, Cardiology, Evora, Portugal

Purpose: Hospital acquired infections result in excess length of stay, morbidity, mortality and healthcare costs. Little is known about the clinical risk factors and prognosis of hospital acquired infection (HAI) in patients admitted to an Intensive Cardiac Care Unit (CCU). We evaluated the potential predictors of HAI in patients admitted in our CCU.

Methods: We performed a prospective study that included all patients admitted consecutively to our CCU during a period of 2 years. We compared two groups: patients who developed HAI during CCU stay and patients who did not develop HAI during CCU stay. We registered demographic data, length of hospitalization, patient provenience (which was divided in patients admitted directly from the emergency department and patients transferred from another ward or medical institution), admission diagnosis and invasive procedures performed.

Results: A total of 843 patients were admitted to our CCU, of which fifty-eight patients (6,8%) developed a HAI during their CCU stay. Both groups were similar in demographic data (patients with HAI: mean age of $71,1 \pm 14,2$ years, 67,2% males vs patients without HAI: mean age of $68,9 \pm 14,1$ years, 64,8% males, $p=ns$). A longer hospitalization

was found in infected patients ($5,98 \pm 3,7$ days vs $2,97 \pm 2,3$ days, $p=0.001$). Patients with HAI were admitted more frequently from another ward or medical institution (53,5% vs 18,1%, $p=0.001$). The main cause of admission was acute myocardial infarction (AMI) in both groups, however we observed differences in the incidence of HAI according to admission diagnosis with higher incidence of HAI in cardiogenic shock (12.1 vs 1,2%, $p=0.001$) and lower incidence in AMI (46,6 vs 56,2%, $p=0.030$). No statistical difference was found for heart failure, high-grade atrioventricular block or tachyarrhythmias as cause of admission. More invasive procedures were found in patients with HAI (arterial line: 25,8 vs 2,5%, $p=0.001$ and central venous catheter 24,1 vs 3,3%).

Conclusions: In our CCU population, HAI was found in 6,8% patients. Patient provenience, length of hospitalization and invasive procedures were found to be predictors of development of HAI. Admission diagnosis was also found to be statistically significant with a lower incidence of HAI in AMI and higher incidence in cardiogenic shock.

P619

Infectious complications after heart transplantation

M Simonenko,¹ P Fedotov,¹ Y Sazonova,¹ V Rubinchik¹ and M Sitnikova¹

¹Federal North-West Medical Research Centre, Cardiopulmonary test, Saint-Petersburg, Russian Federation

Objective: to estimate the frequency of infectious episodes (IEs) after heart transplantation (HT).

Materials and Methods: From 2010 to April 2015 52 HT were performed, mean age $43,4 \pm 1,6$ yrs. Causes of heart failure were dilatated cardiomyopathy (42 %), ischemic heart disease (42%) and others (16%). All patients treated by triple-drug therapy: calcineurin inhibitors, corticosteroids, antiproliferatives. Recipients received either Basiliximab (69 %) or antithymocyte globulin (31 %) as the induction therapy. During 6 months after HT all patients treated by trimoxazole and for a 1 yr – valganciclovir. We estimated the frequency of IEs 6 months after HT and in long-term outcome (to 5 yrs).

Results: During the first 6 months after HT recipients suffered from pneumonia in 27 %, tracheobronchitis (17 %), pulmonary aspergillosis (PA) (6 %), nasopharyngitis (22 %), gastrointestinal (GI) complications (9 %) and urinary tract infectious (UTI) (19 %). In long-term outcome after HT the frequency of pneumonia were 21 %, nasopharyngitis (21 %), mastoiditis (4 %), bronchitis (14 %), PA (4 %), GI complications (18 %), UTI (7 %). It

was reported about 1 case of Candida tracheobronchitis. It was developed an abscessed boil of left buttock, infective endocarditis in 1 patients 2,5 yrs after HT. 1 yr after HT mortality occurred in 8 % of recipients, pneumonia took place in 75 % of them.

Conclusion: Despite of therapy, in first 6 months after HT the frequency of IEs were higher than in long-term outcome, the rate of respiratory IEs was significantly higher.

P620

Major cardiovascular outcomes in diabetic patients with/without sepsis undergoing amputation of lower limb

E Shalava,¹ B Babadjanov,¹ A Shalava,² U Pulatov,¹ Q Matmurotov,¹ B Janabaev¹ and G Kasimdjanova²

¹Tashkent Medical Academy, Republican Centre of purulent surgery and complications of diabetes, Tashkent, Uzbekistan ²Tashkent Medical Academy, Tashkent, Uzbekistan

Objective: Perioperative risk for major perioperative cardiovascular complications is particularly high in patients with type 2 diabetes undergoing surgery amputation of lower limb.

The aim of this study was to identify cardiovascular outcomes in diabetic patients with/without sepsis undergoing amputation of lower limb.

Methods: In this prospective single center interventional cohort study, we evaluated 690 consecutive symptomatic patients with diabetes and without history of coronary intervention or myocardial infarction (MI) undergoing amputation during the year 2013. 358/690 patients (51.9%) had no contraindications for coronary computed tomographic angiography (CCTA) and were included in the study cohort. Mean age was $57,8 \pm 12,9$ years. 32.9% of patients where women who were significantly older than men ($68,1 \pm 5,9$ vs. $57,2 \pm 6,2$, $p=0.0017$). We divided them into 2 groups; in 1st group we included 154 patients without sepsis, in 2nd group 204 septic patients.

Results: Postoperative period was complicated by cardiac death in 5 non-septic patients (3.2%), and 27 patients (13.2%) with sepsis died from fatal MI, severe arrhythmias or acute cardiac insufficiency ($p=0.0001$). The incidence of non-fatal MI was significantly more often in septic patients (27(13.2%) vs. 5(3.2%), $p=0.0001$). When examining CCTA results, only 6 men from non-septic group (3.9%) were found to have no coronary artery disease (CAD), 87 patients (56.5%) had <50% stenosis, and 61 patients (39.6%) had obstructive CAD (stenosis >70%), 6/61 patients (9.8%) were 3-vessel obstructive. In septic patients non-obstructive CAD was detected in 76 patients (37.3%),

obstructive CAD had 128 pts (62.7%), 39/128 patients (19.1%) were 3-vessel obstructive ($p=0.0001$).

Conclusions: Perioperative risk for major perioperative cardiovascular complications was particularly high in patients with type 2 diabetes undergoing surgery amputation of lower limb with septic complications. However, we detected more severe obstructive CAD in this type of patients.

Sudden death / resuscitation

P621

Therapeutic hypothermia use in cardiac arrest of comatose patients. It is useful?

G Caixal,¹ R San Antonio,¹ G Jimenez,¹ P Sanchez,¹ X Freixa,¹ X Bosch,¹ M Masotti¹ and M Sabate¹

¹Barcelona Clinic Hospital, Barcelona, Spain

Background: Therapeutic hypothermia (HT) is defined as a induced decrease in body temperature until ranges between 32 and 34°C, maintained and monitored for a variable period of time depending on the type of neurological aggression. CPR guidelines of the European Resuscitation Council and American Heart Association recommend the HT in comatose patients after suffering a cardiac arrest. There is currently a dispute with the target temperature in these patients

Objectives: Compare mortality and neurological outcome at discharge of comatose patients after cardiac arrest, following HT or not, to 33°C.

Methods: The clinical and neurological outcome at discharge were analyzed by modified Rankin scale and death of patients admitted to our hospital that showed cardiac arrest. They were compared patients without HT ($n = 81$) from 2004 to 2009 with those of 2010-14 with HT treatment ($n = 96$).

Results: No significant differences between patients with and without HT were observed in relation to the average age (55 ± 18 vs 63 ± 15 years, $p = 0.2$), male (83% vs 72%, $p = 0.4$), hypertension (42% vs 56%, $p = 0.11$), DM (13% vs 27%, $p = 0.15$), PCR ischemic etiology (74% vs 68%, $p = 0.62$) or anoxia time (minutes) (HT: 23; not HT: 22, $p = 0.59$). The combination of death and poor neurological outcome at discharge by modified Rankin scale was: (%) HT: 46; no HT: 62.8 ($p = 0.05$)

Conclusions: In our series, the application of HT to 33 degrees to patients after presenting out of hospital cardiac arrest was associated with a significant decrease in hospital mortality and improved neurological outcome at hospital discharge. These findings suggest that HT may be a therapeutic option for these patients waiting for the results of upcoming studies comparing different temperature levels and determining the optimal duration of hypothermia.

P622

Prognostic impact of urgent vs. deferred coronary angiography in cardiac arrest survivors

C Ferrera Duran,¹ P Salinas Sanguino,¹ MJ Perez-Vizcayno,¹ G Tirado Conte,¹ MT Nogales Romo,¹ L Nombela Franco,¹ JC Gomez Polo,¹ C Macaya Miguel,¹ A Fernandez Ortiz¹ and A Viana Tejedor¹

¹Hospital Clinic San Carlos, Cardiovascular Institute, Madrid, Spain

Purpose: Cardiac arrest (CA) is a medical urgency which requires promptness and accuracy in decision making. Myocardial infarction (MI) is the most frequent cause of CA. Excluding patients with ST elevation MI and cardiogenic shock, there are no formal recommendations regarding the optimal time to perform a coronary angiography (CG) in survivors after CA.

Our aim was to investigate whether an urgent CG after CA of a presumed cardiac cause is associated with improved outcomes in patients without ST elevation.

Methods: We analyzed 167 patients recovered from CA where the first electrocardiogram after pulse recovery did not show ST elevation or left bundle branch block and who were not in cardiogenic shock. They were prospectively recruited from April-2004 to January-2015 in a tertiary care hospital and classified in two groups: G-I ($n=56$), patients who received urgent CG; and G-II ($n=111$), who received deferred CG, after clinical stabilization. Urgent CG was defined as being performed on admission or within the first 24 h after CA.

Results: Patients from G-II were older (59.2 vs 65.1, $p=0.01$) and they had more commonly hypertension (44.6% vs 66.7%, $p=0.006$), dyslipidemia (30.4% vs 46.8%, $P=0.041$) and diabetes (17.9% vs 39.6%, $p=0.004$). There were no differences in gender distribution ($p=0.606$), previous ischemic cardiomyopathy ($p=0.682$) and the initial arrest rhythm (Table). The CG showed absence of coronary stenosis (48.2% vs 35.1%, $p=0.103$), as well as severe left main coronary disease (3.6% vs 9.9%, $p=0.223$) and 3-vessel disease (7.1%, vs 10.8%, $p=0.240$) similarly in both groups. There were no significant differences neither in in-hospital mortality (21.4% vs 11.8%, $p=0.102$), nor in 1-year mortality (5% vs 15.7%, $p=0.146$). In the multivariable analysis, urgent CG was not significantly associated with survival ($p=0.419$).

Table 1.

Variables	Group I (urgent CG N=56)	Group II (deferred CG) N=111	P
First rhythm: VF	73.2% (41)	68.2% (75)	0.917
First rhythm: Asystole	16.1% (9)	20% (22)	
First rhythm: VT	8.9% (5)	9.1% (10)	

VF: ventricular fibrillation; VT: ventricular tachycardia.

Conclusions: Although CG is essential in the management of survivors from CA of a presumed cardiac cause, performing it urgently in patients without ST elevation was not associated with improved survival. A randomized trial is warranted to guide clinical practice.

P623

Impact of automated external defibrillators on neurological outcome of patients with out-of-hospital cardiac arrest

A Fageda,¹ J Aboal,¹ M Nunez,¹ E Badosa,¹ P Fluvia,¹ J Pascual,¹ G Vazquez,¹ P Loma Osorio¹ and R Brugada¹

¹University Hospital de Girona Dr. Josep Trueta, Cardiology, Girona, Spain

Introduction and purpose: When an automated external defibrillator (AED) is immediately available, the chance of survival from sudden cardiac arrest is substantially improved. The project Girona Vital (2012) granted greater public access defibrillation using AEDs in the hands of trained laypersons. The purpose of this study was to determine the impact of AEDs on the neurological prognosis of patients with out-of-hospital cardiac arrest (OHCA).

Methods: Prospective register of patients admitted to the cardiac intensive care unit from December 2012 to the present with a diagnosis of resuscitated OHCA. We analyzed the neurological status according to the Cerebral Performance Category (CPC), considering good neurological prognosis being, at discharge, alive and neurologically intact with minimal sequelae (CPC 1-2). We also determined intermediate variables such as the time to recovery of spontaneous circulation (ROSC) and pH on admission.

Results: A total of 104 patients were included. In 12.5% of cases AED was used (38% by local police, 46% by health services and 15% by general population). No statistically significant difference was detected between the two groups (AED used or not) in terms of baseline characteristics or percentage of hypothermia performed. In the AED-used group we observed a shorter resuscitation time (ROSC 18±12 minutes vs 28±17min, $p < 0.01$) as well as a better average pH (pH 7.37±0.12 vs 7.13±0.24, $p < 0.01$). These patients also showed better neurological prognosis at discharge (92% were CPC 1-2 vs 43% in the non-used AED group, $p < 0.01$).

Conclusion: In our population, we detected a better neurological prognosis in patients with OHCA, when the AED was used.

P624

Prognostic value of electroencephalogram and brain scanner after out-of-hospital cardiac arrest

A Fageda,¹ J Aboal,¹ M Nunez,¹ E Badosa,¹ P Fluvia,¹ J Pascual,¹ G Vazquez,¹ R Brugada¹ and P Loma Osorio¹

¹University Hospital de Girona Dr. Josep Trueta, Cardiology, Girona, Spain

Introduction and purpose: Somatosensory evoked potentials and neuron-specific enolase have emerged as the most accurate predictors of poor outcome in patients with anoxic-ischemic encephalopathy after out-of-hospital cardiac arrest (OHCA). It remains unclear whether electroencephalogram (EEG) and cerebral computed tomography (cCT) findings have clinical use in predicting a poor outcome. Our aim was to evaluate the prognostic value of cCT and EEG in a clinical cohort of OHCA-patients.

Methods: A prospective and observational register was built with information from patients admitted to an intensive-care-unit from January 2007 to January 2015 with a diagnosis of resuscitated OHCA. We calculated the sensitivity (SNS), specificity (SPC), positive predictive value (PPV) and negative predictive value (NPV) of EEG (third day of admission) and cCT (first 24 hours) predicting a poor outcome. The neurological status at discharge was described according to the Glasgow-Pittsburg Scale (CPC), considering good neurologic outcome CPC 1-2 and poor neurologic outcome $CPC \geq 3$.

Results: We analyzed 204 patients (69% first shockable rhythm, 30% use of therapeutic hypothermia, time to return of spontaneous circulation 30 ± 19 minutes and pH on admission 7.2 ± 0.2). At discharge 117 patients (57%) were in CPC 3-5. In 114 patients the cCT in acute phase was performed and in 64 patients was the EEG on the 3rd day of admission. The SNS, SPC, PPV and NPV for EEG were respectively 91%, 78%, 96% and 58% and for cCT were respectively 29%, 100%, 100% and 40%.

Conclusion: Cerebral CT is a useful test in acute phase for its excellent specificity. The performance of the EEG is more discreet and should be used in specific cases.

P625

Unusual reason for refractory ventricular fibrillation

P Hajdusek,¹ J Kautzner,¹ J Kettner¹ and M Pazdernik¹

¹Institute for Clinical and Experimental Medicine (IKEM), Cardiology department, Prague, Czech Republic

Pheochromocytoma is a rare neuroendocrine tumor with highly variable clinical expression and typical paroxysmal course. Its proper diagnosis is crucial for treatment that could be life-saving in certain cases. The classical clinical presentation consists of a triad of headache, palpitations and diaphoresis. However, other cardiac symptoms could

be present. The most common signs are labile hypertension and sinus tachycardia, secondary to high levels of circulating catecholamine. Sustained ventricular arrhythmias have been rarely reported. To our knowledge, this is the first literally reported case of pheochromocytoma, with unusual presentation in the form of refractory ventricular fibrillation that required prolonged cardiopulmonary resuscitation.

Table 1.

Epinephrine in urine	<30-80>	nmol/l	9,1
Epinephrine daily waste/urine	<27-110>	nmol/D	17,29
Normetanephrine	<.13-.79>	nmol/l	4,6
Noremtanephrine in urine	<150-350>	nmol/l	5126
Normetanephrine daily waste/urine	<480-2400>	nmol/D	9739
Metanephrine	<.14-.54>	nmol/l	0.141
Metanephrine in urine		nmol/l	516
Metanephrine daily waste/urine	<264-1440>	nmol/D	980
Urine-free cortisol	<100-379>	nmol/D	299
Chromogranin	<0-85>	ng/ml	317,1

Catecholamine and chromogranin plasmatic and urine levels/waste per 24hours.



Image 5:Pheochromocytoma after resection.

P626

Ventricular ectopic activity is reduced in comatose survivors of out of hospital cardiac arrest treated with target temperature management at 36 degrees C compared to 33 degrees C

J H Thomsen,¹ J Kjaergaard,¹ C Graff,² M Wanscher,³ S Pehrson,¹ L Koeber,¹ J Bro-Jepesen,¹ M Winther-Jensen,¹ H Soeholm¹ and C Hassager¹

¹Rigshospitalet - Copenhagen University Hospital, Department of Cardiology B, The Heart Centre, Copenhagen, Denmark ²Aalborg University, Department of Health Science and Technology, Aalborg, Denmark ³Rigshospitalet - Copenhagen University Hospital, Department of Thoracic Anaesthesiology, The Heart Centre, Copenhagen University Hospital Rigshospita, Copenhagen, Denmark

Background: Deep hypothermia increases the risk of life-threatening arrhythmias. Though targeted temperature management (TTM) with mild hypothermia following out-of-hospital cardiac arrest (OHCA) is considered safe, it is unknown whether the level of target temperature affects the risk of arrhythmia including the burden of ventricular ectopic beats (VEB).

Method: We studied 115 comatose OHCA-survivors from a single center substudy of the TTM-trial (year: 2010-13). The main study showed no overall difference with regards to mortality between TTM at 33°C (TTM33) or 36°C (TTM36) for 24 hours. A high fidelity 12-lead digital ECG recording was analyzed blinded to treatment allocation.

Results: Pre-arrest characteristics were similar between the groups, including witnessed arrest, bystander CPR, time to return of spontaneous circulation, and the prevalence of STEMI (TTM33=62% vs. TTM36=60%, p=0.79).

The number of isolated VEB per hour was similar at the beginning of the maintaining phase of TTM and decreased significantly over time in both groups. However, the reduction in isolated VEB per hour was significantly affected by target temperature (p<0.0001) (Figure), with fewer VEB by the end of the maintaining phase in the 36°C-group, also when adjusting for heart rate. As a measure of the combined ventricular ectopic burden, the sum of isolated, couplets and number of runs of VEB per hour yielded identical results (p<0.0001). Occurrence of re-arrest during TTM, in the form of ventricular tachycardia or fibrillation, did not differ between the groups (TTM33=2 vs. TTM36=3, p=0.63).

Conclusion: Ventricular ectopic activity is reduced in comatose survivors of OHCA treated with TTM at 36°C compared to 33°C, while no difference in the occurrence of life-threatening ventricular arrhythmia was found.

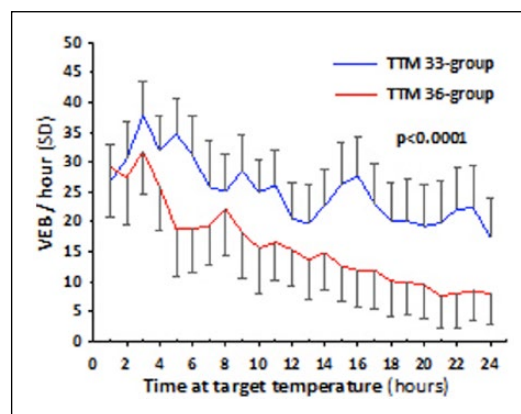


Figure 1.

P627

Circadian rhythm in out-of-hospital cardiac arrest

MC Monedero Martin,¹ E Lopez-De-Sa,¹ E Armada Romero,¹
C Escobar Cervantes,¹ R Mori Junco,¹
J Irazusta Cordoba,¹ R Moreno Gomez¹ and
J Lopez-Sendon¹

¹University Hospital La Paz, Madrid, Spain

Purpose: Several studies have reported a circadian variation in the occurrence of sudden cardiac death. We investigated the characteristics and outcome among comatose survivors of out-of-hospital cardiac arrest (OHCA) treated with therapeutic hypothermia in relation to whether the cardiac arrest took place during the day (D) or at night (N).

Methods: A descriptive retrospective study of the out-of-hospital cardiac arrest patients admitted to the Coronary Care Unit (CCU) of a tertiary university hospital was developed. For the study purpose we divided the daily schedule in Day (office hours, 8-20h) and Night (20 to 8 h). The sex, age, date and hour of the event, first monitored rhythm, time to recovery of spontaneous circulation (ROSC) and pH or lactic acid level were studied as independent variables. Survival free from significant neurological sequelae (Cerebral Performance Categories Scale (CPC): ≤ 2) was also analyzed.

Results: From August 2007 to May 2015 a total of 241 patients were evaluated. Mostly patients were admitted by day (172 vs 69), mainly at noon (53 patient between 12-14 h). Median age was 60 years and 78.5% were male in both groups. There were no differences between a witnessed cardiopulmonary resuscitation (CPR) or not (D 93% vs N 87%; $p=0.13$) and time to ROSC was similar as well. pH and lactate levels at admission neither had significant differences. Survival to hospital discharge was higher when the OHCA occurred during the day (D 51% vs N 38%, $p=0.04$), and these patients had better neurological outcome (CPC ≤ 2 : $p=0.01$). Non ischemic etiology was more frequent during night (N 62.3 vs D 45.9%; $p=0.02$). A higher proportion of patients presented at night presented non-shockable rhythms (N 43.5% vs D 29% $p=0.03$) were reported.

Conclusions: There is a clear circadian pattern of survivors of OHCA with a nightly lower rate. The patients admitting at night, despite having a similar CPR or demographic characteristics, have worse prognosis; probably due to a higher proportion of non-shockable rhythms. Moreover, patients who have a cardiac arrest etiology of ischemic heart disease have a greater OHCA rate during the day. However, nights have a higher proportion of patients with non-ischemic origin, which could be due to the prevalence of nocturnal vagal tone.

Moderated Poster Session 3: biomarkers, risk stratification, miscellaneous

Monday, 19 October 2015

10:30 - 11:30

643

Long-term prognostic value of cardiac magnetic resonance imaging after a first ST-segment elevation myocardial infarction

G Nucifora,¹ D Muser,¹ C Tioni,² D Zanuttini,¹
L Spedicato,¹ G Bernardi¹ and A Proclemer¹

¹Cardiothoracic Department, University Hospital "Santa Maria della Misericordia", Udine, Italy ²University of Udine, School of Medicine, Udine, Italy

Aim: In recent years, cardiac magnetic resonance (CMR) with late gadolinium enhancement (LGE) technique has emerged as an accurate imaging modality for the assessment of myocardial necrosis and fibrosis. Aim of the present study was to investigate the long-term prognostic value of CMR in patients with a first ST-segment elevation myocardial infarction (STEMI).

Methods: 107 patients with a first STEMI (mean age 59 ± 12 years, 82% male) were included. All patients underwent primary percutaneous coronary intervention (PCI). After a median of 8 days (IQ range 4-18) following admission, CMR with LGE imaging was performed to assess left ventricular (LV) function, infarct size (IS) and microvascular obstruction (MO). In addition, the presence of traditional clinical prognostic parameters, including symptom onset-to-balloon time, post-PCI Thrombolysis in Myocardial Infarction (TIMI) flow, ST-segment resolution and peak value of cardiac Troponin I, was determined. Patients were followed-up for a median of 97 months (IQ range 32-101); the primary endpoint was defined as a composite of death,

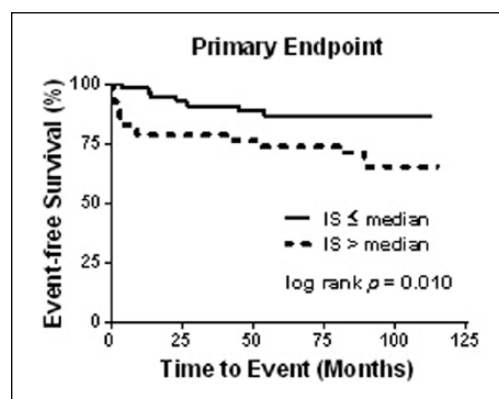


Figure.

myocardial infarction and hospitalization due to heart failure.

Results: Median IS was 14% of the LV mass (IQ range 5-30); MO was observed in 32% of patients. The outcome event occurred in 22% of patients. At multivariate Cox proportional-hazards analysis, after correction for the traditional clinical prognostic parameters, age (HR 1.06, IC 1.01-1.10; $p=0.013$) and IS (HR 1.06, IC 1.03-1.09; $p<0.001$) were the only variables significantly and independently related to the primary endpoint. Kaplan-Meier survival curves for the outcome event comparing patients according to IS are shown in the Figure.

Conclusion: CMR assessment of IS after a first STEMI provides a significant and independent long-term prognostic information.

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NICE guidelines 95 vs ESC guidelines in the risk stratification of stable chest pain in a UK district hospital rapid access chest pain clinic: a registry comparison

J C Ball,¹ A Cai,² K Brown,³ A Pineau,³ C Holloway³ and K Budack³

¹William Harvey Hospital, Cardiology, Ashford, United Kingdom ²King's College Hospital, London, United Kingdom ³Maidstone and Tunbridge Wells NHS Trust, Maidstone, United Kingdom

Purpose: National Institute for Clinical excellence (NICE) and European Society of Cardiology (ESC) have both developed guidance and risk stratification tables which guide physicians as to the likelihood of patients with stable chest pain symptoms having coronary artery disease (CAD). We hypothesised that NICE guidance overestimated the likelihood of CAD in our patient population and that using ESC guidance may reduce over-investigation of patients and reduce costs.

Methods: Clinic records of the 1968 patients who attended a Rapid Access Chest Pain Clinic between July 2005 and December 2012 were reviewed.

Results: Where NICE guidelines 95 estimated probability of CAD to be 61 – 90%, 31-60%, 10-29% and <10% for different patient groups, we found actual incidence of CAD in each patient group to be 31% (95% CI 27.5 – 35.5), 4.4% (2.68 – 6.14), 2.5% (0.68 - 4.32) and 0.28% (-0.28 – 0.84) respectively.

Where ESC estimated probability of CAD as >85%, 66-85%, 15-65% and <15%, our cohort's actual incidence of CAD in each group was 73.4% (63.12 – 82.85), 58.5% (51.22 – 65.78), 6.4% (5.14 – 7.66) and 0.76% (-0.29 – 1.8) respectively.

Conclusions: Strict adherence to NICE guidelines 95 overestimates the prevalence of CAD in our local population group and the use of ESC guidelines in their place would reduce the number of invasive investigations. Use of ESC guidelines may also save considerable amounts of money. When ESC guidelines are applied hypothetically to our cohort population, only £322,545.88 was spent on investigation of CAD, compared with £943,865.22 spent when applying NICE guidelines to our cohort. However, strict use of ESC guidelines may risk missing other diagnoses of chest pain. It is important that local cardiology departments ensure that guidelines are suitable for their local patient population.

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Has a previous diagnosis of stroke / transient ischaemic attack any prognostic value in patients with acute coronary syndromes?

A T Timoteo,¹ S A Rosa,¹ P P Teixeira,¹ A V Monteiro,¹ R Carvalho,¹ M L Ferreira¹ and R C Ferreira¹

¹Hospital Santa Marta, CHLC, Lisbon, Portugal

Background: Atherosclerotic disease is a systemic disease that frequently involves several arterial territories such as the brain and inferior limbs. We sought to evaluate if a previous diagnosis of stroke / transient ischemic attack (TIA) could have a prognostic impact in patients admitted with a first acute coronary syndrome (ACS).

Methods: Consecutive patients admitted at a single-centre coronary unit with ACS. Patient data was included in a registry of ACS. Patients with a previous diagnosis of coronary artery disease were excluded from the analysis. We compared patients with a previous history of stroke/TIA and patients without. All significant variables in univariate analysis for all-cause one-year mortality were included in a multivariate Cox-proportional hazards regression analysis to test if stroke/TIA was an independent predictor of outcome.

Results: We include in the study 2560 patients, with a mean age of 63 ± 13 years, 71% males and 7.8% with a previous stroke / TIA. In-hospital mortality was 5.9%, 7.5% at 30-day and 10.2% at one-year follow-up. Patients with stroke /TIA were older, less often males and smokers, had more cases of hypertension, diabetes and renal dysfunction and were more often on statins with a better lipid profile. They were also more often on anti-platelet therapy and renin-angiotensin-aldosterone blockers. The heart rate at admission was higher, had worst Killip class and had less ST-elevation myocardial infarction. After admission, they received less often beta-blockers and were less often submitted to coronary angioplasty. Survival analysis showed that patients with previous stroke/TIA

had worst survival (Log-rank, $p < 0.001$), confirmed in univariate analysis (HR 2.15, 95% CI 1.50-3.08). However, after multivariate analysis it was no longer an independent predictor of outcome.

Conclusions: Previous stroke / TIA is not an independent predictor of all-cause mortality in patients with a first ACS. These patients had worst previous clinical profile in terms of risk factors as well as worst presentation on admission that were the main determinants of outcome.

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Cardiac arrest as an age-dependent prognosticator for mortality in patients suffering acute coronary syndrome

P Sulzgruber,¹ L Koller,¹ F El-Hamid,¹ S Forster,¹ DJ Rothgerber,¹ G Goliash¹ and A Niessner¹

¹Medical University of Vienna, Cardiology, Vienna, Austria

Background: The development of cardiac arrhythmias resulting in cardiac arrest (CA), represents a severe complication in patients suffering acute coronary syndrome (ACS). While the worsening of prognosis in this vulnerable patient collective is well known, less attention has been paid to its age-specific relevance so far. Therefore we aimed (1) to assess the age-dependent incidence of CA in ACS patients and furthermore (2) to elucidate the age-dependent prognostic impact of CA on outcome from a long-term perspective.

Methods: We retrospectively enrolled 832 ACS patients. Patients were randomized and stratified into equal groups ($n=208/\text{group}$) according to age “<45 years”, “45-64 years”, “65-84 years” and “>85 years”. Cox regression hazard analysis was used to assess the influence of CA on long-term survival. The multivariate model was adjusted for potential confounders.

Results: The total number of CA significantly differ between groups, demonstrating the highest incidence in the youngest collective with 18.8% ($n=39$; <45 years), and a significantly lower incidence by increasing age (9.6% ($n=20$) 45-64 years; 15.9% ($n=33$) 65-84 years; 7.2% ($n=15$) >85 years, $p=0.01$). After a mean follow-up time of 5.0 years, 185 patients (22.8%) died due to cardiovascular causes including 16 patients (7.7%) <45 years, 13 patients (6.3%) 45-64 years, 49 patients (23.6%) 65-84 years and 107 patients (51.4%) >85 years. Within the total collective CA was a strong and independent predictor for mortality with an adjusted HR of 2.17 (95% CI 1.52-3.10, $p < 0.001$). While there was no significant association within very young patients (<45 years; adj. HR of 1.32 (95% CI 0.42-4.11, $p=0.637$), there was an association with increasing age detectable in young patients (45-64 years; adj. HR of 3.82 (95% CI

1.04-13.98, $p=0.043$), elderly patients (65-84 years with an HR of 4.51 (95% CI 2.48-8.19, $p < 0.001$) and very old patients (>85 years; adj. HR of 7.52 (95% CI 4.13-13.68, $p < 0.001$). A significant interaction between cardiac arrest and age groups was found ($p=0.05$).

Conclusion: We were able to demonstrate that arrhythmias resulting in CA are more common in very young ACS patients compared to their older counterparts. While CA significantly worsens outcome in ACS patients >45 years, we did not find a significant impact on mortality within very young individuals. One may speculate that very young patients – while being more prone to life-threatening arrhythmias during ACS – may have better coping mechanisms to survive without prolonged sequels. Underlying mechanisms for this survival advantage should be addressed in future studies.

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Sex-specific vs. overall cut points for a high sensitivity troponin I assay in predicting 1 year outcomes in ED patients presenting with chest pain

L Cullen,¹ J Greenslade,¹ E Carlton,² M Than,³ S Aldous,³ J Pickering,³ K Greaves⁴ and W Parsonage¹

¹Royal Brisbane & Women's Hospital, Brisbane, Australia ²North Bristol NHS Trust, Bristol, United Kingdom ³Christchurch Hospital, Christchurch, New Zealand ⁴University Of Queensland, Brisbane, Australia

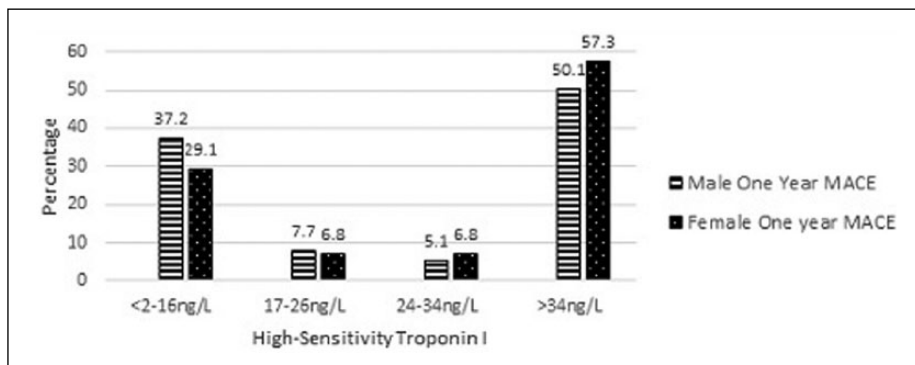
Purpose: To compare the effect of sex-specific with overall troponin cut-points on the identification of patients at risk of major adverse cardiac events (MACE) one year after attendance patients with possible acute coronary syndrome (ACS) in emergency departments (ED).

Methods: Consenting ED patients from three countries were prospectively recruited and managed according to local protocols. Stored serum samples taken on presentation were later analysed using the high sensitivity troponin I (hs-cTnI) (Abbott Diagnostics, Architect STAT hsTnI assay, LOD 2ng/L), with the overall decision cut-point of 26ng/L, and sex-specific cut points of 16ng/L and 34ng/L for females and males respectively. One year follow-up events were monitored. The primary outcome was MACE within one year of presentation including acute myocardial infarction, revascularization and death. Descriptive statistics were used to compare the baseline characteristics of one-year MACE and non-MACE groups. Hs-cTnI data were categorised as $\leq 2-16\text{ng/L}$, $17-26\text{ng/L}$, $27-34\text{ng/L}$ and $>34\text{ng/L}$. The number and percentage of individuals with hsTnI values were reported by sex and one-year MACE.

Results: Of the 2841 patients enrolled, 1661 (58.5%) were male with a mean age of 57.0 years (SD=14.0). Sex-specific

cut-points reclassified 25 (2.2%) females from having a normal troponin to having an elevated values of whom 7 (6.8%) had a MACE, and 29 (1.7%) males from having an elevated troponin to having a normal value of whom 12 (5.1%) had a MACE (Figure 1).

Conclusion: Sex-specific cut-points improves the identification of women at risk for one year MACE however the net effect across the whole ED population with chest pain is minimal. Current practice and potential bias with the clinical use of overall cut points must be considered.



Proportions of ED patients with MACE.

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Should glomerular filtration rate be added to TIMI risk score in patients with ST-segment elevation myocardial infarction?

A T Timoteo,¹ P Rio,¹ T P Silva,¹ M L Ferreira¹ and R C Ferreira¹

¹Hospital Santa Marta, CHLC, Lisbon, Portugal

Introduction: TIMI risk score for ST-segment elevation acute myocardial infarction (STEMI) was one of the first risk scores developed for risk stratification after myocardial infarction, and is widely used. More recently, GRACE risk score (more representative of the “real world”) was introduced and has been used more often. In this new score, one of the most important variables is kidney function on admission, but this variable was not contemplated in TIMI risk score. The present study tried to evaluate if the inclusion of glomerular filtration rate on admission (eGFR, by Cockcroft-Gault formula) in TIMI risk score, has any added value for predicting short-term mortality in patients submitted to primary angioplasty.

Methods: Study of 607 patients (62 ± 13 years, 76% males) admitted with a STEMI and submitted to successful primary angioplasty. We evaluated demographic, clinical and laboratorial characteristics of the patients on admission, including renal function. We also evaluated the occurrence of in-hospital and 30-day mortality in the follow-up.

Results: In-hospital and 30-day mortality in the present population was 5.4% e 6.3%, respectively. Mortality increased directly with TIMI risk score increase and an eGFR < 60 mg/dl/1.73m² was associated with an increase

in mortality in patients with moderate or high TIMI risk score. In the present population, TIMI risk score showed a good predictive accuracy for in-hospital mortality (c-statistic: 0.84), despite the fact that it was lower than for GRACE risk score (c-statistic: 0.92). The association of eGFR to TIMI risk score in a logistic regression model improved its predictive capacity (c-statistic: 0.87), that is now closer to GRACE score. The same results were obtained for 30-day mortality (identical c-statistics).

Conclusions: In patients with STEMI submitted to primary angioplasty, GRACE risk score is the one with best predictive accuracy for short-term mortality. However, we can improve predictive capacity of TIMI risk score by adding renal function on admission - eGFR provides important additional prognostic information.

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Effect of dialysis on high-sensitivity troponins in stable chronic kidney disease patients

T C Aw,¹ CY Chionh,¹ MT Gallero,¹ SK Phua,¹ J Sicken² and A Beshiri²

¹Changi General Hospital, Lab Medicine & Renal Medicine, Singapore, Singapore ²Abbott Diagnostics, Chicago, United States of America

Purpose: There is paucity of data on the effect of hemodialysis (HD) on serum levels of the newer high-sensitivity-cardiac troponins (hs-cTn). This effect may impact interpretation of hs-cTn results in HD patients. We investigated stable chronic kidney disease (CKD) patients attending dialysis at our center.

Methods: Sera from consecutive patients with stable CKD undergoing 3.5 hours of low-flux HD (polysulfone membranes) with urea reduction ratio (URR) > 50% were tested for hs-cTnI (Abbott) and compared with hs-cTnT (Roche). Pre- and post-HD hs-cTn were tested for statistical significance (non-parametric) and for limits of agreement (MedCalc 15, Mariakerke, Belgium).

Results: Fifty-two subjects (27 males) aged 29-89 years (mean 63.4±/−13.5) with mean CKD-EPI estimated GFR (eGFR) of 7.2±/−3.7 mL/min and pre-HD creatinine ranging from 146-3226 μmol/L (mean 618.1±/−406.4) were studied. The URR ranged from 50.3-77.1% (mean 63.0±/−7.5). For hs-cTnI post-HD concentrations were higher in 32 patients, unchanged in 2 and lower in 18 compared to pre-HD. For hs-cTnT post-HD were higher than pre-HD

levels in 50 subjects and lower in the remaining 2. There was no significant difference between pre-HD and post-HD values for both hs-cTn (see Table). Bland-Altman analysis revealed close agreement between pre-HD and post-HD hs-cTn: mean (range) absolute delta hs-cTnI (pre-post HD) of -0.69 (-7.06/+5.67) ng/L for TnI values < 50 and -4.0 (-29.43/+21.41) ng/L for TnI levels > 50 ng/L respectively; mean (range) absolute delta hs-cTnT (pre-post HD) of -5.8 (-11.30/-0.29) ng/L for TnT values < 50 and -19.97 (-52.21/+12.27) ng/L for TnT levels > 50 respectively.

Conclusions: With URR > 50%, hemodialysis per se has little impact on hfs-cTn levels in blood. Adherence of TnI to dialyser membranes previously reported does not appear to affect the Abbott hs-TnI; this assay is thus suitable for evaluation of CKD patients on dialysis.

Table 1.

Troponin ng/L	Pre-HD hs-cTnT	Post-HD hs-cTnT	Pre-HD hs-cTnI	Post-HD hs-cTnI
Range	21.9–597.5	25.5–601.9	2.7–315.1	3.0–321.4
Median	108.7	123.0	19.4	20.1
(95% confidence interval)	(81.8–148.3)	(97.5–167.7)	(16.4–24.1)	(16.0–23.6)
Inter-quartile range	58.7–181.7	66.7–209.6	13.1–45.1	12.9–44.5
Wilcoxon's test	z statistic = - 6.2018 (p < 0.0001)		z statistic = - 2.0031 (p = 0.0453)	

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Antimicrobial peptide LL37/ RNA complexes stimulate Toll-like receptor 3 upon shock wave therapy of ischemic muscle

C Tepekoeylue,¹ M Graber,¹ D Lobenwein,¹
E Kirchmair,¹ M Grimm¹ and J Holfeld¹

¹Innsbruck Medical University, Department of Cardiac Surgery, Innsbruck, Austria

Purpose: Shock wave therapy (SWT) induces angiogenesis in ischemic heart disease. It is mediated via Toll-like receptor 3 (TLR3), an endosomal receptor of the innate immune system recognizing RNA. How TLR3 is activated upon SWT remains unknown. The antimicrobial peptide LL37 has been shown to be released after mechanical stress and to form complexes with RNA. We hypothesized that mechanical stimulation upon SWT leads to LL37 release, which forms complexes with RNA and leads to activation of endosomal TLR3.

Methods: Supernatant of treated human umbilical vein endothelial cells (HUVEC) was transferred onto TLR3 reporter cells and TLR3 activation was measured. To find out whether protein/RNA complexes play a role after SWT, supernatants were treated with RNAse and proteinase.

Treated HUVECs were analyzed for LL37 expression. To investigate the uptake of LL37/RNA complexes, premarked RNA was added to cells prior to treatment and uptake was tracked. C57BL/6 mice were subjected to hind limb ischemia and subsequently treated with SWT. Treated muscles were analyzed for LL37 expression. Laser Doppler perfusion imaging and histological quantification of vessels was performed.

Results: Supernatants of treated cells activated TLR3 reporter cells (CTR 7.346 ± 2,173 vs. SWT 146.005 ± 12.508; p<0.0001). Analysis of the supernatant revealed increased RNA levels (CTR 21 ± 2.444 vs. SWT 37 ± 1.5; p=0.0174). The effect could not be abolished by pre-treatment of the supernatant with RNAse, but only by a sequential digestion with proteinase and RNAse hinting strongly towards the involvement of protein/RNA complexes. Indeed, LL37 expression was significantly increased after SWT. LL37/RNA complexes could be visualized after SWT. Pre-marked RNA was added to HUVECs, followed by subsequent SWT. Cellular RNA uptake was significantly increased after SWT (CTR 31.67 ± 28,17 vs. SWT 19757 ± 1054, p<0.0001). Treated muscles of C57BL/6 mice showed significantly increased expression of LL37. Finally, SWT resulted in significantly higher numbers of capillaries (SWT 1262 vs. CTR 461,

$p=0.001$) and arterioles (SWT 461 vs. CTR 160.5, $p=0.001$) and improved limb perfusion (SWT 0.7460.01 vs. CTR 0.4860.01, $p=0.021$) in treated muscles.

Conclusion: TLR3 activation upon SWT is mediated via the release of LL37. The antimicrobial peptide forms complexes with extracellular RNA and can thus stimulate endosomal TLR3. SWT subsequently induces angiogenesis in ischemic muscle and might therefore develop a potent regenerative treatment alternative for ischemic heart disease.

Morning Poster session Monday, 19 October 2015 08:30 - 12:30

Acute heart failure

P667

New experiences with music therapy in patients with heart failure and acute myocardial infarction after previous coronary artery bypass surgery

P Mitrovic,¹ B Stefanovic,¹ A Paladin,² M Radovanovic,¹ N Radovanovic,¹ D Rajic,¹ G Matic,¹ A Novakovic,¹ N Mijic¹ and Z Vasiljevic¹

¹University Institute for Cardiovascular Diseases, CCS, School of Medicine, University of Belgrade, Belgrade, Serbia ²Serbian National Broadcasting Agency, Belgrade, Serbia

Patients who have clinical evidence of heart failure (HF) after coronary artery bypass surgery (CABS) have a poor prognosis in expression of acute myocardial infarction (AMI), as one of the MACE. Unrelieved anxiety can produce an increase in sympathetic nervous system activity leading to an increase in cardiac workload. The purpose of this study was to evaluate the effectiveness of music therapy on prognosis of patients with HF and AMI, after CABS.

Methods: 344 patients (males 76.4%, mean age 59.6 ± 2.2 yrs) with AMI after previous CABS have been selected from the patients consecutively submitted from January 2013 to January 2015. HF was registered in 156 (45.4%) pts with AMI after previous CABS. All patients with HF were randomized and divided in 2 groups: Study group of 78 patients treated with music therapy and Control group of 78 patients with no music therapy. Each patient in study group underwent two sessions of medical therapy (12 minutes) in a day. Both groups were similar in baselines, post-AMI characteristics and post-AMI medical therapy. The plasma cytokine and catecholamine were measured in both groups.

Results: In the Study group, heart rate was significantly decreased by music therapy ($p=0.3872$). In the Control

group, there were no significant changes in heart rate. Among cytokines ($p=0.4166$), plasma interleukin-6 (IL-6) ($p=0.3382$) in the Study group was significantly lower than those in the Control group, as well as plasma adrenaline ($p=0.4314$) and noradrenaline ($p=0.4206$) levels.

Conclusion: This study provides support for the use of musical therapy in patients with HF and AMI after previous CABS. The positive effects of music therapy, in these patients, are probably because of enhanced of parasympathetic activities and reduction of plasma cytokine and catecholamine levels.

P668

Comparison of clinical feature for scrub typhus-induced acute myocarditis in south korea: single center experience

K-W Kang,¹ JY Chin,¹ SH Park,¹ WH Kim,¹ YJ Choi¹ and KT Jung¹

¹Eulji University Hospital, Daejeon, Korea, Republic of

Introduction: Scrub Typhus has been known as self-limited infectious disease. Recently, a few cases of acute myocarditis followed by scrub typhus have been reported. We investigated clinical feature of acute myocarditis in Scrub Typhus.

Method: We retrospectively reviewed consecutive 218 Scrub Typhus patients who undertaken echocardiogram and cardiac evaluation from 2005 to 2015 in our University Hospital, Daejeon, South Korea. All patients were divided into two group and compared each other; Scrub Typhus with acute myocarditis ($n=18$) and without acute myocarditis ($n=200$).

Results: Genders, age, hospitalization season and location of residence were similar between two groups. In clinical feature, skin lesion like eschar, duration of general ache, fever and stay of intensive care unit were also similar between two groups. However, scrub typhus with acute myocarditis had longer duration of elevated C-reactive protein ($p=0.014$) and longer duration of elevated liver enzyme ($p=0.014$) than without acute myocarditis.

Conclusion: The longer duration of elevated C-reactive protein and elevated liver enzyme may be closely associated with acute myocarditis and emergent echocardiogram could be needed in Scrub Typhus in that patients.

P669

Ivabradine: a safe and promising drug in patients with acute heart failure and cardiogenic shock

M V Matassini,¹ M Marini,² I Battistoni,² M Shkoza,¹ A Gili,² S Moretti,² M Francioni,² F Guerra,¹ G Perna² and A Capucci¹

¹Arrhythmology and Cardiology Clinic, Ospedali Riuniti Ancona, Ancona, Italy

²Cardiology Division, Ospedali Riuniti Ancona, Ancona, Italy

Background: Despite novel medical and invasive therapies, acute heart failure syndromes (AHFS) with cardiogenic shock (CS) are still characterized by poor prognosis. Tachycardia is an usual, early compensatory mechanism to maintain cardiac output, that is also amplified by use of inotropes and vasopressors. The supposed beneficial effects of compensatory heart rate (HR) increase, however, are counterbalanced by the increase in myocardial oxygen demand, reduction in diastolic coronary perfusion and endothelial dysfunction, all tachycardia-related.

Purpose: The aim of the study was to assess the clinical and hemodynamic effects of ivabradine in patients with AHFS/CS and severe left ventricular (LV) dysfunction, on top of therapy.

Methods: Nineteen patients (14 M, 61±12 years) with AHFS (n=10, 53%) and CS (n=9; 47%) and severe LV dysfunction (LV ejection fraction 25±6 %), requiring inotropic and vasopressor drugs, were treated, since admission in intensive care unit, with Ivabradine 5 mg per os bid and monitored through clinical, laboratory and non-invasive echocardiographic hemodynamic evaluation at 24, 48, 72, 120 hours.

Results: Ivabradine administration was associated with significant reduction in HR (from baseline 103±14 bpm to 77±11 bpm at 120h, p=.04) without negative effects on mean blood pressure (from baseline 68±13 mmHg to 70±7 mmHg at 120 h, p=ns). Cardiac index increased (from baseline 1.8±0.2 to 2.2±0.5 at 120 h, p<.001) as stroke volume index (from baseline 20±4 ml to 30±9 ml p<.001), cardiac stroke index (from baseline 18±9 g/m/m² to 28±14 at 120 h, p=.002) and LV ejection fraction (from baseline 25±6 % to 30±9 % at 120 h, p<.001). No serious side effects ivabradine-related occurred.

Conclusions: Ivabradine administration in the setting of AHFS and CS is safe and effective in term of HR reduction and concomitant improvement of hemodynamic parameters, leading to assume a future promising use in acute critically ill patients.

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Clinical and paraclinical prognosis factors in ischemic vs nonischemic acute pulmonary edema.

I Iordache,¹ V Enache,¹ AC Nechita,¹ C Delcea,¹ SC Stamate¹ and MM Vintila¹

¹St. Pantelimon Emergency Hospital, cardiology, Bucharest, Romania

Background: Data from registries have highlighted clinical and paraclinical differences in the group of patients with acute pulmonary edema (APE), depending on the substrate: ischemic vs nonischemic.

Methods: 43 patients with APE. 39.53% had ischemic substrate and 48.53% had nonischemic substrate (26 patients of which 25 had hypertension and 16 had valvulopathies (mitral regurgitation - 13, aortic regurgitation - 2, aortic stenosis - 8).

Results: Clinical parameters proven to have prognostic value (systolic blood pressure (SBP), heart rate (HR), supraventricular arrhythmias), showed differences associated with the substrate. Patients with nonischemic substrate associated statistically significant SBP higher than patients with ischemic substrate (p=0.037, 186mmHg vs 160 mmHg).

HR before treatment has lower values in the ischemic group, although without statistical value (91bpm vs 99bpm).

All of the supraventricular arrhythmias (19.23%) were correlated with the nonischemic substrate, but without statistical value.

In the analysis of paraclinical parameters, we did not identify statistically significant differences depending on the substrate. However, BUN and creatinine at presentation had higher levels in patients with nonischemic substrate. Withal, in the analysis of the cardiorenal syndrome, we identified a higher frequency in nonischemic patients (38.46% vs 29.41%). There are no differences in terms of sodium, both substrates having mean sodium values characteristic for hyponatremia.

In terms of echocardiographic parameters, we identified that ischemic substrate associates an ejection fraction lower than in the other group (30.3% vs 37.7%), and a more dilated left ventricle, although without statistical value. In the nonischemic group, left atrium dimensions are higher (27.8mm vs 26.8mm and pulmonary artery acceleration time (PAAT) values are lower.

Conclusions: there are differences in what concerns clinical and paraclinical parameters with prognostic value in APE, depending on the ischemic/nonischemic substrate; the differences are important in terms of clinical and echocardiographic parameters, but minimal in biological parameters.

P671

Acute heart failure in post-cardiac surgery: predictive role of lung ultrasonography

F Bianco,¹ V Bucciarelli,¹ F Ricci,¹ R Aquilani,² G Dipace,² E Miniero,² R De Caterina¹ and S Gallina¹

¹G. d'Annunzio University, Department of Cardiology, Chieti, Italy
²SS. Annunziata Hospital, Cardiac Surgery Intensive Care Unit – Heart Department, Chieti, Italy

Purpose: Acute heart failure (AHF) after cardiac surgery is associated with a very poor prognosis. Lung ultrasonography (LUS) represents an attractive, radiation-free, non-invasive diagnostic tool for the assessment of pulmonary congestion by means of B-Lines. The aim of our study was to assess the diagnostic performance and the predictive value of ULCs compared with chest-X-ray (CXR) and NT-proBNP, for the early diagnosis of postoperative AHF in a cohort of patients admitted to the cardiac surgery intensive care unit (CSICU) of our hospital.

Methods: We enrolled 55 consecutive patients (mean age: 69.7±10.1 years; mean EuroSCORE: 5.6±2.6[±SD]) admitted in our CSICU, after cardiac surgery (60% of CABG). All patients enrolled underwent a B-lines evaluation with LUS, before and immediately after surgery. Contextually with LUS it was performed a transthoracic echocardiogram, a CXR and a NT-proBNP assay. Two (2) independent investigators, blinded to the results of LUS, adjudicated final diagnosis of AHF, satisfying ESC guidelines recommendations. ROC-curve analyses were performed to compare diagnostic accuracy of LUS, CXR and NT-proBNP towards the final diagnosis. A multivariate analysis was also performed.

Results: The adjudicated final diagnosis of postoperative AHF was done in 25 patients (48.1%). Mean postoperative ejection fraction (EF) was 49.9±12.2%. TAPSE and MAPSE were respectively 13.1±4.4 mm (±SD) and 12.1±2.8 mm (±SD). After the admission in CSICU, AHF was detected in 69.1% of patients when estimated by LUS, 28.6% by CXR, and 26.2% by NTproBNP. In ROC analyses, ULCs yielded a C-statistic of 0.78 (95% CI: 0.68-0.99) compared with 0.73 (95% CI: 0.55-0.86) for supine CXR and 0.56 (95% CI: 0.42-0.70) for NT-proBNP. Ultrasound myocardial performance indices were independent predictors of increased B-Lines numbers and an increment of ten (10) B-Lines could be estimated for values of EF lower than 50%, MAPSE than 11 mm and TAPSE than 14 mm.

Conclusions: In the postoperative period, B-Lines assessment by LUS is a very sensitive diagnostic method. It allows a prompt and reliable ruling-out of AHF, but with lower specificity compared to supine CXR and NT proBNP assay. We estimate that a decrease in echocardiographic indices of myocardial performance could predict an increased number of B-Lines. This latter suggests that an integrated cardio-pulmonary exam could allow an effective interpretation of hemodynamic modifications occurring in the heart and lungs but it requires further studies to be validated.

P672

Diuretic response in acute heart failure: a marker of increased mortality

P Freitas,¹ F Marques,² I Araujo,² G Rodrigues,¹ R Costa,² L Costa,² J Ferreira,¹ A Leitao,² L Campos² and C Fonseca²

¹Hospital de Santa Cruz, Cardiology, Lisbon, Portugal

²Hospital de Sao Francisco Xavier, Lisbon, Portugal

Purpose: Loop diuretics remain the cornerstone of decongestion therapy for patients with acute heart failure (AHF) and diuretic response has been associated to prognosis. We examined the prognostic impact of diuretic response, defined as total diuresis (mL) / total furosemide dose (mg) ratio (TD/TF) in the first 48 hours after admission for AHF.

Methods: A total of 98 patients admitted for AHF, between October/2012 and March/2013 were studied. Mean age was 76 ± 11 years, 44% had coronary artery disease, left ventricular ejection fraction <40% was present in 30% and median NT-proBNP was 6235 pg/mL (range: 300 – 35000). TD/TF in the first 48 hours after admission was calculated for the entire population. Diuresis at 2-hour intervals and intravenous or 0.5 x oral furosemide dose were available for all patients. Variables with p < 0.2 in the univariate

Table 1. Multivariate analysis.

	Univariate P value	Multivariate HR (CI 95%)	P value
Age; African ethnicity; coronary artery disease; DM and dyslipidaemia	< 0.2		
Baseline SBP; DBP; NYHA; NT-proBNP; creatinine and haemoglobin	< 0.2		
Baseline urea	0.001	1.026 (1.014 – 1.037)	0.001
Baseline reactive C-protein	0.107	1.11 (1.018 – 1.212)	0.018
KDIGO classification	0.011		
KDIGO stage 1		3.160 (1.189 – 8.399)	0.021
KDIGO stage 2		11.571 (2.9 – 46.172)	0.001
KDIGO stage 3		14.377 (1.535 – 134.630)	0.02
Diuretic response (20mL/mg)	0.001	3.066 (1.206 – 7.791)	0.019

DM - diabetes mellitus; SBP - systolic blood pressure; DBP - diastolic blood pressure; NYHA - New York Heart Association.

analysis were included for multivariate analysis. Cox proportional hazards models (Backward stepwise Wald) for total mortality were used to assess prognosis.

Results: During a mean follow-up of 17 ± 9 months 35.7% of patients died. The best discriminative value of TD/TF was 20 mL/mg (AUC = 0.760; 95% CI 0.663 – 0.840; $p = 0.0001$) as calculated by ROC curves. There were 27 deaths (55%) in patients with TD/TF ≤ 20 mL/mg, as compared with 8 deaths (16%) in the remaining patients (log-rank $p < 0.001$). Table 1 shows univariate and multivariate analysis.

Conclusion: In this population, poor diuretic response was an independent predictor of mortality.

P673

The impact of underlying echocardiographical pathologies on short and long time mortality in acute pulmonary edema

V Enache,¹ A-C Nechita,¹ I Iordache¹ and MM Vintila¹

¹University of Medicine and Pharmacy Carol Davila, Emergency Hospital St. Pantelimon, Bucharest, Romania

APE is a severe clinical form of AHF with high in-hospital and early after discharge mortality as it was outlined by national and multinational registries.

Purpose: Our study tries to find if there is an impact of underlying ecocardiographical pathologies on in-hospital(IH), 30 days and 12 month mortality.

Methods: 92 patients admitted for Acute Pulmonary Edema in our Cardiology Department between 01.01.2013 – 01.10.2014. During hospitalization an echocardiography was performed to every patient. One year follow up was performed to survivors. After echocardiography was performed, 3 etiologies were taken in to analyse: ischemic, valvular and hypertensive. The ischemic etiology was established for patients with known coronary artery disease(CAD),miocardial revascularization procedures, old myocardial infarction or segmental wall motion anormalites. Valvular etiology was considered for at least moderate valvular lessions, echoquantiphycted, and no CAD. Hypertensive ehtiology was considered for those patients with no clinical and paraclinical evidence for CAD or valvular disease. It was analized the IH, 30 days and 12 month mortality according with ecocardiographical established etiology.

Results: 47.83%(44) patients with ischemic underlying pathology, 23.91%(22) valvular and 28.26%(26) hypertensive. In entire group the IH, 30 days and 12 Month mortality was: 23.91%, 4.48% and 28.25%. The Chi –square test shown no significant statistically corelates between IH mortality and etiology($p=0.6321$) but it was

noticed a high IH mortality for each underlying pathologies: 27.27% for ischemic, 18.18% for valvular and 23.08% for hipertensive. Thirty days mortality was influenced by ischemic etiology, the only cause for 30 days death, at the limit of significant statistically data($p=0.053642$, RR 1.0750, 95%CI 1.0145 -1.1391). The 12 Month mortality was significant statistically influenced by ischemic etiology(Chi –square test: RR 1.4321, 95%CI 1.0288 -2.0022, $p=0.0137$); 12 month death was 68.42% for ischemic and 31.58% for valvular etiology.

Conclucions: Ischemic etiology was significant statistically corelated with medium and long term prognosis. In hospital mortality was high for entire group and for each etiology. The high mortality for hipertensive etiology was surprising, sugesting that for some of these patients another etiology, maybe an ischemic one, has to be taken in discussion and more procedures have to be done for AHF patients in index hospitalization for establishing the correct etiology and also for prognostic purpose.

P674

Atrial fibrillation in heart failure: does maintaining sinus rhythm in acute heart failure matters?

D Mesquita,¹ C Sousa,¹ L Santos,¹ H Almeida,¹ M Almeida¹ and J Tavares¹

¹Hospital N.S. Rosario, Barreiro, Portugal

Purpose: Several previous studies have shown that although preferable, maintaining sinus rythm in heart failure patients does not led to an increased survival and therefore we can adopt either a strategy for rhythm or frequency control in HF patients (P) with atrial fibrillation (AF). The aim of this study was to assess if atrial fibrillation was associated with increased mortality in patients with acute decompensated heart failure and therefore a rhythm control strategy would be preferable.

Methods: Retrospective study in a cohort of P consecutively admitted for AHF in a district general hospital, for a time period of seven years. All patients were evaluated regarding clinical, electrocardiography and imaging characteristics at admission and the etiology of heart failure was assessed. The exclusion criteria were acute coronary syndromes and arrhythmias as the etiology of heart failure and the absence of any pre specified endpoint. Patients were divided into two groups – Group A (AF ou Atrial Flutter – AFL – patients) and Group B (Sinus Rhythm patients – SR).

Results: From a total of 351 P, 234 met eligibility criteria (69,6% male, age $74,7 \pm 14,2$ years old). There was 92 patients (39%) in AF / AFL rhythm. The mean Left

Ventricle Ejection Fraction (LVEF) was 34% in both groups and there was no difference in the systolic blood pressure at admission between groups ($p=0,22$; $129 \pm 34,8$ mmHg in group A and $135 \pm 39,8$ mmHg). In a subgroup of 112 patients (with similar LVEF – $p=0,05$), we additionally calculated the cardiac output – Group A $3,48 \pm 1,22$ L/min, Group B $3,24 \pm 1,1$ L/min ($p=0,30$). There were 15 deaths (6,4%) – 9 patients died in Group A - with a 7% relative risk increase in mortality in patients with AF / AFL rhythm ($p=0,037$).

Conclusions: In spite of similar left ventricle ejection fraction, cardiac output and systolic blood pressure, which could preclude the importance of the 25% of atrial stroke volume contribution for cardiac output in patients with pump failure, the presence of AF / AFL rhythm instead of sinus rhythm, significantly led to an increase in mortality in AHF patients. We postulated that for maintaining similar cardiac output and hemodynamics, these patients have an increase in myocardial workload that could aggravate the vicious cycle of heart failure decompensation and thus lead to increased mortality.

P675

Acute right heart failure and pulmonary hypertension associated with thyroid storm: a case report.

J Neiva,¹ G Goncalves,² D Carvalho² and R Araujo²

¹Hospital de Vila Franca de Xira, Cardiology, Vila Franca de Xira, Portugal ²Hospital Pedro Hispano, Intensive Care Unit, Matosinhos, Portugal

Thyroid disease is quite common. Current estimates suggest that the overall incidence of hyperthyroidism (HT) lies between 0,05% and 1,3%, affecting mainly women and elderly people. Cardiovascular (CV) manifestations are the leading cause of death in HT. CV symptoms and signs are common, and can prevail. HT is associated with an increased risk of arrhythmias, mostly atrial fibrillation (occurring 10-20% of the cases and increases with aging), heart failure (HF), angina, mitral regurgitation (prevalence of 13-17%), mitral valve prolapse (approximately 28-43% of all HT, better reported in Graves' disease), tricuspid regurgitation, and pulmonary hypertension (PHT). Recent reports suggest an association between HT and PHT, although the potential mechanisms remain unclear. PHT can be presented in up to 47% of all the HT and is associated with free T4 hormone levels. Both tricuspid regurgitation and isolated right HF can be the prevalent picture. In almost all cases, cardiovascular changes are reversible when the underlying thyroid disorder is recognized and treated.

This case report describes a 30 year-old woman without any relevant medical history, who presented to our emergency room with rapidly progressive right HF, palpitations and minimal exertional dyspnea. The patient described a scenario of a few months of weight loss, excessive sweating, irritability, thinning of the hair, amenorrhoea, tremor and fatigue. At admission extreme lethargy, hypoxemia, atrial fibrillation, (rate of 150 beats per minute), goiter, jugular venous distention and extreme peripheral edema should be noted. Echocardiography showed moderate dilated right chambers, mitral valve prolapse with middle mitral regurgitation, moderate to severe tricuspid insufficiency and moderate pulmonary hypertension. Work up for the common secondary causes of PHT and right HF was negative. The only concurrent illness was Graves' disease that progressed to a thyroid storm. During hospitalisation in our intensive care unit, symptomatic therapy with beta-adrenergic blockade and antithyroid drug therapy with methimazole was initiated. Clinical progress was observed, and the patient was discharged in a medically stable state.

In conclusion, only a few cases of PHT and right HF associated with HT have been reported. Clinical suspicion is crucial. The authors present this case to emphasize that PHT and acute HF (even isolated right-side HF) patients, especially young adults, should be screened for underlying HT. HT is a treatable entity and its cardiac manifestations can be completely reversed.

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Vasodilator intravenous therapy in acute heart failure: can we indirectly increase survival?

D Mesquita,¹ C Sousa,¹ L Santos,¹ H Almeida,¹ M Almeida¹ and J Tavares¹

¹Hospital N.S. Rosario, Barreiro, Portugal

Purpose: Vasodilator therapy has a long history of use in acute heart failure (AHF), but previous studies have failed to consistently show a benefit in mortality. Nitrates are known to promote venodilation at low doses and coronary dilation at intermediate doses, therefore aiming at decreasing preload and increase coronary perfusion in hearts with high left ventricle diastolic pressures (and lower coronary perfusion pressure). We aimed to audit a population of AHF patients in order to understand if this therapy is directly associated with a decrease in in-hospital mortality and to lower usage of inotropic therapy (which is known to increase mortality).

Methods: Clinical audit in a cohort of P consecutively admitted for AHF in a cardiology department, for a time

period of seven years. All patients were evaluated regarding clinical, laboratory, electrocardiography and imaging characteristics at admission and the etiology of heart failure was assessed. The exclusion criteria were acute coronary syndromes and arrhythmias as the etiology of heart failure, because of specific treatment needs. Patients were divided into two groups – Group A (nitrate therapy patients) and Group B (absence of nitrate therapy).

Results: From a total of 351 P, 116 met eligibility criteria (69,8% male, age 67 ± 12 years old). There was 72 patients (62%) with presentation at emergency department in acute pulmonary edema. The mean Left Ventricle Ejection Fraction (LVEF) was $36 \pm 13\%$ (with no significant differences between groups, $p=0,16$) and there was a coronary etiology for systolic dysfunction in 49P (42%). Only 8P were excluded from nitrate therapy, mainly due to hypotensive profile at admission (Systolic blood pressure $153 \pm 35,8$ mmHg in group A and $95,6 \pm 11,6$ mmHg in group B; $p<0,001$). There were 4 deaths (3,4%) with no difference between groups ($p=1,0$). Nevertheless, there was a significant reduction in subsequent need for the use of inotropic therapy in patients pre-treated with nitrates (72% VS 25%, $p=0,0108$).

Conclusions: Nitrate therapy is a mainstay for AHF syndromes, but it's use is not advised in patients with low systolic profile due to possible deterioration and lack of studies. This audit shows that in spite of not directly decreasing mortality in acute heart failure, nitrates are associated with a reduction in the need for inotropic use in these patients and therefore may have an indirect mortality impact. Therefore we question if they could also be beneficial in patients mildly hypotensive in lower veno and coronary dilation dosage. There is the need for more robust studies in this area.

Antithrombotic therapy

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Real world information on cardiovascular drug management patterns in acute coronary syndrome patients in bulgaria

M Staneva,¹ E Trendafilova,² V Velchev³ and D Penkova¹

¹AstraZeneca Bulgaria, Sofia, Bulgaria ²National Heart Hospital, Sofia, Bulgaria ³University Hospital St. Anne, Sofia, Bulgaria

Purpose: This multi-center, prospective, non-interventional, 4-week, 2-visit study aimed to describe the real-life short-term antithrombotic management patterns (AMPs) in Bulgarian patients with acute coronary syndrome (ACS) - ST-segment elevation myocardial infarction (STEMI)

and non-ST-segment elevation myocardial infarction (NSTEMI) and evaluate the predictors of AMP choices.

Methods: Patients were enrolled at discharge following hospitalization for ACS. Data collected at this point included demographics, medical history, administration of emergency care (medical management, coronary procedures and interventions, antithrombotic therapy before and during the hospitalisation) from the onset of symptoms for the index event, and treatment prescribed at discharge. At the first month, the status of the antithrombotic medications prescribed was followed up. Descriptive statistics included frequency tables. To evaluate the predictors of AMP choices ($p<0.05$ was significant) logistic models were for ticagrelor treatment versus not ticagrelor and clopidogrel versus not clopidogrel.

Results: A total of 814 patients from 16 centers were enrolled in the study, and 792 had follow-up data. A total of 81.0% of patients were diagnosed with STEMI and 19.0% with NSTEMI. One third of patients were women, and the mean age of study population was 62.4 years. Antiplatelet therapy was as follows: ASA + ticagrelor - 226 patients (27.8%), ASA + ticagrelor + GPIIb/IIIa - 184 patients (22.6%), ASA + clopidogrel - 196 patients (24.1%), ASA + clopidogrel + GPIIb/IIIa - 94 patients (11.5%), other therapy - 110 patients (13.5%). Anticoagulant therapy was as follows: unfractionated heparin (UFH) - 390 patients (47.9%), UFH + low-molecular-weight (LMW) heparin - 276 patients (33.9%), other therapy - 132 patients (16.2%). Significant negative predictors for ticagrelor choice were age ≥ 75 years and prior percutaneous coronary intervention (PCI). Significant positive predictors for clopidogrel choice were age ≥ 75 years, high creatinine, use of oral anticoagulants, and prior PCI. Significant negative predictor for ticagrelor choice for both separate subpopulations of STEMI and NSTEMI was age ≥ 75 years. Significant positive predictor for clopidogrel choice in STEMI patients was age ≥ 75 years.

Conclusions: RE-ACT was the first real-life study that describes short-term AMPs in ACS patients in Bulgaria. Predictors of choice were different for ticagrelor and clopidogrel which were the most frequently used antiplatelet therapies.

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ADP induced blood-clotting time: simple and cheap test for antithrombotic therapy response monitoring in acute coronary syndrome

L Malinova,¹ N Furman,¹ P Dolotovskaya,¹ L Chernousova² and R Podbolotov¹

¹Saratov State Medical University, Research institute of cardiology, Saratov, Russian Federation ²Saratov clinical centre of cardiology, Saratov, Russian Federation

The purpose of the study was to evaluate the possibility of ADP induced blood-clotting time measurement implementation into clinical practice as a test for antithrombotic therapy response monitoring in acute coronary syndrome (ACS).

Material and methods: 201 male persons were enrolled in the study: 38 – clinically healthy volunteers (35 (28;43) y.o.); 163 patients (67 (54;78) y.o.) were admitted to the cardiovascular emergency department for ACS manifestation. ADP induced blood-clotting time (ADP BCT) was measured as time (sec) within addition ADP (10 mcM) to recalcified sample of citrate blood and clot formation detected by Thrombotimer 2 Germany. Platelet function tests were performed by laser aggregometer BIOLA. Follow-up period for patients with ACS was 5 years. The primary end point (PEP) was the composite of cardiovascular (CV) mortality and rehospitalization (RH) due to worsening of CV symptoms.

Results: Individual variability of ADP BCT was 16.7%, intragroup – 34.7%. Assessment of ADP BCT at 10, 30, 60, 120 and 180 minutes after blood sampling revealed stability of test results within first 60 min. ADP BCT correlated with age in both health volunteers and patients with ACS ($R = -0.431$, $p < 0.05$ vs $R = -0.398$, $p < 0.05$). In patients with ACS ADP BCT correlated with Ht ($R = -0.337$, $p < 0.05$), platelet count ($R = 0.497$, $p < 0.05$), and APTT ($R = -0.343$, $p < 0.05$). ADP BCT significantly increased in 45 min after loading dose of antiplatelet agent: aspirin 250 mg – 103.2 (95.1; 130.7) vs 133.1 (102.8; 154.3) sec, $p = 0.041$ (in healthy volunteers). After age adjustment ADP BCT was significantly shorter in patients with ACS: 134.8 (109.9; 161.3) vs 85.65 (60.5; 108.7) sec, $p = 0.015$, as well as spontaneous platelet aggregation (0.03 (0.02; 0.04) vs 0.13 (0.07; 0.17) units, $p = 0.003$) and ADP induced platelets aggregation (4.67 (0.00; 9.35) vs 30.90 (12.00; 48.50) %, $p = 0.001$). ADP BCT less than 80 sec was associated with increased risk of in-hospital death (HR 1.98 CI 1.24; 2.57) and adverse CV events in 6 months from discharge (HR 2.18 CI 1.45; 2.71). ADP BCT measurement after patients' discharge allowed us to detect patients missed at least two doses of recommended antiplatelet agent: ADP BCT decrease more than 20% (sensitivity – 81%). ADP BCT measurement takes significantly less time than platelets aggregometry, and is much cheaper.

Conclusion: ADP BCT may be beneficial for antithrombotic therapy response monitoring in acute coronary syndrome in case of lack of time or resources.

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Anticoagulation after an acute coronary syndrome - characteristics and prognosis of this population

JP Moura Guedes,¹ J Amado,¹ D Bento,¹ D Carvalho,¹ J Chin,¹ N Marques,¹ W Santos,¹ J Mimoso,¹ V Brandao¹ and I De Jesus¹

¹Faro Hospital, Cardiology, Faro, Portugal

Introduction and Objectives: Oral anticoagulation (OAC) may be a necessary therapy after an acute coronary syndrome (ACS), mostly for patients with concomitant atrial fibrillation (AF). The need for OAC increases bleeding risk and may limit ACS treatment. The purpose of this study was to characterize the population in need for OAC after an ACS and what your prognosis following 1 year.

Methods: A retrospective, descriptive and correlational study was conducted encompassing all patients admitted for ACS in a Cardiology Service from 1st October 2010 to 30th June 2013. Baseline characteristics, admission data and treatment strategies of the patients were evaluated and a follow up in the medium term 12 months was carried out by telephone contact made by a cardiologist. Univariate and multivariate analysis of hospitalizations and mortality for cardiovascular causes at 1 year after an ACS were performed. Statistical analysis was performed using SPSS 20.0.

Results: In our center 2302 patients were admitted with ACS, of these 167 (7.3%) were discharged under ACO therapy. In most patients the ACO was made due to AF (90%). Compared with patients without ACO at discharge it was found that they were older (70.2 ± 12.6 vs 65.7 ± 13.4 years, $p < 0.01$), had less myocardial infarction (MI) with ST-segment elevation ($p < 0.01$) and more comorbidities, such as high blood pressure ($p = 0.03$), diabetes mellitus ($p = 0.02$), chronic kidney disease ($p = 0.02$) and peripheral vascular disease ($p = 0.01$). They also had more often a history of MI ($p < 0.01$), valvular disease ($p < 0.01$), heart failure ($p < 0.01$) and stroke ($p < 0.01$).

Patients with ACO at discharge were admitted less frequently by pre-hospital medical emergency ($p < 0.01$), had higher prevalence of Killip-Kimball class III/IV ($p = 0.01$) and lower left ventricle ejection fraction ($49 \pm 14\%$ vs $58 \pm 13\%$, $p < 0.01$).

Patients under ACO were less underwent to coronary angiography ($p < 0.01$) and angioplasty ($p < 0.01$). Dual antiplatelet therapy was less often in patients under ACO, acetylsalicylic acid (78% vs 93%) and clopidogrel (46% vs 82%) ($p < 0.01$).

After 1 year follow-up, patients under ACO had higher hospitalization rate for cardiovascular causes ($p < 0.01$) but there were no differences in mortality.

Conclusion: After ACS, patients under ACO therapy at discharge had older age and greater number of comorbidities, including AF. These population are less often subject to invasive revascularization therapy.

Patients under ACO had higher hospitalization rate at 1 year follow-up but despite the differences in the populations was not identified difference in mortality rate at 1 year follow-up.

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ST-segment elevation myocardial infarction during oral anticoagulation with rivaroxaban

M Li Calzi,¹ A Placci,¹ G Paoli,¹ M Bianconcini,¹ S Cinconze,¹ F Grassi,¹ D Lina,¹ MA Cattabiani,¹ A Menozzi¹ and D Ardissino¹

¹University Hospital of Parma, Operative Unit of Cardiology, Parma, Italy

We report the case of a 65-years-old woman admitted to CCU for a inferior ST-segment elevation myocardial infarction (STEMI), complicated by IIIrd degree atrio-ventricular block. The patient was under treatment with rivaroxaban (20mg/day) and clopidogrel because of a history of recurrent idiopathic pulmonary embolism and a recent episode of Non-ST segment Elevation MI due to spontaneous dissection of the first diagonal branch.

The patient underwent to emergency coronary angiography and implantation of transvenous temporary pacemaker. Angiogram showed complete acute thrombotic occlusion of the right coronary artery (Image). After manual thrombectomy, there was no evidence of an underlying atherosclerotic plaque, therefore no further balloon-angioplasty or stenting were performed.

Given the clinical evidence of a thrombophilic state, we performed some laboratory tests, which demonstrated the presence of mutation of the gene for Factor II (G20210A).

As rivaroxaban seemed to be ineffective in preventing thrombus formation in this patient, we decided to shift the antithrombotic therapy to warfarin (INR 2-3) in association with aspirin (100mg/day).

We may suppose that the inhibition of factor Xa by novel anticoagulants, such rivaroxaban, could be insufficient in case of thrombophilic state due to thrombin mutation, being such protein downstream of the coagulation cascade.



Complete thrombotic occlusion of RCA.

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Potential decrease of inflammation and C-reactive protein in patients with acute coronary syndromes in use of ticagrelor

E Castro,¹ B Dadalto,¹ A Brandao,¹ AM Soeiro,² M Tavares,² F Bento,¹ MV Vescovi,¹ A Aiolfi¹ and FCM Pedroti¹

¹HOSPITAL METROPOLITANO, SERRA, Brazil ²Heart Institute of the University of Sao Paulo (InCor), Sao Paulo, Brazil

Purpose: To analyze if ticagrelor could reduce C-reactive protein (CRP) in comparison with clopidogrel in patients with acute coronary syndromes submitted to percutaneous coronary intervention.

Methods: This was a observational and prospective study with 340 patients (139 in the ticagrelor group and 201 in the clopidogrel group) with acute coronary syndromes (ST-segment elevation/non-ST segment elevation myocardial infarction and unstable angina) submitted to percutaneous coronary intervention included between March 2,011 and November 2,014. Exclusion criteria were use of oral anticoagulation. The following data were obtained: age, sex, diabetes, systemic arterial hypertension, smoke, dyslipidemia, clearance of creatinine, left ventricle ejection fraction, type of stent (drug-eluting or bare metal), Killip hemodynamically classification, Crusade bleeding risk and TIMI risk. CRP was obtained at admission, with 3 and 12 months after the event. The primary endpoint was the CRP levels at 3 and 12 months comparing ticagrelor versus clopidogrel group. The secondary endpoint was combined events (death, non-fatal unstable angina or myocardial infarction, death, bleeding and stroke). Univariate analysis between groups was made by Anova and Q-square and was considered significative when $p < 0.05$. Long term follow-up of 12 months was made in all patients.

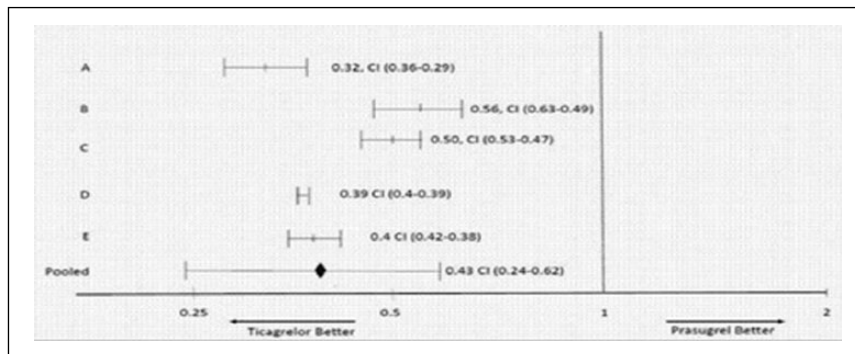
Results: Were observed significant differences in clearance of creatinine (89.6 ml/min x 79.5 ml/min, $p=0.01$) and LDL-cholesterol levels (98 mg/dl x 91 mg/dl, $p=0.02$), respectively between ticagrelor and clopidogrel groups. Significant difference was observed between ticagrelor and clopidogrel groups in CRP levels at 3 months (6.1 mg/dl x 11.4 mg/dl, $p<0.005$) and 12 months (3.5 mg/dl x 11.1 mg/dl, $p<0.005$), respectively. No significant difference was observed between the ticagrelor versus clopidogrel groups in combined events (10.1% x 15.9%, $p=0.13$).

Conclusions: In patients with acute coronary syndromes submitted to percutaneous coronary intervention the use of ticagrelor showed smallest levels of CRP at 3 and 12 months after the event compared with clopidogrel. This reduction in inflammation could be a marker related with the ticagrelor action.

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Acute stent thrombosisP Serpytis,¹ G Navickas² and E Butkute³¹University Hospital Santariskiu Klinikos, Emergency center, Vilnius, Lithuania²University Hospital Santariskiu Klinikos, Vilnius, Lithuania ³Vilnius University, Faculty of medicine, Vilnius, Lithuania**Purpose:** to assess the connection between platelet resistance to clopidogrel and acute stent thrombosis.**Methods:** a total of 692 patients with acute coronary syndrome and planned stent implantation were enrolled in this study between January 2014 and November 2014. All patients received either 300 mg or 600 mg loading dose of clopidogrel before percutaneous coronary intervention (PCI) followed by 75 mg daily dose. Clopidogrel responsiveness was analyzed with Multiplate analyzer more than 24 hours after the initiation of clopidogrel treatment. The primary endpoint was defined stent thrombosis during hospitalization period.**Results:** the mean age of the study group was 67,58±11,74 years. Of these 692 patients, 451 (65,20%) were male, 241 (34,80%) – female. 58 patients (8,4%) had unstable angina, 196 (28,3%) – NSTEMI, 438 (68,3%) – STEMI. Among the 692 patients analyzed, 13 (1,9%) developed an acute stent thrombosis. 6 (46,2%) of these patients were female, 7 (53,8%) – male. Multiplate analyzer measurements in this group were – 55,69±23,51 U. In patients where stent thrombosis has not occurred, Multiplate analyzer measurements were 56,86±22,76 (p=0,829). Patients who experienced stent thrombosis often had diabetes (30,8% vs 21,1%, p=0,388) and arterial hypertension (100% vs 87%, p=0,159).**Conclusions:** The study showed that low response to clopidogrel assessed with Multiplate analyzer is not statistically significantly associated with acute stent thrombosis. Further research is needed to determine the causes of acute stent thrombosis.**Discussions:** stent thrombosis may be dependent on the doctor's experience, stent type, vascular condition, stent implantation technique and other factors.

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Review and meta-analysis of platelet inhibition and platelet reactivity of newer anti-platelets agents - ticagrelor and prasugrelA Gandhi,¹ G Saxena,¹ J Dalal,² S Dani,³ A Raza¹ and B Kotak¹¹Astrazeneca, Medical Affairs, Bangalore, India ²Kokilaben Dhirubhai Ambani Hospital, Cardiology, Mumbai, India ³Life Care Institute, Cardiology, Ahmedabad, India**Background:** Newer Oral Anti Platelets (OAP) Prasugrel and Ticagrelor are associated with significant reduction in cardiovascular events when compared with Clopidogrel in their respective randomised trials in Acute Coronary Syndrome (ACS) patients. To date no randomised clinical trial has directly compared these two drugs.**Methods:** A systematic literature search of the MEDLINE, EMBASE and COCHRANE databases was performed. Randomised studies directly comparing platelet reactivity (PR) of Ticagrelor and Prasugrel by Verify Now Assay/VASP method were included. A descriptive statistical analysis was performed.**Results:** Nine randomised direct comparative PR studies of Ticagrelor and Prasugrel in variety of ACS patients met our criteria for inclusion. Total randomised patients those having risk factors like, diabetes mellitus, patients exhibiting High on Treatment Platelet Reactivity (HTPR). PR was measured after either loading or maintenance dose of both the drugs by either VERIFY NOW or VASP index. In all nine studies, Ticagrelor achieved a significantly and consistent lower PR compared to prasugrel regardless of risk factors or dosing strategy. Individual study analysis was performed using ratio of means, respectively for the five studies using Verify Now. A forest graph is plotted to compare the PRU in each study for both ticagrelor and prasugrel and the pooled value 0.43 (95% CI 0.24-0.62).**Conclusion** In this systematic review of pharmacodynamic comparison of Ticagrelor and Prasugrel, Ticagrelor demonstrated significantly lower PR in variety of ACS

RoM mean PRU with 95% CI.

patients. Review concluded that Ticagrelor is superior to Prasugrel in terms of platelet inhibition. Correlation of this superiority of Ticagrelor over Prasugrel in terms of PR with clinical benefits needs to be tested in clinical trial.

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Comparative effectiveness and safety of clopidogrel and ticagrelor in patients with ST segment elevation myocardial infarction

H G Hayrapetyan,¹ KG Adamyan,² VR Ter-Grigoryan¹ and HH Petrosyan¹

¹Erebouni MC, Yerevan, Armenia ²Institute of Cardiology, Yerevan, Armenia

Purpose: Current guidelines recommend dual antiplatelet therapy (DAT) for patients with ST segment elevation myocardial infarction (STEMI) treated with primary percutaneous coronary intervention (pPCI). We sought to compare effectiveness and safety of clopidogrel and ticagrelor platelet antiaggregants in STEMI patients who underwent PCI.

Methods: The study included 96 primary STEMI patients after pPCI. 48 of them (Group 1) received DAT with aspirin and clopidogrel (300 mg or 600 mg loading dose followed by 75 mg daily) and the remaining 48 patients (Group 2) received aspirin and ticagrelor (180 mg loading dose followed by 90 mg b.i.d). Above identical groups were followed for 1 year to compare frequencies of cases of cardiovascular death (CVD), rehospitalisation due to acute coronary syndrome or other vascular causes, minor or major bleeding, drug intolerance.

Results: During one year of follow-up, we recorded 14.6% vs. 10.4% of CVD cases in Groups 1 and 2 ($p < 0.05$). For frequencies of re-hospitalization cases we again found a statistically significant between-group difference - 29% vs. 21% ($p < 0.05$). We found no significant difference between groups either for cases of major (6.3% for both groups) or minor (12.5% vs. 10.4%) bleeding ($p > 0.05$ for both cases). No cases of drug intolerance were recorded for either of groups.

Conclusion: Compared to clopidogrel, ticagrelor reduces CVD and rehospitalisation rates within 1st year of treatment without increasing risks of any type of bleeding or drug intolerance in STEMI patients who underwent pPCI.

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Additional loading and high clopidogrel maintenance dosing regimen in acute coronary syndrome with persistent platelet hyperreactivity after stenting - a twelve month follow-up safety substudy

M Krpan,¹ J Samardzic,² B Skoric,² M Cikes,² M Petricevic³ and D Milicic²

¹University Hospital Centre Zagreb, Department of Cardiovascular Diseases, Zagreb, Croatia ²University of Zagreb School of Medicine, Department of Cardiovascular Diseases, Zagreb, Croatia ³University of Zagreb School of Medicine, Department of Cardiac Surgery, Zagreb, Croatia

Introduction: Clopidogrel is still widely used in treating acute coronary syndrome (ACS) despite its limitations and development of new P2Y₁₂ inhibitors like prasugrel and ticagrelor. High on-treatment platelet reactivity (HTPR) on clopidogrel is associated with increased risk for new ischemic events. We sought to investigate whether repeated clopidogrel loading regimen and long term high maintenance dose MD (300 mg/day) is safe in persistent HTPR on clopidogrel after successful coronary stenting in ACS during 12 months.

Methods: Interventional group from the randomized controlled trial (RCT) NCT02096419 was analyzed in this substudy. Cut-off value for high on-treatment platelet reactivity on clopidogrel was set at 46U as recommended by consensus statement of experts. Patients received additional loading dose of clopidogrel on day 2 and underwent platelet function testing (PFT) again the following day. Remaining low responders received another 600 mg loading dose followed by a MD of 150 mg/day. On day 7, we repeated PFT and patients who still had HTPR on clopidogrel were assigned to 300 mg/day MD. Patients older than 70 remained on 150 mg/day. One, two, three, six and twelve months after PCI control PFT and interview was performed. We assessed platelet reactivity, compliance to treatment and major bleeding events according to BARC classification.

Results: Fourty-three patients were enrolled in the original interventional group. Persistent HTPR was present in 8 patients after one week (18.6%). After 1, 2, 3, 6 and 12 months HTPR on clopidogrel was found in 5, 3, 2, 1 and 1 patient, respectively. No patient had a major bleeding event. One patient died before first month visit (ischemic CVD).

Conclusions: The results imply that repeated clopidogrel loading doses and high clopidogrel MD might be safe in persistent low responders on clopidogrel. Maintaining high doses of clopidogrel in late post PCI period might prevail HTPR phenotype in certain number of patients. New P2Y₁₂ blockers such as ticagrelor and prasugrel should be used in patients with persistent HTPR on clopidogrel if available. Due to limited power of this analysis, these results warrant confirmation in large RCTs.

Biomarkers

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Oxidative stress in subacute phase of myocardial infarction: rise and gone in seconds

S Salinger-Martinovic,¹ D Stanojevic,¹ S Apostolovic,¹
Z Dimitrijevic,² V Mitic¹ and M Pavlovic¹

¹Clinic for Cardiovascular Diseases, Nis, Serbia ²Clinical Center Nis, Nis, Serbia

Introduction: Acute myocardial infarction (AMI) is associated with increasing production of reactive oxygen species (ROS). Additionally, during reperfusion therapy (thrombolysis or percutaneous coronary intervention-PCI) the ROS in the blood causes further cell damage due to oxidative stress. Targets for oxidative modification are proteins, nucleic acids and lipids when advanced oxidation protein products (AOPP), malondialdehyde (MDA) and other molecules are formed.

Purpose and methods: We measured AOPP and MDA on the 3rd day after admission in AMI patients with persistent ST segment elevation (STEMI) and in those with non-ST segment elevation myocardial infarction (NSTEMI) in order to compare the intensity of oxidative stress in those two sub-groups.

Results: We enrolled 108 consecutive patients with AMI admitted to Coronary Care Unit during April-June 2012. The average age was 62.44±10.42 years, 74.1% being males. Control group consisted of 50 age and gender matching volunteers, with the average age 59.37±9.46 years, and 68.8% being males.

In 74.1% of patients STEMI was diagnosed, and 25.9% had NSTEMI. In 65.7% STEMI patients primary PCI was performed, 27.9% received thrombolytic therapy (rt-PA) and in 3.4% rescue PCI was performed. In patients with STEMI the average MDA was 37.57 µmol/L, while in NSTEMI group it was slightly higher 39.37 µmol/L, without statistical significance (p=0.428). AOPP was slightly higher in STEMI group (22.55 µmol/L) than in NSTEMI (21.77 µmol/L), p=0.975. Interestingly in STEMI patients who underwent primary PCI or rescue PCI compared to those treated only with fibrinolytic therapy MDA and AOPP were not significantly different (37.71 vs. 36.38 µmol/L, p=0.797 for MDA and 22.85 vs. 19.86 µmol/L, p=0.391 for AOPP), although they were higher in STEMI group. MDA in control group was significantly lower (13.99±3.59 µmol/L, p<0.001) while AOPP compared to experimental group was insignificantly lower 18.35±1.73 µmol/L.

Conclusions. Oxidative stress is responsible for necrosis of cardiomyocytes in AMI. On the third day after the initial event MDA was significantly and AOPP insignificantly higher in AMI patients than in healthy volunteers. No statistical difference in level of oxidative stress products was found between STEMI and NSTEMI patients or among those treated with PCI compared to fibrinolytic therapy. It seems likely that in subacute phase of AMI, free radical scavenging and antioxidative activity is maximally engaged and that any antioxidative therapy should be applied as early as possible in this setting. We need more research in this field.

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One more controversy of procalcitonin: predictor of 1-year mortality in heart failure (MOLITOR sub-study)

S Apostolovic,¹ D Stanojevic,¹ S Salinger-Martinovic,¹ R Jankovic-Tomasevic,¹ R Djordjevic-Radojkovic,¹ D Kutlesic Kurtovic,¹ M Pavlovic,¹ E Tahirovic,² S Radenovic² and HD Dungen²

¹Clinic for Cardiovascular Diseases, Nis, Serbia ²Charite - Campus Virchow-Klinikum, Department of Internal Medicine-Cardiology, Berlin, Germany

Purpose: Procalcitonin (PCT) is a calcitonin precursor that was first defined as an inflammatory biomarker in the plasma of patients with sepsis and infection in the 1990s. An elevated PCT level occurs not only in patients with sepsis or infection but also in patients with pancreatitis, major surgery, multi-trauma, heatstroke, burn injuries, hemodialysis, kidney transplantation, and prolonged cardiogenic shock. Evidence is growing that PCT concentration correlates with the extent of atherosclerosis and prognosis in patients with coronary artery disease (CAD) and possibly in heart failure (HF) which was the aim of our sub-study.

Methods and results: Study "Impact of therapy optimization on the level of biomarkers in patients with acute decompensated and decompensated chronic heart failure" with acronym MOLITOR included 168 patients of whom 119 (70.8%) were male with acute HF. The average age was 68.18±9.92 years. 37(22%) patients died during the first year and 45(26.8%) were re-hospitalized. The main reason for HF was CAD in 50(29.8%) patients, arterial hypertension in 56(33.3%), cardiomyopathy in 33(11.1%), valvular disease in 12(4%), unknown etiology in 12(5.1%) and other in 2 (0.7%) patients. The mean left ventricular ejection fraction (LVEF) on admission was 33.5±12.4% and slightly higher after 1 year (36.8±12.57%). PCT measured at the admission was 0.42±2.56 µg/L and it was associated with higher 1-year mortality rate [OR=1.011, 95% CI (1.006-1.016) p<0.001] in whole group as well as in sub-group where CAD was main cause for HF [OR=1.013, 95% CI (1.002-1.023), p=0.018], however it was not associated with higher risk for re-hospitalizations in patients with CAD as cause for HF as well as in rest of the included patients. Interestingly, PCT did not correlate with LVEF. Patients with arterial hypertension and unknown reason for HF had the highest values of PCT, although insignificantly.

PCT was lower after one year of follow-up in patients with CAD as main cause of HF (0.09±0.07 vs. 0.04±0.02 µg/L, p=0.079, t=1.984) although insignificantly as well as in rest of the patients (0.72±4.75 vs. 0.10±0.38 µg/L, p=0.342, t=0.96).

Conclusions: Admission PCT levels are an independent predictor for 1-year mortality in heart failure patients including those where CAD is a reason for acute HF or acute decompensation of chronic HF. The role of PCT is

controversial in heart failure and CAD and we need more studies for that matter.

P688

Inflammation measured by tumor necrosis factor alpha is a strong predictor of outcome in patients presenting with ST-segment elevation myocardial infarction

Y Yazeed,¹ T Ali,¹ H Elhossary¹ and Z Ashour¹

¹Cairo University Hospitals, Department of Cardiovascular Medicine, Cairo, Egypt

Background: Inflammation is a key factor in the hospital outcome of patients presenting with acute ST-segment elevation MI (STEMI).

Aim: The aim of the present study was to evaluate the correlation between the degree of inflammation, measured by level of tumor necrosis factor alpha (TNF- α) and white cell count (WBC), and major adverse cardiovascular events (MACE) in patients presenting with STEMI

Methods: The study included 81 consecutive patients with STEMI. TNF- α , and WBC were analyzed during hospitalization. Receiver operator characteristic (ROC) and Kaplan-Meier survival curves were used to assess their correlation with MACE (nonfatal myocardial infarction, Heart failure, arrhythmia and cardiac death).

Results: An optimized cut-off point of TNF- α level >1774 pg/ml showed 94% sensitivity and 75% specificity yielded the best sensitivity and specificity for MACE with AUC = 0.959. Patients were divided into two groups according to the cut-off value of TNF- α level. Patients with TNF- α level > 1776 pg/ml (group I, 49 patients), and those with TNF- α \leq 1776 pg/ml (group II, 33 patients). Patients in group I were more likely to have higher WBC count (14.9 ± 4.5 vs 9.9 ± 3.3 (10^3 cells/ml); $p = 0.001$), higher troponin I (39 ± 18 vs 17.8 ± 6 ; $p = 0.006$), and higher CK-MB (Mass) (201 vs 99 ng/mL, $p = 0.007$)

Also patients in group I had larger left ventricular end diastolic diameter [5.6 ± 0.7 vs 5.2 ± 0.7 cm; $P < 0.05$), left ventricular end systolic diameter [4.1 ± 0.8 vs 3.6 ± 0.9 cm; $P < 0.03$), lower ejection fraction [$47.1 \pm 13.3\%$ vs 55.4 ± 9.4 ; $p < 0.04$]. Patients in group I were more likely to suffer from MACE; atrial fibrillation was higher [3 vs 0; $p = 0.001$], Re-Infarction (3 vs 0; $p = 0.001$), heart failure during hospitalization (12 vs 1; $p = 0.000$), in hospital mortality (5 vs 1; $p = .022$). There was a statistically significant negative correlation found between TNF- α level and EF ($r = -0.449$, $p = 0.000$), serum troponin I ($r = 0.527$, $p = 0.003$) and CK-MB ($r = 0.560$, $p = 0.000$).

Conclusion: Inflammation measured by TNF- α and WBC is a strong predictor of outcome in patients with STEMI.

P689

Subclinical hypothyroidism is not associated with adverse in-hospital cardiac events in patients admitted with acute coronary syndrome.

Y Yazeed,¹ A Mohsen¹ and H Kandil¹

¹Cairo University Hospitals, Department of Cardiovascular Medicine, Cairo, Egypt

Background: Subclinical hypothyroidism may be present in patients admitted with acute coronary syndrome (ACS). But whether ACS patients with SCH have a worse prognosis compared to euthyroid ACS patients, this is still controversial

Aim: The study aims to examine the relation between SCH and adverse in-hospital outcome in patients admitted with ACS.

Methods: We prospectively studied 100 consecutive patients with ACS. Free T3, free T4 and TSH were measured in all patients. In-hospital adverse events were defined as recurrent angina, new onset heart failure, significant arrhythmia, in-hospital mortality.

Results: SCH was present in 5(5%) patients, while 81(81%) patients were euthyroid. There was no difference between both groups regarding age ($p = ns$), Gender ($p = ns$), diagnosis on admission ($p = ns$), ejection fraction ($p = ns$), revascularization procedure ($p = ns$). There was no statistical difference between adverse cardiac events in SCH vs euthyroid group (20% vs 38.5%, $p = 0.7$), or mortality between both groups (0% vs 2.5%).

Conclusion: SCH does not worsen in-hospital outcome in patients admitted with ACS

P690

The impact of marathon and ultra-marathon running on cardiovascular function

AH Zebrowska,¹ K Przybyla,¹ A Posmysz,¹ Z Waskiewicz,¹ Z Gasior² and R Swiderski²

¹Department of Physiological and Medical Sciences, Katowice, Poland ²1st Department of Cardiology, Medical University of Silesia, Katowice, Poland

Long-term endurance training may significantly contribute to sports-specific functional adaptation of cardiovascular system. Limited research exists on the relationships between specific biomarkers of myocardium ischemia and the cardiovascular risk factors in runners following an different distance of ultra-marathon running. We investigated the response of high sensitive C-reactive protein (hsCRP), N-terminal pro-brain natriuretic peptide (NT-proBNP), cardiac specific troponin

T (cTnT), creatinine kinase-myocardial band (CK-MB), ischemia modified albumin (IMA), and heart-type fatty acid binding protein (H-FABP) and cardiovascular function to marathon, 12-h and 24-h ultra-marathon races.

Methods: Cardiac biomarkers and echocardiography (M-mode and two-dimensional Doppler echocardiography; Hewlett-Packard Image Point HX) evaluations were performed in 14 male (50.8±13.4 years) ultra-marathon athletes in response to marathon and ultra-marathon running during the Polish Championship in 24-h Running.

Results: The average distance covered during 24-ultra-marathon race was 156±38 km. Running the ultra-marathon led to a progressive increase in hsCRP concentration ($p<0.001$), CK-MB activity ($p<0.01$), non-significant increase in cTnT and NT-proBNP concentrations and slight decrease in IMA. The H-FABP correlated with the age of the athletes ($r=0.74$; $p<0.02$) and running distance ($r=0.73$; $p<0.05$). There was no evidence of myocardial or vascular dysfunction in the study individuals. Significant negative association was observed in left ventricular ejection fraction (LVEF) and CK-MB activity ($r=-0.88$; $p<0.05$) and LVEF and H-FABP post-marathon level ($r=-0.93$; $p<0.01$).

Conclusions: Running an ultra-marathon significantly stimulates cardiac biomarkers and cardiovascular adaptation to extreme exercise. These findings suggest that the exercise-induced cardiac stress may play a central role in cardiovascular adaptive mechanisms and enhanced exercise performance in marathon runners.

P691

Neuron-specific enolase for the prediction of the neurological outcome after refractory out-of-hospital cardiopulmonary resuscitation treated with ECMO—preliminary analysis of Prague-OHCA substudy.

H Skalicka,¹ J Belohlavek,¹ A Linhart,¹ T Boucek¹ and M Hupych²

¹Charles University Prague, 1st Faculty of Med., 2nd Dept of Medicine—Dept of Cardiology & Angiology, Prague, Czech Republic

²Czech Technical University in Prague, BioDat Research Group, Prague, Czech Republic

Background: The outcome after refractory cardiac arrest is determined by the degree of hypoxic brain damage. Neuron-specific enolase (NSE) is considered to be a possible predictor for neurological outcome after out-of-hospital cardiac arrest (OHCA). In patients treated with extracorporeal membrane oxygenation (ECMO) for refractory OHCA, NSE has not been studied. We conducted a substudy investigating the association between the NSE level after resuscitated OHCA and the neurological outcome.

Methods: During 25 months (Jan 2013 to Feb 2015) we enrolled 36 pts. with refractory OHCA in the prospective, randomised study, 13 of them receiving urgent VA-ECMO (36%). We want to find out, if NSE could be a helpful prognostication marker of neurological status also in these pts. on ECMO. Blood samples of NSE were collected after 72 hours following cardiac arrest. Neurological outcome was classified according to the Pittsburgh cerebral performance category (CPC 1-5) on days 4-5 at ICU, or before discharge or death.

Results: The mean age was 55±9 years (85% men). On admission, there were many unfavourable predictors for survival - the median lactate was 13mmol/l, the median pH was 7, 69% had fixed mydriasis, the median admission brain rSO₂ was 25 and the median time to return of spontaneous beating (the start of ECMO) was 58min. In spite of that 31% (4pts) survived and 3 of them with a good neurological outcome. The mean NSE levels was 67±28 umol/l (the median 57,9umol/l). The cut off value for absolute NSE levels in patients with unfavourable outcome (CPC 3-5) after cardiac arrest was 57,9ug/l with an area under the curve of 0,6 (sensitivity 60%, specificity 100%). We didn't find any significant correlation between NSE and admission pH, lactate, rSO₂, mydriasis nor overall mortality.

Conclusion: Our preliminary analysis showed, that NSE levels in patients with refractory OHCA treated with VA-ECMO could be a helpful prognostication marker of poor neurological outcome. These data are preliminary and need to be confirmed during the next years of the main study.

P692

The relation between interleukin-2 and acute coronary syndrome

A M Moustafa Abdou Aboualia,¹ M O Kayed,¹ M A Salama,¹ K A Merghany,¹ A M Badr¹ and M Y Shahin²

¹Al-Azhar University, cardiology department, cairo, Egypt ²Al-Azhar University, clinical pathology, Cairo, Egypt

Background: Interleukin-2 (IL-2) has multiple, sometimes opposing, functions during an inflammatory response. Some studies showed that IL-2 may act as a predictor in vascular disease and stroke but no studied on its effect in acute coronary syndrome (ACS) patients.

The aim of this study: is to investigate the role of IL-2 in acute coronary syndrome patients and comparing them with control.

Patients and methods: 90 patients with the diagnosis of ACS (30 patients diagnosed as unstable angina, 30 patients diagnosed as STEMI with successful thrombolytic therapy and 30 patients diagnosed as STEMI with failed

thrombolytic therapy) from those attending the Coronary Care Units in Cardiology department Al Hussein university hospital between March to June 2013 and 30 apparently healthy subjects as a control.

Results: In USA group the age was 32.4 ± 5.19 years, in STEMI success group 44.7 ± 9.41 years, in STEMI failed group 58.3 ± 7.93 years, while in the control group was 27 ± 7.07 years. In the current study, DM and age more than 50 years were more prevalent in UA group than the other groups and HTN was more prevalent in STEMI success group. In the present study, Interleukin-2 was in control group 171.53 ± 39.48 pg/ml, in USA group 217.15 ± 73.17 pg/ml, in STEMI success group 274.3 ± 104.20 pg/ml and in STEMI failed group was 215.1 ± 49.43 pg/ml.

Conclusion: Serum IL-2 concentrations were significantly higher in patients with ACS than control, in patient with STEMI than UA group and in STEMI success than TEMI failed group.

P693

Circadian rhythm of cardiac troponin I and its clinical impact on the diagnostic accuracy for acute myocardial infarction

H Singeisen,¹ K Wildi,¹ R Twerenbold,¹ C Puelacher,¹ K Grimm,¹ T Nestelberger,¹ J Boeddinghaus,¹ M Rubini Gimenez,¹ T Reichlin¹ and C Mueller¹

¹University Hospital Basel, Cardiology, Basel, Switzerland

Purpose: Cardiac Troponin T and I (cTnT, cTnI) are the goldstandard diagnostic blood markers for acute myocardial infarction (AMI). It is unknown, whether the circadian rhythm seen in cTnT (higher levels in the morning vs. evening) also exists for cTnI and whether subsequently diagnostic accuracy of cTnI for AMI depends on time of presentation to the emergency department (ED).

Methods: In a prospective multicenter study, 2601 patients presenting to the ED with chest pain were analysed. ST segment elevated AMI were excluded. At time of presentation to the ED (0h) and at 1h, cTnI was measured with sensitive (s-cTnI Architect, s-cTnI Centaur, s-cTnI Accu) and high-sensitivity assays (hs-cTnI Accu). 0h, 1h and delta (0h-1h) levels were compared in patients presenting in the morning (23:00-14:00, n=1935) vs. evening (14:00-23:00, n=666). Final diagnosis was done by 2 cardiologists. To evaluate the impact of a possible circadian rhythm on diagnostic accuracy, the area under the receiver operating characteristics curve (AUC) for AMI was compared between the 2 timeframes for 0h, 1h and combined 0h/delta.

Results: AMI was the final diagnosis in 17.6% of patients. cTnI levels were not different in the morning vs. evening in

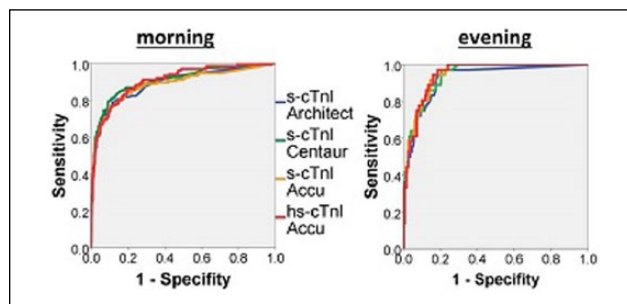


Figure 1.

any of the diagnostic groups including non-cardiac chest pain. AUC for AMI did not differ significantly over the timeframes for 0h, 1h and combined 0h/delta (s-cTnI Architect: 0.90, 0.94, 0.95 vs. 0.93, 0.97, 0.97; s-cTnI Centaur: 0.91, 0.93, 0.92 vs. 0.94, 0.96, 0.95; s-cTnI Accu: 0.89, 0.93, 0.93 vs. 0.94, 0.97, 0.96; hs-cTnI Accu: 0.91, 0.93, 0.93 vs. 0.94, 0.97, 0.97 for morning vs. evening resp.; fig.1).

Conclusion: cTnI does not seem to have a relevant circadian rhythm. Diagnostic accuracy of cTnI is very high and does not differ significantly with time of presentation to the ED.

Cardiac shock

P694

Intra-aortic balloon pump: retrospective analysis of a decade of experience in a surgical centre

M Passos Silva,¹ E Matos Vilela,¹ J Mancio Silva,¹ AI Azevedo,¹ R Lima,² A Dias,¹ L Santos,¹ D Caeiro¹ and V Gama Ribeiro¹

¹Hospital Center of Vila Nova de Gaia/Espinho, Cardiology, Vila Nova de Gaia, Portugal ²Centro Hospitalar do Alto Minho, Cardiology, Viana do Castelo, Portugal

Introduction: Since its development in the 1960s intra-aortic balloon (IABP) is the most used left ventricular assisting device. It has easy deployment, relatively low cost and hemodynamic benefit with low rate of major complications. After the publication of IABP-SHOCK II trial, the systematic use of this device has been questioned.

In this study we intend to describe indications, clinical characteristics, serious complications and intra-hospital mortality associated with IABP's use in a cohort of patients admitted consecutively over 10 years in a cardiac intensive care unit.

Methods: Retrospective analysis of medical records of consecutive patients in whom IABP was used in the period between January 2005 and September 2014. Serious complications were considered: vascular complications which motivate any type of intervention, major bleeding

requiring transfusion of 2 or more blood units and dysfunction of the BIA, requiring its replacement

Results: 508 patients were included, with the average age of 66.3 ± 11.9 years, 72.4% male, 66.5% were hypertensive, 63.1% had dyslipidaemia, 29.2% were diabetic and 37.7% were smokers. Previous coronary artery disease history was present in 37.7% and 7.1% had peripheral arterial disease. About half (49.2%) was transferred from another hospital. Cardiogenic shock (38%) in the context of acute coronary syndrome (with or without ST segment elevation) was the most frequent reason for placement, 28.7% was placed for hemodynamic support and stabilization up to the cardiac bypass surgery, 18.4% for refractory angina after optimal medical therapy and 14.9% as hemodynamic support in high risk coronary intervention.

IABP's median time of use was of 2 days (IQR 1-4). Severe complications occurred in 3.9% of patients: vascular injury 2.7%, major bleeding 1% and 0.2% rupture of the balloon.

Individuals in shock who placed IABP did not have more complications than those who placed it for other reasons (3.4% vs. 4.3% $p = 0.612$). There were no significant differences in mortality among individuals with or without complications (31.6% vs 18.9%, $p = 0.170$). Intra-hospital overall mortality was 19.3%. Patients with cardiogenic shock who placed IABP had a mortality of 44.7%.

Conclusion: IABP main indication to its deployment was cardiogenic shock. Incidence of serious complications was relatively low and there were no more significant complications in those who placed IABP due to cardiogenic shock. There was no difference in mortality between individuals with and without complications.

P695

Retrospective analysis of cardiogenic shock management and prognosis in the intensive cardiac care unit of a third level hospital

I Montilla Padilla,¹ M Valiente Fernandez,¹ R Martin Asenjo¹ and MA Corres Peiretti¹

¹University Hospital Doce de Octubre, Madrid, Spain

Introduction: Cardiogenic shock remains one of the most prevalent syndromes in the intensive cardiac care units, with a high mortality rate and major medical cost.

Materials and Methods: Retrospective study of cases from January 1, 2013 to April 30, 2015. The charts of all patients admitted to our hospital's Intensive Cardiac Care Unit with a cardiogenic shock diagnosis were reviewed. A data collection protocol was followed to obtain information on demographic variables, etiology, length of stay, mechanical circulatory support, complications and mortality.

Results: The study population consisted of 102 patients, the mean (SD) age was 60 (16.4) years, 62% were men. Etiologies were acute coronary syndrome (68%), heart waiting list patients (16%) and group I pulmonary arterial hypertension (5%). The mean length of stay was 24.5 days.

Left anterior descending artery was the culprit artery in 52% of acute coronary syndromes (ACS). Complete revascularization was performed in 48% of ACS.

Intra aortic balloon pump was used in 55% of patients (55% of ACS and 68% of heart waiting patients). 12 patients required mechanical circulatory support (11 extracorporeal membrane oxygenation and 1 centrifugal pump). 8 patients underwent heart transplant: 6 from the heart waiting list, 1 ACS and 1 anthracyclines cardiomyopathy.

The main complications were acute renal failure requiring renal replacement therapy in 25% and infection in 49%.

Overall mortality was 55% (57% in ACS, 56% in heart waiting patients, 50% in pulmonary arterial hypertension), and a half of them passed away in the first 7 days.

Mortality in ACS was 48% in the complete revascularization group and 68% when the revascularization was incomplete ($p=0.126$). Patients with LV ejection fraction $< 30\%$ and moderate to severe mitral regurgitation had 62% mortality.

In patients requiring circulatory support mortality was 62% in those with intraaortic balloon pump 63% and in the extracorporeal membrane oxygenation group.

Conclusions: ACS was the the main cause of cardiogenic shock, as it has been described in the literature. The mortality rate is similar to other series, and it is still high even with the wide use of mechanical circulatory support. Complete revascularization shows a tendency to better prognosis. LV ejection fraction $<30\%$ and mitral regurgitation predict poor prognosis

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Culprit lesion location and outcome in patients with cardiogenic shock complicating myocardial infarction

K Fengler,¹ G Fuernau,² S Desch,² I Eitel,² F-J Neumann,³ H-G Olbrich,⁴ A De Waha,⁵ S De Waha,⁶ G Richardt⁶ and H Thiele²

¹Heart Center of Leipzig, Cardiology, Leipzig, Germany ²Medical University, Lübeck, Germany ³University of Freiburg, Freiburg, Germany ⁴Hospital Langen, Internal Medicine I, Langen, Germany ⁵German Heart Center of Munich, Munich, Germany ⁶Heart Center Bad Segeberg, Bad Segeberg, Germany

Objectives: The objective of this study was to determine the prognostic relevance of the culprit lesion location in patients with cardiogenic shock (CS) complicating acute myocardial infarction.

Table 1. Mortality and non-lethal adverse events.

	LM	RCA [#]	LAD [‡]	LCX [§]	p-value	Proximal	Mid/Distal	p-value
Mortality day 1 (%)	14 (18)	26 (13)	36 (11)	20 (14)	0.33	63 (14)	33 (11)	0.23
Mortality day 30 (%)	37 (49)	83 (41)	146 (44)	64 (45)	0.70	198 (44)	132 (44)	0.99
Mortality 1 year (%)	45 (60)	100 (50)	178 (54)	81 (56)	0.48	234 (52)	170 (57)	0.24
Re-AMI* (%)	1 (3)	4 (4)	10 (7)	5 (8)	0.67	12 (6)	8 (6)	0.84
Stroke (%)	0 (0)	2 (2)	1 (1)	2 (3)	0.47	3 (1)	2 (1)	0.92
Repeat PCI (%)	6 (20)	14 (14)	25 (17)	13 (20)	0.74	37 (17)	21 (16)	0.78
Additional CABG [‡] (%)	0 (0)	4 (4)	9 (6)	3 (5)	0.54	11 (5)	5 (4)	0.58

*acute myocardial infarction, †coronary artery bypass grafting, ‡left anterior descending coronary artery, §left circumflex coronary artery, ||left main coronary artery, ¶percutaneous coronary intervention, #right coronary artery.

Background: In myocardial infarction without CS the affected coronary vessel with its corresponding area of risk have significant influence on final infarct size and patient prognosis. For CS this relation has not been examined, yet.

Methods: In the Intraaortic Balloon Pump in Cardiogenic Shock II (IABP-SHOCK II) trial patients with CS were randomized to therapy with intraaortic balloon pump or control. Additional CS patients not eligible for the randomized trial were included in a registry. We compared the location of the culprit lesions in these patients with regard to affected coronary vessel (left main [LM], left anterior descending [LAD], left circumflex [LCX] and right coronary artery [RCA]) and location within the vessel (proximal or mid/distal) regarding short- and long-term outcome.

Results: Of 758 patients with defined culprit lesions, the majority had a lesion in the LAD (44%) compared to RCA (27%), LCX (19%) or LM (10%). Proximal lesions were more frequent than mid/distal culprit lesions (60 vs. 40%, $p < 0.001$). No differences were observed for mortality with respect to either culprit vessel (log-rank- p -value=0.54) or mid/distal location of the culprit lesion within the vessel (log-rank- p -value=0.45).

Conclusion: For patients with ischemic CS, the culprit lesion localization seems to be unrelated with mortality.

P697

A new risk stratification score in patients with cardiac rupture following acute myocardial infarction; multicenter registry in eight academic hospitals in East Japan

Y Koeda,¹ T Itoh,¹ Y Ishikawa,¹ Y Morino,¹ T Mizutani,² J Ako,² M Nakano,³ M Sakuma,⁴ T Komatsu⁵ and H Yoshino⁶

¹Department of Cardiology, Iwate Medical University, Morioka, Iwate, Japan

²Kitasato University School of Medicine, Department of Cardiovascular Medicine, Sagami-hara, Japan ³Tokai University Hospital, Department of Cardiology, Isehara, Japan ⁴Dokkyo Medical University, Department of

Cardiovascular Medicine, Mibu, Japan ⁵Dokkyo Medical University Koshigaya Hospital, Department of Cardiology, Koshigaya City, Japan ⁶Kyorin University, Department of Internal Medicine II, Mitaka, Japan

Purpose: The mechanical complications following acute myocardial infarction (AMI) such as cardiac rupture (CR) (ventricular septal perforation, oozing type CR, blow-out type CR and papillary muscle rupture) are fatal. However, risk stratification scores in patients with CR have not previously been reported. The purpose of this study was to evaluate prognostic factors and to establish a new risk stratification score in patients with CR following AMI.

Methods: The study cohort consisted of 209 consecutive patients with CR in the registry of eight academic hospitals in east Japan between 1997 and 2014. The authors conducted a retrospective observational study to analyze the correlation of their classification of CR, in-hospital mortality, risk-grade scoring and treatment. A new risk stratification score was established using the Cox proportional hazard model.

Result: The in-hospital mortality of all patients with CR was 47%. The hazard ratios for in-hospital death were 1.49 for serum creatinine level (95%CI; 1.19-1.87), 2.34 for blow-out type cardiac rupture (95%CI; 1.11-4.95), 1.08 for shock score (95%CI; 1.00-1.16) and 0.20 for surgical repair (95%CI; 0.09-0.45). We thus attempted to establish a new mechanical complication risk score composed of four clinical factors: 1) serum creatinine level ≥ 1.3 mg/dL, 2) blow-out type cardiac rupture, 3) shock score ≥ 7 , and 4) no surgical repair (total 4 points). Area under ROC curve (AUC) value for the new risk score was 0.796. Kaplan-Meier analysis using the new risk stratification score is shown in Figure.

Conclusions: Factors such as renal failure, blow-out type, shock grade and no surgical repair were associated with in-hospital mortality. The new risk stratification score in patients with CR following AMI could predict in-hospital mortality.

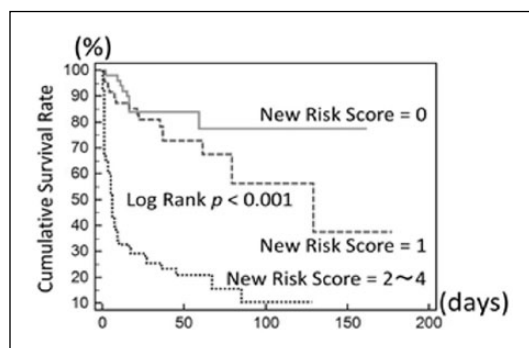


Figure.

P698

Cardiogenic shock due to myocardial infarction treated at the emergency department of a tertiary care hospital in a 5 year overview

A Schober,¹ D Roth,¹ R Van Tulder,¹ C Weiser,¹ H Herkner,¹ C Havel,¹ AN Laggner¹ and W Schreiber¹

¹Medical University of Vienna, Department of Emergency Medicine, Vienna, Austria

Purpose: Cardiogenic shock due to myocardial infarction remains a critical condition, even in times of readily available percutaneous coronary intervention (PCI). Aim of this study was to analyze patients treated for cardiogenic

shock at our emergency department and display factors associated with 30 days survival.

Methods: Consecutive adult patients treated for cardiogenic shock due to myocardial infarction admitted to the emergency department of the university hospital of Vienna between 2006 and 2011 were analyzed. Multivariable Cox-Regression was used to analyze factors associated with 30 days survival.

Results: Out of 3390 patients treated for acute myocardial infarction, 139 (4.1%) met inclusion criteria of cardiogenic shock. Baseline demographics, selected lab findings and ECG patterns are displayed in Table 1. Vasopressor therapy was established in 120 (86%) patients and mechanical ventilation in 86 (62%), CPR was performed in 17 (12%) and electric cardioversion applied in 5 (4%). In 34 (24%) patients intra-aortic balloon pump (IABP) was used. Revascularization strategy was primary PCI in 70 (49%), thrombolysis in 20 (14%) and rescue PCI in 9 (6%) patients. Within 30 days 67 patients (49%) died. After correcting for age, blood pressure, serum lactate, serum glucose, Killip 4 classification at admission, use of mechanical ventilation and primary PCI, age >69years (OR 0.33; 95%CI 0.14-0.76, p<0.01) and lactate >5mmol/l at admission (OR 0.42; 95%CI 0.18-0.97, p=0.043) remained significant predictors of mortality.

Conclusions: Cardiogenic shock in the ED was associated with almost 50% of 30d mortality. Predictors for mortality in this cohort were age and serum lactate on admission.

Table 1.

	All patients n= 139	30 day Survival N= 72	Non 30 day survival N= 67	
Age - years (median; IQR)	69 (60;76)	65 (56;72)	71 (63;79)	
Female sex (n; %)	48 (34)	26 (36)	22 (33)	
Weight - kg (median; IQR)	80 (67;90)	79 (75;90)	80 (69;96)	STEMI pattern (n; %)
97 (70)	52 (72)	47 (70)		Killip class 4 (n; %)
58 (41)	24 (33)	34 (51)		Systolic blood pressure - mm Mercury (median; IQR)
100 (80;120)	108 (89;130)	90 (80;118)		Lactate - mmol/l (median; IQR)
5 (3;10)	4 (2.5;8)	7 (3;11)		Troponin T - ng/ml (median; IQR)
0.22 (0.05;1.21)	0.18 (0.03;0.75)	0.29 (0.08;1.75)		

P699

Shock in a critical cardiac care unit: differences according to the initial diagnosis and timing of the shock

A Rafecas Ventosa,¹ RM Lidon Corbi,¹ J Baneras Rius,¹ G Oristrell Santamaria,¹ JA Barrabes Riu¹ and D Garcia-Dorado Garcia¹

¹University Hospital Vall d'Hebron, Cardiology, Barcelona, Spain

Purpose: In a Critical Cardiac Care Unit (CCCU) we often face the challenge of treating patients (p) with shock. Shock may be the reason for the admission, but it is not unusual for p to develop shock during the hospitalization. The aim of this study is (1) To determine the clinical differences according to the initial diagnosis and (2) To analyze the differences between p admitted with shock as initial

diagnosis and those who develop it subsequently, in a tertiary hospital CCCU.

Methods: Between April 1 and November 16, 2014, 45 p with shock of any etiology presented either at admission or during hospitalization in our CCCU were prospectively included.

Results: During this period, a diagnosis of shock was made in 8.6% of 526 p admitted in CCCU. The mean age was 66.8±11.8 years and 78% (35 p) were male. Hospital mortality was 51.1% (23 p).

- (1) Acute coronary syndrome (ACS) was the initial diagnosis in 28 p (62.2%), while p with a different diagnosis were 17 (37.8%). There was a high prevalence of cardiovascular risk factors: 60% smokers, 46.6% diabetes, 62.2% arterial hypertension and 71.1% dyslipidemia, without statistical differences between groups. However, there were differences in previous heart disease (32.1% ACS vs 76.5% non-ACS, $p=0.04$) and chronic renal failure (3.6% ACS vs 29.4% non-ACS, $p<0.02$). During hospitalization the non-ACS group presented more sepsis (47.1% compared to 14.3% in ACS, $p=0.02$). The in-hospital mortality was high in both groups (42.9% ACS vs 64.7% non-ACS) without statistical differences; the lack of difference could be determined by the sample size.
- (2) Shock was the initial diagnosis in 30 p (66.6%), while 15 p developed shock during hospitalization. Significant differences were observed according to the sex of the p: most men were admitted with shock (77.1%), but 70% of the women developed shock during hospitalization ($p=0.009$). In addition, invasive mechanical ventilation (IMV) was required in 60% of p with initial shock but only in 26.7% of p who developed shock during hospitalization ($p=0.036$). No significant differences in mortality between groups were observed.

Conclusions: In our series, p with non-ACS shock have more previous heart disease and worse clinical profile. Initial shock p were more frequently men while women developed shock during hospitalization. IMV was more used in initial shock. Mortality remains high in all groups.

P700

Learning curve and prognosis in patients with refractory cardiogenic shock undergoing AV- ECMO

B Saldanha Santos,¹ A Ariza-Sole,² JC Sanchez-Salado,² V Lorente-Tordera,² J Gonzalez-Costello,² C Guerrero-Morales,² A Izquierdo-Marquiza,² A Miralles-Casina² and A Cequier-Fillat²

¹Hospital of Santarem, Cardiology, Santarem, Portugal

²Hospital Universitario de Bellvitge, Cardiology, Barcelona, Spain

Introduction: Short term ventricular assist devices are indicated in patients with refractory acute cardiogenic shock and multisystem organ failure. However, due to the complexity of this patients the use of these therapies is restricted to specialized centers. The experience reported in Spain remains scarce and little is known about the impact of the learning curve in this scenario.

Purpose: The purpose of this study is to analyze the effect of the learning curve in the selection and clinical outcome of patients that undergo ventricular assistance with arterio-venous Extracorporeal membrane oxygenation (VA-ECMO)

Methods: All consecutive patients that underwent VA-ECMO in the Intensive Coronary Unit Care of one center from December 2009 to March 2015 were included. The patients were subdivided into two groups: Group A - initial period (December 2009 to October 2012) and Group B - posterior period (November 2012 to March 2015). We compared baseline characteristics, indications for VA-ECMO and clinical course during admission between the two groups. Baseline characteristics, VA-ECMO indication, in-hospital management and clinical course were prospectively registered.

Results: We analyzed 29 patients, 16 in Group A and 13 in Group B. No differences were found in gender, age or haemodynamic status with both groups presenting in INTERMACS class 1 status (87,5% vs 92,3% $p=ns$). The etiology of refractory cardiogenic shock in group B was mainly acute coronary syndrome but there was less prevalence of previous cardiopathy with no statistical significance. Nevertheless, this group tended to have better renal function and a significantly worse left ventricular ejection fraction. On the other hand, we found that the main indication for AV-ECMO in Group A was bridge to transplant and in Group B was support to recovery. In group B the period of ventricular support was significantly longer and there was a higher percentage of switch to central biventricular support. There were no differences in serious bleeding or infectious complications between the two groups. The figure shows the survival curve of the two groups. Although there were no differences in the severity profile of the two groups, the mortality tended to decrease in Group B but with no statistical significance, probably due to the small sample size. However, time to death during admission was significantly higher in group B.

Conclusions: Data showed changes in patient selection and management overtime due to experience. A tendency to decrease hospital in-hospital mortality is also found, probably due to the effect of the learning curve.

P701

Treatment of refractory cardiogenic shock with short term ventricular assist devices: The experience of a intensive cardiologic unit care (ICUC) in a terciary hospital with cardiac transplant program

B Saldanha Santos,¹ JC Sanchez-Salado,² A Ariza-Sole,² V Lorente-Tordera,² J Gonzalez-Costello,² C Guerrero-Morales,² A Izquierdo-Marquiza,² A Miralles-Casina² and A Cequier-Fillat²

¹Hospital of Santarem, Cardiology, Santarem, Portugal ²Hospital Universitario de Bellvitge, Cardiology, Barcelona, Spain

Purpose: The mortality of refractory cardiogenic shock higher than 50% in most series. The clinical practice guidelines recommend the use of short term ventricular assist devices (STVAD) in the treatment of refractory cardiogenic shock (RCS). However, there is still little experience in its management.

Methods: Retrospective registry of patients admitted to a ICUC for RCS treated with STVAD from december 2009 to january 2015. We evaluated the baseline characteristics, clinical parameters at admission, type of device and evolution.

Results: We included 50 patients with RCS that were treated with STVAD. The ethiology of RCS included acute coronary syndrome in 47%, acute miocarditis in 26% and acute failure in chronic cardiomyopathy in 12%. There were 56 devices implanted (29 ECMO and 27 Centrimag-Levitronix). At the time of implantation 70% of the patients had multisystem organ failure. The average duration of the assist device was 7,8 days. The patients had clinical improvement in 20% of the cases, received heart transplant in 28% and 52% were deaths during the support period. In the patients treated with ECMO, 8 (28%) had the support switched to Centimag-Levitronix. The major complications were bleeding in 50% of the patients, infection in 50% and ischemic events in 27%. In-hospital mortality was 62%.

Conclusion: The treatment of RCS with STVAD is an option for patients that don't respond to optimal conventional treatment, although mortality rates are still high

P702

Cardiogenic shock in the setting of ST elevation myocardial infarction: the elderly population

R Costa Rodrigues,¹ S Madeira,² RC Teles,² G Rodrigues,² P Sousa,² N Vale,² L Raposo,² P Goncalves,² M Almeida² and M Mendes²

¹Hospital Funchal, Funchal, Portugal ²Hospital Santa Cruz, Carnaxide, Portugal

Purpose: the advent of newer, better tools and the widespread use of cardiovascular prevention has allowed ST elevation myocardial infarction (STEMI) patients to present at an older age. In this population the development of cardiogenic shock (CS) can be dramatic. We aimed at evaluating differences between elderly patients (>75 years old) presenting with and without CS.

Methods: Retrospective analysis of 2078 consecutive patients with STEMI, admitted for percutaneous coronary intervention (PCI), prospectively included in a tertiary centre registry between January 2004 and January 2014. We included only patients over 75 years old (n=355) and divided them in two groups: patients presenting without CS (Group A: n=333; 93.8%; 55.3% men) and patients presenting with CS (Group B: n=22; 6.2%; 77.3% men). We evaluated the differences in clinical presentation, therapeutic management during PCI, 30-day and 1-year mortality and major adverse cardiovascular events (MACE), using the following tests: Qui2, t-student and Mann-Whitney.

Results: Group B had worse outcome when comparing MACE (A= 16.8% Vs B=36.4%; p<0.05) and death (A= 8.4% Vs B=31.8%; p<0.05) at 30 days. At one year group B still presented worst outcomes in terms of mortality (A= 14.7% Vs B=36.4%; p<0.05) but not when comparing MACE (A= 29.7% Vs B=40.9%; p<0.05). Group B had more male patients (A= 55.3% Vs B=77.3%; p<0.05), but no differences in terms of age or previous cardiovascular risk factors or history were found. Primary PCI was more frequently performed in group B (A= 59.5% Vs B=90.9%; p<0.05). No differences between the groups existed in the number of cardiopulmonary arrests or performing complete revascularization.

In terms of culprit vessel there was only differences in the main left (A= 3.9% Vs B=18.2%; p<0.05) and group B had a higher number of coronary lesions (A= 2.0 iq=2 Vs B=3.5 iq=3; p<0.05) and affected segments (A= 2.0 iq=2 Vs B=3.0 iq=3; p<0.05).

Conclusions: Elderly patients presenting with CS have the same risk profile as patients not presenting with CS. These patients have a worst 30 days outcome (MACE and total death), but when surviving the acute event, they still have a 1 year higher mortality but no differences remain when comparing MACE.

P703

Prognostic impact of hemodynamic factors, Syntax Score and residual Syntax Score in cardiogenic shock

M Varpula,¹ RS Rosello,² I Tierala,¹ J Lassus,¹ A Sionis² and V-P Harjola³

¹Helsinki University Central Hospital, Heart and Lung center, Helsinki, Finland
²Hospital de la Santa Creu i Sant Pau, Department of Cardiology, Barcelona, Spain
³Helsinki University Central Hospital, Department of Medicine, Helsinki, Finland

Background: Rapid revascularization is a cornerstone of treatment in cardiogenic shock (CS) after myocardial infarction (MI) but whether the extent of coronary artery disease is an independent driver of outcome is not known.

The aim of this study was to evaluate the predictive value of the Syntax Score (SS), a validated score of coronary artery disease burden, before and after PCI compared to hemodynamic variables of shock.

Patients and Methods: This study was a sub-analysis of a prospective observational multicenter CardShock study. Patients with acute MI and primary or rescue PCI in two centers (Helsinki and Barcelona) were analyzed.

Syntax Score (SS) was measured from angiographic images before (baseline SS) and after PCI (residual SS). Clinical characteristics and hemodynamic factors were assessed at baseline.

The endpoint of the study was 90-day mortality.

Results: 61 patients fulfilled the criteria of this sub-study. 35 (57,4%) patients had shock before PCI while in 26 (42,6%) shock developed after the procedure.

Baseline SS was 23.3 ± 11.2 and residual SS was 9.8 ± 11.0 . Change from bSS to rSS varied from -37% to 100% (mean $66.1 \pm 31.0\%$).

90-day mortality of the study group was 41% (n=25). In univariate analysis baseline SS correlated to 90-day mortality ($p=0.036$) but residual SS did not ($p=0.28$). In multivariate analysis LVEF [$p=0.001$, OR 0.92 (0.86-0.98)], age [$p=0.003$, OR 1.08 (1.02-1.16)] and lactate [$p=0.007$, OR 1.33 (1.05-1.67)] but not Syntax Scores were independently associated to mortality (Table).

Conclusions: Syntax score at baseline is associated to mortality but hemodynamic variables concerning shock severity are the most important determinants of mortality in CS after MI.

Table 1.

Variable	Dead	Alive	Univariate p-value	Multivariate p-value	Odds ratio (95% CI)
Age, years (\pm SD)	71.7 (11.2)	62.9 (12.1)	0.002	0.003	1.08 (1.02–1.16)
LVEF, % (\pm SD)	28.4 (10.5)	36.3 (13.5)	0.03	0.001	0.92 (0.86–0.98)
Serum creatinine, mmol/l (\pm SD)	149.0 (127.6)	97.0 (59.1)	0.053	0.54	
Serum lactate, mmol/l (\pm SD)	5.0 (3.3)	2.7 (2.6)	0.013	0.007	1.33 (1.05–1.67)
Systolic blood pressure, mmHg (\pm SD)	80.0 (18.3)	85.6 (22.6)	0.35		
Baseline pH, (\pm SD)	7.26 (0.13)	7.30 (0.12)	0.16		
Baseline SS, (\pm SD)	27.2 (10.1)	20.5 (11.3)	0.036	0.34	
Residual SS, (\pm SD)	12.3 (12.7)	8.1 (9.5)	0.28		

Databases, Registries and Surveys

P704

Enhancement of cardiology referral forms in a district general hospital - a service improvement initiative

SN Paterson¹ and G Hegarty¹

¹Maidstone and Tunbridge Wells NHS Trust, Cardiology, Maidstone, United Kingdom

Purpose: The Cardiology Department in this medium-sized Hospital receives up to ten referrals per day. It is the responsibility of the Senior House Officers (SHOs) to screen the referrals, ensure that the patient details are complete,

the referral is appropriate and that electrocardiograms (ECG) and echocardiograms (ECHO) have been attached. A designated referral form is in use to aid this process, but has notable design flaws and is sometimes neglected altogether. The authors felt that a better form could be designed, implemented, advertised and distributed for use within the DGH in order to improve the current efficiency of the referral process.

Methods: The authors; two SHOs, reviewed all Cardiology referrals received within the Cardiology Department at the hospital within the months of February and March 2015.

Results: A total of 181 referrals were received in this period. 17 of these referrals did not use the designated form. Of the 164 referrals that did use the form, 53% did not state whether an opinion or takeover of care was

being sought, 5% did not include the referrers contact details, 4% did not include the patient's hospital number, 3% did not include the referring consultant details and 0.6% did not include the date of referral. Overall, the most common reasons for referral were acute coronary syndrome (33%), syncope (12%), atrial fibrillation (10%) and congestive cardiac failure (10%). Of the 67 referrals with a query of acute coronary syndrome, only 21% included a Global Registry of Acute Cardiac Events Score. 61% did not include an ECG or ECHO, 41% did not include drug dosage, 21% did not contain valid information to justify referral and one referral was completely illegible.

Conclusions: The results demonstrate that referral forms are a valuable tool for the Cardiology Department, however enhancements of the existing form are necessary. The authors have designed a new referral form based on these results. The new form asks the referrer to attach a patient identifier sticker making patient identification clear. A section for personal pager has been included, thus ensuring that the referrer can be contacted if necessary. The reason for referral section has been simplified by using tick box options of the most common reasons. Finally, on the reverse of the form, National Institute for Health and Care Excellence Guidelines have been included. The new form will be widely advertised and available on the hospital Intranet. The authors aim to evaluate its effectiveness by reviewing referrals received in the two months post-implementation.

P705

Acute coronary syndrome management in kazakhstan

S Abseitova,¹ A Baygenzhin,¹ S Kairbekova¹ and R Kabykenova¹

¹National Scientific Medical Centre, Astana, Kazakhstan

Purpose: Analyze the state of emergency in patients with acute coronary syndrome (ACS).

Results: With the adoption of the State Cardiac Care Development Program catheterization laboratories with cardio surgery support were opened in all the 16 administrative centres and the specialists have been trained abroad. To realize the next State Program for Health Development "Salamatty Kazakhstan" with the aim to reduce the mortality rate from cardiovascular diseases a Republican Headquarter was organized who created the System of Emergency care to the patients with ACS. The first level includes primary health care and emergency medical services; the second one - hospitals without the possibility of PCI; the third - hospitals with the possibility of PCI delivering 24 hour/7 day service. The National ACS Algorithm has been developed

in accordance with the ESC guidelines. So in the area A (up to 100 km) the recommended reperfusion therapy for STEMI patients is primary PCI (but there are differences related to the ways of transportation). Zone B (over 100 km) - pharmacoinvasive approach (reperfusion in the absence of contraindications and further shipment for PCI). During the period from 2010 to 2014 holding the PCI in patients with ACS has increased fivefold (from 1812 to 9081), what reduced the hospital mortality in acute myocardial infarction almost for 2 times. Coverage of PCI in STEMI patients was 41%, fibrinolytic therapy - 36%, urgent CABG performed in 3% of the total number of patients diagnosed with previous myocardial infarction. The ratio of hospital and prehospital fibrinolysis is 69.4% to 30.5%. In NSTEMI-ACS patients at high risk of cardiac events the early invasive strategy (<24 hours) was carried out in 36% of the total number of patients diagnosed with previous myocardial infarction without tooth Q. According to this data the coverage of reperfusion therapy and indicators of hospital mortality in acute myocardial infarction do not reach the target levels. A large area of the country (2,724,900 sq. km) with a low population density (6.4 people per 1 sq. km) requires special aid organization in ACS with a broader involvement of air ambulance for the faraway areas with low population density and further development network of urgent cathlabs in remote areas (200-400 km) with a greater population density.

Conclusion: Thanks to the system measures some definite results in the organization of health care to the ACS patients have been achieved. Further changes will be linked to the improvement of emergency service, development of PCI accounts, creation and further implementation of ACS Register.

P706

Personality traits: cardiologists compared to cardiothoracic surgeons

K Mohee,¹ A L Clark,¹ R Anderson,² J Zhang,¹ SB Wheatcroft,³ M Loubani⁴ and J G Cleland⁵

¹Castle Hill Hospital, Academic Department of Cardiology, Hull, United Kingdom ²University of Hull, Department of Psychology, Hull, United Kingdom ³University of Leeds, Division of Cardiovascular and Diabetes Research, Leeds, United Kingdom ⁴Castle Hill Hospital, Department of Cardiothoracic Surgery, Hull, United Kingdom ⁵Royal Brompton Hospital, Cardiovascular Biomedical Research Unit Royal Brompton and Harefield Hospitals, Imperial College, London, United Kingdom

Purpose: Personality traits may differ between cardiac surgeons and cardiologists and might have a bearing on career choice and fulfilment.

Methods: A 51-item questionnaire was e-mailed to consultants and trainees in cardiology and cardiothoracic surgery in the UK using an online survey between December 2014 and January 2015. We collected data for sex, age and deanery and

used the Big Five Inventory-10 (BFI-10) for psychometric assessments. The BFI-10 assess five personality factors, each of which is represented by two questions: extroversion (warmth, gregariousness, assertiveness), agreeableness (trust, straightforwardness, altruism), conscientiousness (competence, order, dutifulness), neuroticism (anxiety, angry hostility, depression) and openness (fantasy, aesthetics, feelings). For each item participants rate the extent to which an adjective/phrase reflects their personality on a scale from 1 (disagree strongly) to 5 (agree strongly). Multivariable linear regression models were used to investigate the association between each trait and sex, age, type of hospital (secondary or tertiary), speciality and grade.

Results: Of 198 responses received, 56 were incomplete and 142 were analysed. Of 76 cardiologists, 55 were men, 50 worked in tertiary centres and 37 were still in training. Of 64 cardiothoracic surgeons, 60 were men, 62 worked in tertiary centres and 25 were still in training. Median (IQR) scores for extroversion, agreeableness, conscientiousness, neuroticism and openness for cardiologists were 3 (2-4), 3.5 (3-4), 5 (4.5-5), 2 (1.5-3), 3.5 (3-4) respectively and for cardiothoracic surgeons were 3 (2-4), 4 (3.5-4.5), 5 (4.5-5), 2 (1-2.5), 3.5 (3-4).

Surgeons had higher scores for “agreeableness” ($\beta = -0.59$ (95%CI: -0.92, -0.26), $p = 0.001$); cardiologists had higher scores for “neuroticism” ($\beta = 0.47$ (95%CI: 0.11, 0.84), $p = 0.012$) as did women compared to men ($\beta = -0.51$ (95%CI: -0.95, -0.06), $p = 0.026$). There were no associations between the independent variables and scores for openness, conscientiousness or extroversion.

Conclusions: Cardiothoracic surgeons had a stronger trait for “agreeableness” compared to cardiologists. Cardiologists had a stronger trait for “neuroticism”. Some of these differences may be due to the higher proportion of women amongst cardiologists.

P707

Temporal changes in the management of ACS patients over the years, egyptian experience

H Bahaa,¹ W Ammar,² A Magdy¹ and S Ghareeb²

¹National Heart Institute, Cairo, Egypt ²Cairo University Hospitals, Cardiovascular Department, Cairo, Egypt

Background: Acute Coronary Syndromes (ACS) represent a continuum of disease ranging from unstable angina, to STEMI, with irreversible myocardial necrosis. The change that is happening in the world concerning the management of the disease, is focusing nowadays on the speed of service, i.e door to balloon, door to needle, First medical contact etc. The data provided in the guidelines are all from the developed countries. Our study was important to focus on the evolution of the standards of

care in one of the important countries in the Middle East and north Africa (Egypt) and specifically in one of its busiest centres, and also delineate the evolution in the characteristics, treatments, and outcomes of patients with (ACS), by comparing current registry with those of previous local registries that have been done in the past years in the same centre.

Methods: This study was performed in the National Heart Institute (NHI) CCU and Kasr Einy hospitals, including a total of 1807 ACS patients. Group 3 included 606 patients collected prospectively and compared with 1201 patients collected retrospectively from previous national registries performed in the NHI from 2007 (group 1) and 2010 (group 2). Data included: demographics, clinical picture, and hospital course.

Result: percentage of STEMI increased among those presenting with ACS (from 59% in G1 vs. 63% in G2 reaching almost 74% in G3) $P < 0.001$. The mean ages were 54.5 \pm 11.8 G1, 56.9 \pm 10.6 in G2, and 54.3 \pm 10.9 in G3. Smoking and diabetes increased with no statistical significance. Patients with previous PCI increased significantly 5% in G1 5.6% in G2 reaching 12% in G3 ($P = 0.001$). PCI was done to 48.3 % of admitted patients of G3 vs. 22% in G2 ($P < 0.001$) and 26% in G1 ($P < 0.001$). Primary PCI has increased significantly 12.36% G1 ($P = 0.001$), 13% G2 ($P = 0.001$), and almost 40% G3. Door to needle (DTN) and door to balloon (DTB) showed no statistical difference. DTN 20 \pm 8 min G1 vs 21.5 \pm 7.3 minutes ($P = 0.105$), while DTB 102 \pm 10.9 min G1 vs. 101.5 \pm 26.6 min ($P = 0.86$). Overall complications have decreased significantly. Mortality has improved, 4.24% G1 vs. 2.5% in G3 ($P = 0.044$)

Conclusion: Risk factors haven't change significantly over many years. This finding necessitates the formulation of programs to increase patients' awareness, and also secondary prevention of CAD. The percentage of PCI increased significantly, but still thrombolysis is the primary reperfusion modality. That shows the need for developing our insurance system to cover a broader spectrum with more services.

P708

15 years - Is there a change in risk factor profile for STEMI patients over time in a city wide registry?

J-U Roehnisch,¹ B Maier,² S Behrens,³ R Schoeller,⁴ H Schuehlen⁵ and H Theres⁶

¹Vivantes Hospital Hellersdorf, Berlin, Germany ²Berlin Myocardial Infarction Registry at TU Berlin, Berlin, Germany ³Vivantes Humboldt-Klinikum, Berlin, Germany ⁴DRK Kliniken Berlin | Westend, Berlin, Germany ⁵Vivantes Auguste-Viktoria Hospital, Berlin, Germany ⁶Charite - University Medicine Berlin, Campus Mitte, Berlin, Germany

Background: More invasive treatment of patients with ST-elevation ACS (STEMI) has been successfully

implemented in the last years. The increase in the use of PCI and guideline recommended drug therapy has been associated with a reduced hospital mortality over time. But have risk factors and age distribution remained the same in STEMI patients over time? We studied whether there have been any changes in age distribution and risk factor profile among STEMI patients over the last 15 years.

Methods: Our Registry collects data on hospital treatment of patients with ACS since 1999. In our study we included all 15436 STEMI patients treated in up to 25 hospitals between 1999 and 2013. We analyzed age distribution and selected risk factors according to different age groups (≥ 75 yrs.) and sex over time (1999-03, 2004-08 und 2009-13).

Results: Age distribution has remained very similar for men over time: ≥ 75 yrs: 15%. For women age distribution changed over time with an increase in the percentage of women younger than 55 yrs over time: 1999-03: 10%, 2004-08: 13%, 2009-13: 17%, a slight increase between 55-64 yrs: 1999-03: 16%, 2004-08: 15%, 2009-13: 19%, a stable situation with 26% for those between 65-74 yrs, and a decrease in the oldest age group: 1999-03: 48%, 2004-08: 46%, 2009-13: 38%.

Smoking has increased in younger age groups with the highest increase for women in the age group 55-64 yrs. (47% - 57% - 62%). In the age group ≥ 75 yrs. (37% - 38% - 35%).

Conclusions: The percentage of women in younger age groups has increased over time. Smoking is a constant problem of the younger age groups with an increase in women being smokers in the age group 55-64 years. Adipositas has increased especially in younger women. Diabetes, as an important comorbidity, has remained the same or even decreased (inspite its increase in prevalence), which may be interpreted as secondary prevention being more successful. From our results it seems that primary prevention should focus especially on younger women.

P709

Gender differences in the clinical characteristics of patients with mechanical complications following acute myocardial infarction

Y Ishikawa,¹ T Itoh,¹ Y Koeda,¹ Y Morino,¹ T Mizutani,² J Ako,² M Nakano,³ M Sakuma,⁴ T Komatsu⁵ and H Yoshino⁶

¹Iwate Medical University, Department of Cardiology, Morioka, Japan

²Kitasato University School of Medicine, Department of Cardiovascular Medicine, Sagami-hara, Japan ³Tokai University Hospital, Department of Cardiology, Isehara, Japan ⁴Dokkyo Medical University, Department of Cardiovascular Medicine, Mibu, Japan ⁵Dokkyo Medical University Koshigaya Hospital, Department of Cardiology, Koshigaya City, Japan ⁶Kyorin University, Department of Internal Medicine II, Mitaka, Japan

Purpose: Mechanical complications following acute myocardial infarction (AMI) are serious and associated with a high mortality rate. However, the clinical characteristics and outcomes of this patient population are not well understood. This report evaluated gender-based differences in the clinical characteristics, management, and prognosis of mechanical complications following AMI.

Methods: The study included 212 patients with mechanical complications of AMI who were registered at eight academic hospitals in East Japan between 1997 and 2014. Patients were separated into two groups comprising 106 males and 106 females.

Results: Female patients with mechanical complications of AMI were significantly older than male patients (72.3 \pm 9.2 years vs. 77.0 \pm 7.2 years; $p < 0.05$). At hospital admission, serum creatinine levels were significantly higher in males (1.0 \pm 0.7 mg/dl vs. 1.6 \pm 1.7 mg/dl; $p < 0.01$), whereas HDL-C levels were significantly higher in females (41.6 \pm 12.3 mg/dl vs. 49.8 \pm 17.1 mg/dl; $p < 0.01$). Although the female group was older than the male group, in-hospital mortality rates were similar for the two respective genders (47.6% vs. 48.6%; $p = 0.89$). The frequency of repair operations was equal for females and males (67.6% vs. 68.0%, respectively; $p = 0.95$). The peak time for the occurrence of mechanical complications was before noon in the female group (from 6am to 12pm; $p = 0.011$), while no peak time was observed in the male group. However, circadian variation was not related to in-hospital mortality for either gender.

Conclusions: Although females were older than males and the onset of mechanical complications displayed a circadian pattern in females, this multicenter registry in Japan suggests that the short-term prognosis and rate of repair surgery in patients with mechanical complications of AMI was not affected by gender.

P710

Regionalizing STEMI receiving center within a metropolitan city shorten Ischemic Time : data collected from iSTEMI pilot project.

D Juzar,¹ F Isman,¹ S Suridanda,¹ D Tobing,¹ D Ariwibowo,² R Dewayani,² A Priyana,² D Firman¹ and S Soerianata¹

¹Pusat Jantung Nasional Harapan Kita, Kardiologi & Kedokteran Vaskular, FK Universitas Indonesia, Jakarta, Indonesia ²Rumah Sakit Umum Daerah Cengkareng, Cardiology, Jakarta, Indonesia

Purpose: It is now well established that primary percutaneous coronary intervention (PCI) is the optimal reperfusion strategy for ST-elevation myocardial infarction (STEMI), if performed in a timely manner by experienced

operators. However, availability of this optimal strategy is limited. In Jakarta with population approximately 15 million people, only one primary PCI STEMI receiving center (SRC), Pusat Jantung Nasional Harapan Kita, which performs primary PCI consistently. As previously published, the rate reperfusion is still low and mostly due to late presenter which has been transferred from another health facilities. City traffic congestion and the lack of adequate ambulance services have also contributed to the delayed.

In light of the above findings, iSTEMI project with its pilot project in West Jakarta was initiated. The purpose of the iSTEMI West Jakarta pilot project is to establish and to improve STEMI services in a regionalized network and its SRC.

The effect of regionalizing SRC on shortening ischemic time as compared with the ischemic time at the national SRC, which act as SRC for the whole city was evaluated.

Methods and Results: Data was derived from iSTEMI base (multi center registry), from July –December 2014 which contained 1938 ACS patients including 168 STEMI in regionalized SRC network and 485 STEMI in tertiary facility which acting as a national SRC.

In regionalized network, the proportion of patients who did not receive reperfusion therapy was 55 % in all STEMI patients and majority of them are late presenter (87%) in the referring facilities. The main reperfusion mode is fibrinolysis (57%). Inter hospital transfer time is 150 (50-480) minutes. Total ischemic time is 320 (60-765) minutes.

In National SRC, the proportion of patients who did not receive reperfusion therapy was 36 % and majority of them (32%) are late presenter in the referring facilities. The main reperfusion mode is primary PCI (86%). The inter hospital transfer time is 270 (30-7200) minutes Total ischemic time is 438 (105-1093) minutes.

In hospital mortality of reperfused STEMI patients between in the regionalized network and national SRC, was not significantly differences 9.3% vs 7.2 % $P < 0.52$.

Conclusion: Regionalizing SRC has shorten ischemic time of acute STEMI patients. Despite most of regionalizing SRC reperfusion strategy was performed with fibrinolysis, the difference of in hospital mortality was not significant.

P711

Is it appropriate to use invasive/interventional therapies in older patients with acute heart disease?

E Garcia Piney,¹ C Lugo Godoy,¹ MJ Garcia Sanchez,¹ F Martin Herrero,¹ P Pabon Osuna¹ and PL Sanchez Fernandez¹

¹Hospital Clinico Universitario, Salamanca, Spain

To analyze and describe the elderly population (age ≥ 75 years) was admitted to our cardiology service and assess the impact of invasive therapy in prognosis short and medium term.

Material and Methods: Since 01/01/14 to 06/30/14 were consecutively included 442 patients, corresponding to 45% of all patients admitted. Variables objective: hospitalization (mortality) and 6 months follow-up (mortality, readmission and combined events).

Results: urgently income (82%). Main reason for admission: ischemic heart disease (40%); arrhythmias (26%), heart failure (21%), other diseases (13%). Any type of interventional procedure is performed during admission in 269 (61%). In-hospital mortality was 3.8% and follow-up of 6.3%. Observed hospital mortality: heart failure (5.4%), ischemic heart disease (3.4%), other causes (3.1%). The hospital mortality tended to be higher in patients who opted for medical treatment in connection with any interventional procedure (5.8% vs. 2.6%; $p = 0.09$). The Kaplan-Meier curves (Figure 1) show how the combined event in the 6 months follow up appeared less frequently in patients who received interventional treatment during the first hospitalization (log-rank test = 8.54; $p = 0.003$). Multivariate Cox regression analysis (Table 1) showed as independent predictors for the presentation of the combined event in monitoring hemoglobin and creatinine. A non-significant trend toward a protective effect of the use of invasive therapies are also observed.

Conclusions: Elderly patients represent a high percentage of all patients admitted. In more than half of patients, a strategy of invasive/interventional treatment was taken, which could be associated with better clinical outcomes the high and medium-term follow-up, compared with conservative treatment.

Table 1. Multivariate logistic regression analysis.

	B	ET	Wald	gl	Sig	Exp(B)	Inferior	Superior
Age	,038	,020	3,393	1	,065	1,038	,998	1,081
Comorbidity	,158	,239	,435	1	,510	1,171	,733	1,870
Diabetes	,301	,189	2,545	1	,111	1,351	,933	1,956
Hemoglobin	-,151	,052	8,402	1	,004	,860	,777	,952
Creatinin	,336	,104	10,494	1	,001	1,399	1,142	1,714
Invasive treatment	-,304	,188	2,612	1	,106	,738	,511	1,067

General intensive care

P712

Prognostic implications of automated pupillary evaluation in a cardiac intensive care setting

C Illum,¹ SC Wiberg,¹ C Hassager,¹ MG Lindholm,¹ S Boesgaard¹ and J Kjaergaard¹

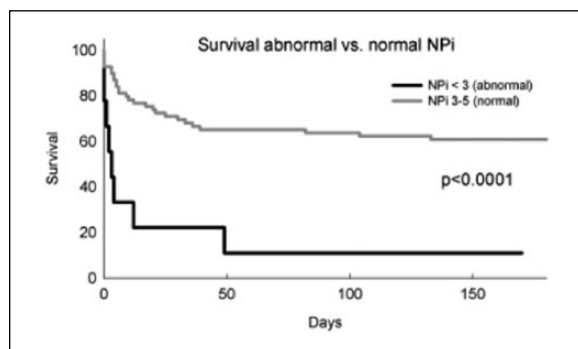
¹Rigshospitalet - Copenhagen University Hospital, Copenhagen, Denmark

Purpose: Examination of pupil size and reaction can be performed using an infrared camera based technology, allowing for greater accuracy and reproducibility compared to than manual pen-light based evaluation. The potential yield of prognostic information from these data has yet to be fully established

Methods: 78 sedated patients admitted to a cardiology ICU from August to December 2014, underwent serial pupillary evaluation using an automated pupillometer. Maximal pupillary diameter, minimal %-change in reaction to light and minimal Neurological Pupil index (NPi) was noted as a mean of both eyes. The NPi sums up measured variables in a composite score ranging from 0-5. NPi<3 is considered abnormal and NPi=0 corresponds to absent pupillary reaction. Multivariable models adjusting for age, sex, primary diagnosis and previous medical history were applied.

Results: Patients were 63±12 years of age, 46% were male and their past medical history included inshemic heart disease (32%), stroke (10%) and diabetes (18%). Out-of-hospital cardiac arrest (59) and cardiogenic shock (13%) were the predominant reasons for the ICU admission. 35 (45% patients died during a maximum of 268 days of follow-up

A normal NPi was associated with increased survival rates (figure). NPi was associated with increased survival rate, HR=0.63 (0.51-0.78) for death per point increase in NPi, p<0.001 in the multivariable model. Maximal pupil diameter was also associated with increased risk of death, HR=1.67 (1.34-2.08), p<0.001 per mm, whereas



%-change in diameter was not associated with risk of death, p=0.42.

Conclusion: Automated assessment of the pupils provides quantitative information on pupillary size and reaction to light in sedated intensive care patients and provides clinically important prognostic information.

P713

Clinical characteristic of patients with cancer and acute coronary syndrome

G Piotrowski,¹ K Pszonicka,¹ P Strzelecki,¹ K Czajkowska¹ and P Gworys¹

¹Department of Cardiology, N. Copernicus Memorial Hospital, Lodz, Poland

Background: The number of patients (pts) with cancer (ca) hospitalized on cardiology wards due to cardiovascular disorders has been increasing. The coexistence of ca is regarded to cause many difficulties in dealing with cardiovascular diseases particularly with acute coronary syndromes (ACS).

Purpose: The study aimed to compare clinical characteristic of ACS pts with (Group A) and with no ca (Group B).

Methods: A total of 71 ca pts hospitalized due to ACS in 2014 in our institution were identified and included in the study, which constituted 11,5 % of total population with ACS in 2014. Their clinical characteristic was compared with a group of 304 randomly chosen ACS pts with no ca. Analysis was done retrospectively.

Results: Sixty seven (94,4%) pts had solid ca, others blood malignancies.

Eleven (15,5%) pts had advanced ca; 10 (14,1%) were subjected to chemotherapy and 14 (19,7%) to radiotherapy in the past; 4 experienced ACS during chemotherapy and 1 during radiotherapy.

Pts with ACS and ca compared to those with no ca were older (72vs.67); less frequently experienced STEMI (23vs.40%); more often presented with dyspnoea (27vs.8%); hypotension (14vs.5%); less often with pain (80vs.94%); positive TnT (62vs.81%) and had lower TnT rise (1,0vs.1,9 ng/ml); hyperlipidemia was diagnosed less frequently (57vs.84%). In both groups invasive approach was applied at the same rate but no significant changes in coronary arteries were present and only medical treatment was applied in ca pts. more frequently (45vs.16%) (P,0,05). Less often ca pts used to received DES (21vs.50%), were treated with clopidogrel (77vs.92%); beta-adrenolitics (77vs.89%); ACE/ARB (81vs.92%); statins (84 vs. 97%) (p<0,05). In ca pts LV was larger (5,1 vs. 4,8 cm) and the level of HGB was lower (12,6 vs. 13,8 g/dl). More pts with

ca experienced bleedings (7% vs. 1%) and died (9% vs. 2%) during hospitalization ($p < 0.05$). There were no significant differences between the groups in terms of other clinical aspects analysed.

By univariate logistic regression analysis in-hospital death was associated in Group A with hypotension, left ventricle size, TnT level, GFR, AST and advanced cancer disease while in Group B with male sex, age, LVEF, LVEF, LAVi. By multivariate logistic analysis in Group A no parameter, and in Group B only bleeding (OR 54.0; 95CI 3.9-756.2) was independently associated with in-hospital death.

Conclusion: This study suggests that clinical characteristic of ACS differs between pts with and with no cancer, particularly in terms of clinical presentation, treatment methods, rate of bleeding complications and in-hospital mortality.

P714

Mechanical ventilation in acute coronary syndromes

F Francisco Aparicio,¹ A Espinola-Pardo,¹
MJ Cristo-Ropero,¹ A Izquierdo-Bajo,¹
M Cassani-Garza,¹ AD Ruiz-Duthil,¹
MA Perez-Rodriguez,¹ M Almendro-Delia,¹
JC Garcia-Rubira¹ and R Hidalgo-Urbano¹

¹University Hospital of Virgen Macarena, Cardiology, Seville, Spain

Purpose: Analysis of patients with acute coronary syndrome (ACS) requiring mechanical ventilation (MV) in a contemporary Coronary Care Unit.

Methods: Patients admitted consecutively with ACS from 2011 to 2014 in our Coronary Care Unit. We analyzed the clinical characteristics and hospital course patients requiring MV, both invasive (IV) and noninvasive (NIV), and independent predictors of MV.

Results: 981 Patients were included, 27.2% women, mean age 63 years (62.9-64.5), 59.4% had ST segment elevation ACS (STEMI). 99 Patients required MV: 44 patients NIV, 33 patients IV and 22 both NIV and IV. The most common indications for MV were hypoxemic respiratory failure in 63.3% of cases, followed by cardiac arrest in 29.6%. After completion of the univariate analysis, we found that MV patients had more frequently history of diabetes, hypertension, dyslipidemia, prior myocardial infarction, peripheral vascular ischemia, chronic lung disease, chronic renal failure and were taking more often cardiovascular medication. MV group had significantly worse Killip class at admission. There were no significant differences in the proportion of STEMI (60.6% vs 59.3%), nor in the invasive management

between groups (88.4% vs 87.9%). In multivariate analysis of admission characteristics, only age (odds ratio [OR] 1.028 per year, $p = 0.028$), heart rate (OR 1.014 per beat, $p = 0.008$) and Killip class at admission (OR 2.95 per class, $p < 0.001$) were independent predictors of ventilation. The mortality in the group of ventilated patients was significantly higher (28% vs 1.8%, $p < 0.001$) compared to non-ventilated, with 24.4% in NIV, 27.3% in patients with IV, and 34.6% with both NIV and IV. Left main coronary or three vessel disease were more frequent in patients requiring MV.

Conclusions: Patients with ACS who required MV had more comorbidities. Age, heart rate and Killip class at admission were independent predictors of need of MV. Mortality was significantly higher in patients undergoing MV, without differences between IV and NIV.

P715

Acute coronary syndrome in the elderly: different perspectives over three decades

R Costa Rodrigues,¹ A Correia,¹ M Neto,¹ MG Serrao,¹
S Gomes,¹ B Silva,¹ N Santos,¹ G Caires,¹ AC Alves¹
and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Purpose: therapeutic advances in the last decades allowed for better health care services and to an increase in life expectancy. The incidence of coronary acute syndromes (ACS) is increasing in older patients. We intended to evaluate the changes in clinical profile and treatment of elderly (≥ 80 years old) patients in the last three decades.

Methods: retrospective analysis of prospective collected data of 402 patients with ≥ 80 years, admitted for ACS in an intensive care unit of a tertiary hospital, in distinct periods over the last three decades. We divided the patients in three groups: patients admitted between October 1989-September 1994 (group A: $n=92$, 22.9%; 42.4% men); October 1999-September 2004 (group B: $n=123$, 30.6%; 39.8% men) and October 2009-September 2014 (group C: $n=187$, 46.5%; 51.3% men). We compared them in relation to baseline characteristics, therapeutic procedures and prognosis during in-hospital stay.

Results: group C presented lesser mortality (A=31.5% vs 29.3% vs 16.0%; $p < 0.01$). In baseline characteristics there were no differences between groups in relation to gender, age (A=83 Iq (5) vs B=84 Iq (5) vs C=83 Iq (5); $p=ns$) and previous history of diabetes mellitus or myocardial infarction. Group C presented more previous history of dyslipidemia (A=17.4% vs B=35.0% vs C=38.5%;

$p < 0.05$) and arterial hypertension (A=56.5% vs B=54.5% vs C=75.9%; $p < 0.01$) while group A had more history of angina (A=55.4% vs B=17.1% vs C=25.1%; $p < 0.01$) and smoking habits (A=18.5% vs B=3.3% vs C=6.4%; $p < 0.01$). There were no differences in Killip-Kimball class [Killip ≥ 2 : (A=63.0% vs B=50.0% vs C=56.0%; $p = ns$)]. In relation to treatment, group B was more frequently submitted to thrombolysis (A=9.8% vs 14.6% vs 0.0%; $p < 0.01$) while group C was more frequently treated by coronariography (A=2.2 vs 5.7% vs 58.3%; $p < 0.01$) and angioplasty, being more frequently medicated with aspirin (A=92.4% vs 78.9% vs 96.8%; $p < 0.01$), beta-blockers (A=5.4% vs 13.0% vs 27.8%; $p < 0.01$), diuretics (A=54.3% vs 46.3% vs 64.2%; $p < 0.01$), angiotensin-converting enzyme inhibitor (A=15.2% vs 0.0% vs 59.9%; $p < 0.01$) and was more often submitted to invasive ventilation (A=1.1% vs 0.8% vs 13.9%; $p < 0.01$). Group A presented more post-infarction angina (A=19.6% vs 10.6% vs 1.1%; $p < 0.01$).

Conclusions: in the last three decades the number of patients ≥ 80 years with ACS is increasing, presenting, nowadays, with a different risk profile and having a lesser inhospital mortality.

P716

Influence of selected clinical factors on prognosis in patients treated with moderate therapeutic hypothermia

R Kowalik,¹ A Scibisz,¹ L Koltowski,¹ E Szczerba,¹ KJ Filipiak¹ and G Opolski¹

¹Medical University of Warsaw, 1st Department of Cardiology, Warsaw, Poland

The study was retrospective, single center. The study group consisted of 28 patients after an out of hospital arrest (OHCA) treated in the Intensive Cardiac Care Unit in 2012-2013 with the moderate therapeutic hypothermia (MTH). The control group consisted of 37 patients admitted to the ward due to OHCA in 2010-2011, before the routine use of MTH in our ICCU. The two groups did not differ significantly with respect to age, sex, initial arrhythmia. During hospitalization 25 patients died, including 10 patients with hypothermia group and 15 in the control group (35.7% vs 40.5%; $p = 0.692$). Neurological status evaluated on a scale of CPC at the start of therapy in both groups was 4 points. After treatment, on a scale CPC these values were as follows: for a group of hypothermia 2.3 ± 0.3 points vs. 2.9 ± 0.3 punk control group ($p = 0.09$). Statistical significance was a good result neurological advantage for a group of hypothermia was achieved in terms of changes in the distribution of individual compartments percentage point both scales.

In univariate logistic regression, risk of death in patients treated with MTH was associated with higher lactic acid level at the beginning of hospitalization (OR 1.45, 95% CI 1.072 - 1.978; $p = 0.01$), higher lactic acid level in blood gas result declared the worst, in the course of treatment (OR 1.85, 95% CI 1.074 - 3.212; $p = 0.02$), the pH of the blood coming from the same measurement (OR 0.001, 95% CI 0.001 - 0.008; $p = 0.01$) and the value D-dimer levels measured at baseline and at the end of therapy (D-dimer initial (unit 1000.0) OR 1.36, 95% CI 1.040 - 1.773, $p = 0.02$. D-dimer end (unit 1000.0) OR 2.3 95% 1.170 - 4.667; $p = 0.01$). The age of patients was not a significant factor increasing the risk of death in these patients (OR 1.0 95% 0.007 - 1.210; $p = 0.05$). The control factor of poor prognosis in these patients were: pH of the blood in the first blood gas analysis performed (0.38 95% 0.174 - 0.821; $p = 0.01$), lactic acid concentrations identified at the start of treatment (OR 1.4 95% 1.11 - 1.78; $p = 0.004$), and the concentration of lactic acid in the worst case of blood gas (OR 1.83 95% 1.9 - 3.4; $p = 0.05$), the final concentration of creatinine (OR 3,11 95% 1.18 - 8.19; $p = 0.02$). The occurrence of shock in the hypothermia group was associated with about 19 fold higher risk of death (OR 2.53 18.667 95% - 137.58; $p = 0.004$) and a 20 times greater achievement for the composite endpoint of death and poor neurological outcome. (OR 19.99 2.74 95% - 145.466; $p = 0.0031$).

P717

Coronary care units organized as level I of care intensity: typology and intrahospital outcome

E Salvetti,¹ F Bonechi,¹ F Calabro,¹ F Spezia,¹ F Mazza,¹ A Cecchi,¹ A Monopoli¹ and M Sansoni¹

¹Ospedale San Giuseppe, Cardiologia, Empoli, Italy

Introduction: The Empoli 's Cardiology Department (FI, Italy) is organized as Intensity Level 1 and can hospitalize patients that need mechanical ventilation. A group of cardiologists-intensivists were trained to treat patients with resuscitation problems, as well as nutritional and sepsis problems and the anesthesiologist had the role of consultant. By using this model, we have already documented a reduction of mortality with respect to the previous years (G. Ital. Cardiol. 13, suppl 2, 112S, 2012). However, the risk is that not appropriate hospitalizations occur when the capacity of the intensive care unit is saturated.

Methods and materials: We analyzed the hospitalization cases of 2014 to evaluate their typology and the intrahospital outcome.

Results: In 2014, 619 patients with average age of 73.0+ 14.1 were hospitalized (62,3% males). The global mortality was of 5.1%. The acute coronary syndrome (ACS) represented the 66.0 % of the admissions. The primary PTCA (pPTCA) were 128 with a mortality of 2.3 %. Patients affected by STEMI in sub-acute phase showed the highest mortality (3 out of 13 patients, 23.1%). Total shocks pts were 4,1% with a mortality of 46,1%; of ACS pts in shock treated with PTCA the mortality was 23,0%. The pPTCA in shock were 10,2% with a mortality of 15,4%. Of pts admitted with non-cardiac disorders or not appropriate for admission were 23 (3.7 %).

Conclusion: The analysis of the data collected in 2014 shows a few cases of inappropriate hospitalizations when clear indications regarding the admission typologies were given. Furthermore, hospitalization of patients with high complexity in the CCU of care intensity level 1 showed a good outcome with low mortality rate. This model could be proposed to the scientific community as a new cardiological organization of the CCUs

P718

Targeted temperature management in cardiovascular disease complicated by cardiac arrest

M Gorecka,¹ A Hanley,¹ F Burke,¹ P Nolan¹ and J Crowley¹¹Galway University Hospital, Galway, Ireland

Purpose: The majority of cardiac arrests are caused by cardiovascular disease and its complications. Targeted temperature management (TTM) (target 32 - 34°C) is a part of the standard post-arrest care. Data on TTM and its effect on long-term cardiac outcomes are lacking. We hypothesized that lower body temperature may lead to reduced cardiac metabolic demand and potentially have a beneficial long-term effect on myocardial function.

Methods: We performed a retrospective cohort study, collecting data on patients admitted to the intensive care unit following cardiac arrest secondary to cardiovascular aetiology over a 9 year period from 2005 to 2013. Patients were divided into two groups: TTM treated and non-TTM treated. Patients with spontaneous hypothermia (temperature < 36°C) were excluded. We recorded neurological status at time of discharge, vital status at six months and baseline and 6-month left ventricular function. The mean change in ejection fraction (EF) was compared between the groups using the 2-tailed independent sample t-test assuming equal variance.

Results: There were seventy three patients who fulfilled the above criteria. This included 14 female and 59 male patients with mean age at presentation of 65 years (31-88). The majority of arrests (67%) were due to acute coronary

syndrome. Other causes included heart failure, arrhythmia, valvular heart disease and others. TTM was applied in 30% of cases. Reasons for not inducing hypothermia included Glasgow Coma Scale (GCS) > 13, death and admission prior to 2010.

The majority of patients in the TTM treated group survived to discharge from ICU (73%) and 68% were still alive at 6 months. Good neurological outcome (GCS ≥ 14) was present in 55% of cases. In the non-TTM treated group 75% of patients survived to discharge from ICU and 54% were still alive at 6 months. 62% cases had GCS ≥ 14 on discharge. The cardiac outcomes are shown in Table 1.

Conclusions: The study demonstrates a possible beneficial effect of TTM on long-term cardiac function, when instituted following cardiac arrest due to cardiovascular aetiology. Larger prospective studies are warranted to investigate this effect further.

Table 1. Cardiac outcomes.

Group	Mean EF baseline (%)	Mean EF 6 months (%)	Mean change (7%)*
TTM treated (n=8)	39	43	+4
Non-TTM treated (n=10)	42	39	-3

*p-value = 0.02.

Interventional Cardiology

P719

Comparison between complete revascularization in primary percutaneous coronary intervention versus culprit-only revascularization

W Omar Md,¹ H Elatroush Md,¹
A Mowafi Md,¹ K Mashhour Md¹ and
H Elghawaby Md Fesc¹¹cairo university, critical care department, elgiza, Egypt

Background: the presence of multi-vessel disease has been found to be associated with worse prognosis in patients with STEMI. Identification of optimal strategies for treating these patients is the subject of considerable interest and controversy.

Objective: to compare in-hospital, long-term outcomes and LV EF (6 months) between complete revascularization (CR) and culprit-only revascularization (COR) in STEMI patients with MVD undergoing p-PCI.

Methods: A total of 40 patients with recent STEMI and MVD undergoing p-PCI were alternatively randomized to CR (group A) or COR (group B) during p-PCI and followed

for 6 months with completion of PCI in group B after one month. patients were followed for incidence of MACE (in-hospital, at 1 and 6 months), CIN and EF improvement at 6 months.

Results: Forty pts (mean age 55.2±9.1 years, 33 males, 7 females) were included with comparable risk factors between both groups. In gp. A, LV EF improved significantly after 6 months (54.3±9.1 to 58.4±6.2 P value 0.002) compared to gp. B (54.9±5.2 to 55.7±6.7 P value 0.55). This improvement was more observed in patients with anterior wall MI. Incidence of MACE in both groups was comparable during hospital stay, at 1 and 6 months follow up. Two cases in group B, while no MACE in group A at 1 and 6 months follow up (P value 0.14). Safety of aggressive strategy for complete revascularization is comparable with culprit-only strategy as regard incidence of CIN (2 cases in gp. A, while 1 case in gp. B P value 0.54) and vascular complications (no cases in gp. B, while only one case in gp.A P value 0.31). patients with Door to balloon less than 90 minutes are associated with better EF in comparison to those with more than 90 minutes (57.1±6.3 versus 50.5±7.3 P value 0.005).

Conclusion: Complete revascularization is safe during p-PCI and associated with better LV EF at 6 months especially in anterior MI.

P720

Predictors of cardiogenic shock after transcatheter aortic valve implantation

JG Almeida,¹ P Fonseca,¹ D Caeiro,¹ A Rodrigues,¹ P Braga,¹ J Ribeiro,¹ L Vouga² and V Gama¹

¹Hospital Center Vila Nova Gaia, Cardiology, Porto, Portugal

²Hospital Center Vila Nova Gaia, Cardiothoracic Surgery, Oporto, Portugal

Purpose: Transcatheter aortic valve implantation (TAVI) is a therapeutic option for high/prohibitive risk patients with severe aortic valve stenosis. Cardiogenic shock (CS) represents one major cause of early mortality in this population. We aim to ascertain the predictors associated with this complication after TAVI.

Methods: We enrolled retrospectively all patients undergoing TAVI between August 2007 and November 2014. They were divided and compared in two groups, according to the development of CS after the procedure. Age, gender and all variables statistical significant (p<0.05) were included in multivariable analysis (logistic regression) to identify the independent predictors of CS. Statistical software: IBM® SPSS® (version 22).

Results: Of 171 patients, 13 patients (7.6%) developed CS after TAVI. There were no differences between the two

groups in gender (females: 53.8% versus 50.6%, p=0.824), age (82 vs 80 years, p=0.138) or previous New York Heart Association functional class (III-IV: 80% vs 69%, p=0.720). The body mass index (BMI: 35.7 vs 28.5g/m², p=0.024) and the society of thoracic surgeons score (8.7 vs 4.8, p=0.027) were significantly superior in the CS group. Previous ventricular function was similar (ejection fraction: 51.5 vs 51.25%, p=0.989), however there was a statistical tendency for more aortic regurgitation above grade 2 (58.3 vs 31.9%, p=0.064) and the valvular area was inferior (0.5 vs 0.6cm², p=0.02). Transapical access was more frequent (30.8 vs 6.4%, p=0.048), without differences in the type of implanted valves (self-expandable: 61.5 vs 66%, p=0.766). The device implantation success was significantly inferior (30.8 vs 87.2%, p<0.001)

Intervention complications like major/life-threatening bleeding (75 vs 18.9%, p<0.001) and major vascular complications (41.7 vs 8.3%, p=0.004) were significantly superior in the CS group.

The majority of CS patients died before 30 days (69.2%) and the 1-year mortality was significantly superior (84.6 vs 9%, p<0.001).

In multivariate analysis, the independent predictors of CS were: BMI (OR 1.06, 95% CI 1.02-1.11, p=0.007), transapical access (OR 46.34, 95% CI 2.94-731.48, p=0.006) and major/life-threatening bleeding (OR 16.93, 95% CI 1.89-152.55, p=0.012).

Conclusions: CS after TAVI is associated with an elevated early mortality. It is probably a multifactorial complication, related with the procedure (bleeding complications and vascular access) and co-morbidities (obesity).

P721

Two faces of Wellens syndrome

S Abdel Samad,¹ KM Mahmoud,¹ OI Elbahi¹ and MA Zaki¹

¹Medical Research Institute, Cardiology & Angiology Unit, Alexandria, Egypt

Purpose: Wellens syndrome represents a special subset of electrocardiographic (ECG) changes. It usually correlates with critical stenosis of the proximal left anterior descending (LAD) coronary artery. Two cases of Wellens syndrome are presented with similar clinical presentation, similar ECG findings but different angiographic findings and management.

Methods: The first patient was a 74-year-old male complaining of exertional angina. He is not hypertensive, not diabetic and is a current smoker. His ECG revealed normal sinus rhythm, biphasic T-waves in lead V1 &

deep T-wave inversion in leads V2-V5. There was also T-wave inversion in leads I, aVL & V6. He underwent diagnostic coronary angiography (DCA) which revealed a focal tight mid LAD lesion with distal TIMI 1-2 flow. Ad-hoc percutaneous coronary intervention (PCI) LAD was decided with pre-dilatation and implantation of a cobalt-chromium bare-metal stent (BMS).

The second patient was a 50-year-old male complaining of recent onset exertional angina. He is diabetic, hypertensive and is an ex-smoker. His ECG revealed normal sinus rhythm, biphasic T-waves in lead V2 & deep T-wave inversion in leads V3-V6. He underwent DCA which revealed a long tight proximal LAD lesion with good distal run-off and a 60-70% lesion in the most distal LAD segment. Ad-hoc PCI LAD was decided with pre-dilatation, implantation of a cobalt-chromium, biodegradable polymer, sirolimus-eluting stent and post-dilatation of the stent.

Results: Both patients ended up having a very good final angiographic result. They had an uneventful post-PCI stay in the coronary care unit and were discharged the second day. The first patient is doing well now for 5 months and the second patient is in his first week following PCI with no chest pain. They are both on dual anti-platelet therapy with aspirin and clopidogrel.

Conclusions: Identification of the ECG changes of Wellens syndrome and prompt management with coronary angiography and revascularization is of paramount importance. Delays in management of such cases have resulted in massive anterior wall infarctions and even sudden death in some patients. It is also very important for those patients not to undergo exercise stress testing as it may result in acute myocardial infarction as well.

P722

Polish Drug Eluting Stent technology performance in real-world practice of PCI, subanalysis from Katowice-Zabrze Registry

B Morawiec,¹ D Kawecki,¹ J Dola,¹ W Wanha,² G Smolka,² A Pluta,² K Marcinkiewicz,² A Ochala,² E Nowalany-Kozielska¹ and W Wojakowski²

¹2nd Department of Cardiology, Medical University of Silesia, Zabrze, Poland

²Medical University of Silesia, 3rd Division of Cardiology, Katowice, Katowice, Poland

Purpose: To assess the safety and efficacy of polish drug eluting stents (DES) in comparison to other brands DES in the real-world population of patients undergoing percutaneous coronary intervention (PCI).

Methods: Unrestricted patient population undergoing PCI with the implantation of DES was included in the analysis. Patients were stratified into three groups: first – polish DES (paclitaxel eluting stent - PES or sirolimus eluting stent - SES), second - other than polish first-generation DES (SES, PES), third – all other than polish DES (PES, SES, evelorimus eluting stent – EES, zotarolimus eluting stent – ZES, biolimus eluting stent - BES).

The efficacy was defined as major adverse cardiac and cerebrovascular event (MACCE) at 1 year and included death, myocardial infarction, target vessel revascularization (TVR) and stroke. Safety was defined as definite cumulative stent thrombosis (ST) at 1 year.

Results: The total of 431 patients were included. Of them, 181 patients (42%) were treated with polish DES, 116 (27%) with other than polish first-generation DES and 251 (58%) with other than polish DES. There were no significant differences regarding clinical profile, angiographic and procedural characteristics. In polish DES group, myocardial infarction and TVR occurred less frequently when compared to second group ($p=0.006$ and $p=0.047$, respectively). Myocardial infarction was also less frequent when compared to third group ($p=0.045$). Regarding safety end-point, ST was equally frequent in polish and two other groups (3.3% vs. 6%; $p=0.26$ for second group; 3.3% vs. 3%; $p=0.93$ for third group).

Conclusions: In the real-world population of patients undergoing PCI the use of polish coronary DES reduces the risk for myocardial infarction and TVR, especially in

Table 1. The incidence of end-points in groups.

End-point	First group (polish DES)	Second group (other than polish first-generation DES)	Third group (all other than polish DES)	p ¹	p ²
MACCE	15 (8%)	16 (14%)	31 (12%)	0.13	0.18
Death	9 (5%)	4 (3%)	10 (4%)	0.62	0.61
MI	5 (3%)	12 (10%)	18 (7%)	0.006	0.045
TVR	5 (3%)	9 (8%)	14 (6%)	0.047	0.16
stroke	2 (1.1%)	0	2 (0.8%)	0.07	0.74
Stent Thrombosis	6 (3.3%)	7 (6%)	8 (3%)	0.26	0.93

p1 – between first and second group; p2 – between first and third group.

comparison to other brands first-generation DES and has similar safety profile to other brands DES.

P723

Prospective study of contrast induced nephropathy among patients undergoing in the cardiac catheterization laboratory in a tertiary hospital centre.

N Shuka,¹ E Petrela,² E Hasimi,¹ J Lazaj,¹ J Dragoti,¹
A Kristo,¹ L Simoni,¹ J Karanxha,¹ S Kabili¹
and A Goda¹

¹University Hospital Center Mother Theresa, Department of Cardiology, Tirana, Albania ²University Hospital Center Mother Theresa, Statistics, Tirana, Albania

Background and Purpose: Coronary Angiography (CAG) and Percutaneous Coronary Intervention (PCI) have become cornerstone diagnostic and therapeutic procedures in the modern cardiology era. While contrast induced nephropathy (CIN) is a known complication of these procedures, its incidence is not well defined and it varies in different studies. Although the most widely accepted definition of CIN is an increase in serum creatinine of ≥ 0.5 mg/dL and/or $\geq 25\%$ at 48-72 hours after the procedure, there is no unanimous definition of CIN. The study aimed at determining for the first time the incidence of CIN among patients in the cardiac catheterization laboratory in our tertiary hospital centre. It also aimed at evaluating the predictive value of CIN developed at 24 hours after the procedure, on CIN developed at 48-72 hours.

Methods: The authors enrolled and followed a prospective, consecutive cohort of patients who received contrast medium during CAG and PCI in the catheterization laboratory of a tertiary hospital centre. CIN was defined as an increase in serum creatinine of ≥ 0.5 mg/dL and/or $\geq 25\%$ at 48-72 hours after the procedure to determine the incidence of CIN. CIN was also evaluated by the same criteria at 24 hours after the procedure. The incidence was measured in percentage and the chi-square test was used to compare groups' variables. The p-value was considered significant if $p < 0.05$.

Results: 1231 patients were enrolled in total and divided in three groups with 706 (II), 804 (I) and 279 (III) patients, in which serum creatinine was measured certainly at 24 hours, certainly at 48 hours, and at both 24 and 48 hours after the procedure, respectively. 111 patients (15.7%) developed CIN at 24 hours, 116 patients (14.4%) developed CIN at 48 hours, and 33 patients (11.8%) developed CIN both at 24 and 48 hours after the procedure in the three groups, respectively. 64.7% of patients in the third group who developed CIN at 24 hours, developed CIN at 48 hours as well, representing a statistically significant greater percentage ($p=0.001$).The

specificity value of creatinine increase at 24 hours after the procedure was 91.7%, with PPV (positive predictive value) and PNV (negative predictive value) of 63.5% and 92.1% respectively

Conclusions: The incidence of CIN at 48-72 hours after CAG and/or PCI among our patients was similar to that in other studies (14.4%). Measuring serum creatinine increase at 48-72 hours after the procedure remains the best option to define CIN. However, measuring serum creatinine increase at 24 hours after the procedure

P724

Three decades of acute coronary syndromes: what has changed?

A Correia,¹ R Rodrigues,¹ B Silva,¹ M Neto¹
and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Introduction: In recent years we have witnessed an evolution of health resources available to the population and scientific community. New diagnostic means and therapeutic strategies allowed facing acute cardiac events from a different perspective.

Purpose: The aim of this study was to evaluate the prognosis of the first acute coronary syndrome (ACS), in patients under 65 years, in 3 different periods over the past 3 decades.

Methods: Single-center, retrospective study of 1054 patients, admitted for ACS in an intensive cardiac unit. They were divided into 3 groups: between the years of 1989 and 1993 (Group A: $n=272$; 25.8%; 74.3% men); between 1999 and 2003 (Group B: $n=374$; 35.5%; 80.7% men); and between 2009 and 2013 (Group C: $n=408$; 38.7%; 82.4% men). The groups were compared regarding their baseline characteristics, therapeutic procedures and prognosis during in-hospital stay.

Results: Group C had a lower mortality rate during in-hospital stay ($A=6.6\%$ vs $B=4.3\%$ vs $C=2.0\%$; $p<0.01$). The groups showed no differences in relation to gender, age and bone mass index. Group C had more previous history of arterial hypertension ($A=45.6\%$ vs $B=40.6\%$ vs $C=50.5\%$; $p<0.05$) and less of angina ($A=49.3\%$ vs $B=14.4\%$ vs $C=9.6\%$; $p<0.01$). There were no differences regarding prior diabetes mellitus, dyslipidemia or smoking. Group C was more diagnosed with acute myocardial infarction ($A=67.6\%$ vs $B=81.6\%$ vs $C=94.4\%$; $p<0.01$). They performed more coronary angiography ($A=21.0\%$ vs $B=48.9\%$ vs $C=91.2\%$; $p<0.01$) and were less submitted to thrombolysis ($A=32.0\%$ vs $B=30.5\%$ vs $C=1.7\%$; $p<0.01$). Group C was more medicated with ACE inhibitors ($A=10.7\%$ vs $B=22.5\%$ vs $C=60.8\%$; $p<0.01$), beta

blockers (A=38.2% vs B=57.2% vs C=60.5%; $p<0.01$) and less calcium-channels blockers (A=33.5% vs B=13.6% vs C=10.5%; $p<0.01$). They registered less angor post-infarction (A=14.7% vs B=5.2% vs C=2.4%; $p<0.01$).

Conclusion: In the past 3 decades we have been challenged with an increasing number of patients presenting with ACS. They now have a different risk profile and a more favorable prognosis.

Myocardial and pericardial diseases

P725

Left internal mammary artery puncture as a complication of subxyphoid pericardiocentesis

Z Babic,¹ M Pavlov,¹ N Bulj,¹ V Kalousek,² ID Gabric³ and D Planinc³

¹University Hospital Sestre Milosrdnice, Cardiac intensive care unit, Zagreb, Croatia ²University Hospital Sestre Milosrdnice, Radiology department, Zagreb, Croatia ³University Hospital Sestre Milosrdnice, Cardiology department, Zagreb, Croatia

Pericardiocentesis is considered aggressive but relatively safe procedure, especially when performed under echocardiographic guidance. Unintentional left internal mammary artery (LIMA) puncture is known complication of anterior parasternal pericardiocentesis, while it is extremely rare in subxyphoid approach. The authors experienced the later and present such case.

59-years old female was presented to tertiary Clinic due to large pericardial effusion unresponsive to medical therapy. She complained of fatigue, exertional dyspnea, and pitting edema on extremities. Physical examination revealed alert, moderately obese female with picnic constitution. She was normotensive, but tachycardic, tachypnoic, with distended jugular veins, diminished lung sounds and pleural effusion bilaterally, moderate hepatomegaly, ascites and crural pitting edema. Echocardiography showed circumferential pericardial effusion with largest amount of effusion located inferoposteriorly (45 mm), while apically and parasternally effusion measured 10 mm, with signs of threatening tamponade. Due to poor cooperability, small amount of effusion anteriorly, and operator experience, a subxyphoid approach was chosen, however without success in obtaining effusion. One hour after procedure, arterial hypotension and swelling of left m. rectus abdominis (mRA) was observed. Hemoglobin level decreased from 136 to 84 g/L. Computed tomography revealed active blood extravasation from distal LIMA to mRA hematoma spreading through whole of the muscle. Endovascular treatment was chosen over surgery due to coagulopathy and hemodynamic instability. Through

left radial approach LIMA was accessed, over the microcatheter ethylene vinyl alcohol copolymer Onyx (Covidien) was administered with successful embolization of LIMA proximal to the lesion. Postprocedural period was complicated with hemodynamic instability, paralytic ileus and acute renal failure. With cardiac surgeon in back-up, an echo-guided apical pericardiocentesis was performed with immediate evacuation of 500 ml of effusion. With corticosteroid and other supportive therapy patient recovered well, mRA hematoma regressed completely, Meigs-like syndrome seems to be the most probable etiology of effusions.

Although rare in subxyphoid approach, LIMA puncture during pericardiocentesis is a possible complication, especially in picnic patients with ascites and hepatomegaly. Apical approach with echocardiographic guidance is recommended for avoiding it. Urgent diagnosis and treatment of such patients is needed.

P726

Predictors of cardiogenic shock in Takotsubo cardiomyopathy: a portuguese multicenter study

P Magalhaes,¹ N Marques,² C Lourenco,³ K Domingues,⁴ AR Almeida,⁵ B Marmelo,⁶ J Almeida,⁷ B Picarra,⁸ R Lima⁹ and O Azevedo¹⁰

¹Hospital of Vila Real, Dept. of Cardiology, Vila Real, Portugal ²Faro Hospital, Cardiology, Faro, Portugal ³Hospital Centre do Tamega e Sousa, Cardiology, Penafiel, Portugal ⁴Hospital of Santarem, Cardiology, Santarem, Portugal ⁵Hospital Garcia de Orta, Cardiology, Lisbon, Portugal ⁶Hospital Sao Teotonio, Cardiology, Viseu, Portugal ⁷Hospital Center of Vila Nova de Gaia/Espinho, Cardiology, Vila Nova de Gaia, Portugal ⁸Hospital Espirito Santo de Evora, Cardiology, Evora, Portugal ⁹Centro Hospitalar do Alto Minho, Cardiology, Viana do Castelo, Portugal ¹⁰Alto Ave Hospital Center, Cardiology, Guimaraes, Portugal

Introduction: Takotsubo cardiomyopathy (TC) is characterized by a transient left ventricular (LV) systolic dysfunction. The severity of LV dysfunction may result in cardiogenic shock, but little is known about its predictors in TC.

Aim: To identify predictors of cardiogenic shock in TC.

Methods: A multicenter study involving 12 hospitals with inclusion of all patients diagnosed with TC in the last 10 years. Demographic, clinical, electrocardiographic and echocardiographic data were analyzed in order to identify factors associated with the development of cardiogenic shock. Multivariate analysis was performed to establish independent predictors of cardiogenic shock in TC patients.

Results: We included 165 patients with TC, mainly women (89.1%). The mean age was 66 ± 14 years old.

During hospitalization (mean 6.9 ± 6.6 days) cardiogenic shock occurred in 9.7% of patients. Other complications were: heart failure (28.5%), atrial fibrillation (7.9%), acute pulmonary edema (3.6%), complete atrio-ventricular block (AVB) (2.4%), ventricular tachycardia (VT) (2.4%), stroke/transient ischemic attack (1.8%), LV thrombus (1.8%) and death (1.4%).

In patients with TC, the following factors were associated with the occurrence of cardiogenic shock: previous heart failure (12.5% vs. 0%; $p < 0.001$), chronic renal failure (18.8% vs 4.7%, $p = 0.025$), ST-segment elevation (68.8% vs 42.3%, $p = 0.043$) or right bundle branch + left anterior fascicular block (12.5% vs 0%, $p < 0.001$) in the initial electrocardiogram, the occurrence of VT (18.8% vs 0.7%, $p < 0.001$) or complete AVB (12.5% vs 1.3%, $p = 0.006$).

In multivariate analysis, chronic renal failure ($p = 0.006$), VT ($p = 0.005$) and complete AVB ($p = 0.010$) were identified as independent predictors of cardiogenic shock in patients with TC.

Conclusion: TC has a high rate of complications in the acute phase and cardiogenic shock is one of the most prevalent. In this multicenter study, chronic renal failure and the occurrence of VT or complete AVB were identified as independent predictors of cardiogenic shock in patients with TC.

P727

Left ventricular circumferential and radial two-dimensional strain analysis in patients with hypertrophic cardiomyopathy: Correlation with cardiovascular events

RIM Ben Said,¹ AMIRA Zaroui,¹ S Smaali,¹ M Ben Halima,¹ N Khedher,¹ A Farhati¹ and MS Mourali¹

¹La Rabta hospital, cardiology, Tunis, Tunisia

Introduction and aims: Hypertrophic cardiomyopathy (HCM) is the first cause of sudden cardiac death in young people and its frequency is probably more than 1/500. Stratifying this risk is a major issue in the management of HCM. Existing risk factors have low positive predictive value and new parameters are needed. Determination of myocardial deformation (strain) by 2D Speckle tracking is a new methodology for determining LV regional function and could correlate with myocyte disarray and fibrosis. The aim of this study was to assess the relationship between the left ventricular circumferential and radial strain analysis and the occurrence of a major adverse cardiac event (MACE) in HCM subjects.

Methods: 105 patients with HCM were studied and compared to 30 age-matched controls. All underwent standard echocardiographic and two-dimensional strain examination with the evaluation of left ventricle (LV) longitudinal

strain (GLS), radial strain (RS) and circumferential strain (CS) Echocardiographic parameters were correlated with MACE defined as congestive heart failure, atrial fibrillation, syncope, non sustained ventricular tachycardia, during a mean follow-up period of 22 ± 6 months.

Results: The mean age was 49 years old. Despite apparently normal left ventricular function, all components of strain were significantly reduced in HCM. The average of circumferential, and radial strain in patients with HCM and controls were $-12.83 \pm 7.55\%$ Vs $-19.6 \pm 5.2\%$ for CS and $22.33 \pm 9.63\%$ Vs $36.8 \pm 17.2\%$ for RS. During the follow up, 26 patients (24.7%) had cardiac events. Radial and circumferential myocardial deformation values were significantly lower in HCM subjects with MACE than in those without MACE ($18.51 \pm 9.03\%$ Vs $24.64 \pm 9.48\%$ for RS) and ($-10.63 \pm 6.73\%$ Vs $-14.10 \pm 7.82\%$ for CS). In multivariate analysis, SC and SR were independent predictors of cardiovascular events : a cutoff of 20% for the RS predicted cardiovascular events with 67% sensitivity and 61% specificity (odds ratio 3.11, 95% CI 0.021-5.59, $P = 0.01$. : a cutoff of -19% for the CS predicted cardiovascular events with 70% sensitivity and 66% specificity (odds ratio 9.18, 95% CI 0.021-3.2, $P = 0.006$. By Kaplan–Meier analysis, MACE were more frequent in HCM subjects with RS values $< 20\%$ ($p = 0.01$) and with CS $\geq -19\%$ ($p = 0.01$) during the observation period.

Conclusion: Two-dimensional strain is a new simple, rapid, and reproducible method to measure different components of systolic strain in HCM patients with normal chamber function .It might provide useful information on myocardial fibrosis and cardiac events and consequently can indicate a poor prognostic.

P728

Predictors of atrial fibrillation in takotsubo cardiomyopathy: multicentre study

S Leao,¹ N Marques,² C Lourenco,³ K Domingues,⁴ AR Almeida,⁵ B Marmelo,⁶ J Almeida,⁷ B Picarra,⁸ R Lima⁹ and O Azevedo¹⁰

¹Hospital Center of Tras-os-Montes and Alto Douro, Cardiology, Vila Real, Portugal ²Faro Hospital, Faro, Portugal ³Hospital Centre do Tamega e Sousa, Penafiel, Portugal ⁴Hospital of Santarem, Santarem, Portugal ⁵Hospital Garcia de Orta, Almada, Portugal ⁶Hospital Sao Teotonio, Viseu, Portugal ⁷Hospital Center of Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal ⁸Hospital Espirito Santo de Evora, Evora, Portugal ⁹Centro Hospitalar do Alto Minho, Viana do Castelo, Portugal ¹⁰Alto Ave Hospital Center, Guimaraes, Portugal

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

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

Methods: A multicentre study involving 12 hospitals with inclusion of all patients diagnosed with TC in the last 10 years. We evaluated demographic, clinical, electrocardiographic and echocardiographic data. We determined the factors that were associated with the occurrence of atrial fibrillation. Multivariate analysis was performed to establish the independent predictors of AF in patients with TC.

Results: We included 165 patients with TC. During hospitalization the occurrence of AF was recorded in 7.9% of cases. Other complications: heart failure (28.5%), cardiogenic shock (9.7%), acute pulmonary edema (3.6%), complete atrioventricular block (2.4%), ventricular tachycardia (2.4%), stroke / TIA (1.8%), LV thrombus (1.8%) and death (1.4%). In patients with TC the factors associated with the in-hospital occurrence of AF were hypertension (92.3% vs 63.8%, $p = 0.037$), chronic renal failure (23.1% vs 4.6%, $p = 0.007$), the absence of a precipitating factor (61.8% vs 30.8%, $p = 0.029$), and the presence of right branch bundle block (RBBB) (15.4% vs 2.0%, $p = 0.007$), RBBB + left anterior fascicular block (LAFB) (7.7% vs 0.7%, $p = 0.026$) or long QT (30.8% vs 8.6%, $p = 0.011$) in the initial ECG. In multivariate analysis, the following factors were independent predictors of in-hospital AF: the presence of RBBB ($p = 0.047$), RBBB + LAFB ($p = 0.047$) or long QT ($p = 0.010$) in the initial ECG.

Conclusion: TC has a high rate of complications in the acute phase, with AF being one of the most prevalent. AF in patients with TC is associated with the existence of hypertension, chronic renal failure, the absence of a precipitating factor, the presence of RBBB, RBBB + LAFB or long QT on initial ECG. The presence of RBBB, RBBB + LAFB and long QT were identified in our study as predictors of AF in TC.

P729

Do patients with Takotsubo cardiomyopathy presenting with ST-segment elevation in the ECG have a poorer prognosis? A Portuguese multicentre study

B F Lourenco Marmelo,¹ I Cruz,² D Bento,³
K Domingues,⁴ C Lourenco,⁵ L Teles,⁶ P Magalhaes,⁷
B Picarra,⁸ E Correia¹ and O Azevedo⁹

¹Centro Hospitalar Tondela-Viseu, Viseu, Portugal ²Hospital Garcia de Orta, Almada, Portugal ³Centro Hospitalar do Algarve, Faro, Portugal ⁴Hospital of Santarem, Santarem, Portugal ⁵Hospital Centre do Tamega e Sousa, Penafiel, Portugal ⁶Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal ⁷Hospital Center of Tras-os-Montes and Alto Douro, Vila Real, Portugal ⁸Hospital Espírito Santo de Evora, Evora, Portugal ⁹Alto Ave Hospital Center, Guimaraes, Portugal

Introduction: Takotsubo cardiomyopathy (TC) is characterized by a transient dysfunction of the left ventricle (LV). TC may in some cases simulate an acute ST-segment elevation myocardial infarction. Little is known about the prognostic implications of this form of presentation of TC.

Aim: Evaluate if patients with TC presenting with ST-segment elevation in the ECG have a worse prognosis during hospitalization or medium term follow up.

Methods: Multicenter study involving 12 hospitals including all TC patients diagnosed with the last 10 years. We evaluated demographic, clinical, electrocardiographic and echocardiographic data. We compared the in-hospital and medium term prognosis of TC patients with and without ST segment elevation on admission ECG.

Results: We included 165 patients with TC, predominantly women (89.1%). The mean age was 66 ± 14 years. Mean follow up was 41 ± 31 months.

The admission ECG showed ST segment elevation in 44.8% and negative T waves in 37.6% of the cases.

ST segment elevation in the initial ECG was associated with a higher rate of stroke during hospitalization (4.1% vs 0%, $p = 0.043$). However it was not associated with the occurrence of atrial fibrillation (9.5% vs 6.6%, $p = 0.0497$), ventricular tachycardia (2.7% vs 2.2%, $p = 0.834$), complete atrioventricular block (4.1% vs 1.1%, $p = 0.220$), LV thrombus (1.4% vs 2.2%, $p = 0.686$), heart failure (28.4% vs 28.6%, $p = 0.978$) or in-hospital death (2.7% vs 0%, $p = 0.117$).

ST segment elevation in the initial ECG was not associated with death (2.8% vs 1.1%, $p = 0.428$), stroke / TIA (4.2% vs 2.2%, $p = 0.469$) or TC recurrence (2.8% vs 5.5%, $p = 0.396$) in medium term follow-up.

Conclusions: ST segment elevation in the initial ECG was associated with a higher rate of stroke during hospitalization. In our study, TC presentation with ST-segment elevation was not associated with a worse medium term prognosis.

P730

Radial and Circumferential left ventricular Strain analysis in hypertrophic cardiomyopathy

RIM Ben Said,¹ AMIRA Zaroui,¹ S Smaali,¹ M Ben Halima,¹
N Khedher,¹ A Farhati¹ and MS Mourali¹

¹La Rabta hospital, cardiology, Tunis, Tunisia

Introduction and aims: Hypertrophic cardiomyopathy (HCM) is a genetic disorder characterized by left-ventricular (LV) hypertrophy and myocardial disarray. Abnormalities in diastolic function have been well characterized; however,

abnormal systolic function in the early stages has not been clearly demonstrated. Determination of myocardial deformation by two-dimensional (2D) speckle tracking echocardiography (STE) is a new method for evaluating LV regional function and has been proposed as a sensitive tool to detect early systolic function abnormalities in patients with HCM. The aim of this study was to characterize global and regional LV systolic function abnormalities using 2DSTE in HCM patients.

Methods and results: We prospectively enrolled 105 consecutive patients with HCM and 65 normal subjects matched for age and gender. All underwent standard echocardiographic and two-dimensional strain examination with the evaluation of LV global longitudinal Strain (GLS) in apical views; Radial Strain (RS) and Circumferential Strain (CS) in parasternal short-axis view.

The mean age was 49.29 ± 16.7 years with 71.2% of men. Despite apparently normal left ventricular function (Ejection Fraction was $60 \pm 4.33\%$), all components of strain were significantly reduced in HCM: GLS was significantly lower in patients with HCM compared to controls ($-13.81 \pm 6.19\%$ Vs $-21.85 \pm 1.46\%$; $p < 0.01$). CS was also reduced in HCM patients ($-12.83 \pm 7.55\%$ Vs $-19.6 \pm 5.2\%$; $p < 0.01$) as well as the RS ($22.33 \pm 9.63\%$ Vs $36.8 \pm 17.2\%$; $p < 0.01$). We observed an increase in longitudinal strain from base to apex in patients with HCM: basal longitudinal strain was significantly lower than apical ($-11.50 \pm 5.70\%$ Vs $-21.50 \pm 8.10\%$; $p < 0.01$).

Conclusion: Two-dimensional strain is a new simple, rapid, and reproducible method to measure different components of myocardial contraction in HCM patients with normal chamber function. Myocardial deformation was found to be significantly reduced despite normal LV function as assessed by standard criteria, underlining the diffuse nature of the disease and suggesting the presence of a global subclinical systolic dysfunction.

P731

Tako-Tsubo syndrome: value of cardiac magnetic resonance in diagnostic confirmation

M J Corbi-Pascual,¹ J Navarro-Cuartero,¹ D Prieto-Mateos,¹ J G Cordoba-Soriano,¹ M I Barrionuevo-Sanchez,¹ C Llanos-Guerrero,¹ G Gallego-Sanchez,¹ C Ramirez-Guijarro,¹ J Jimenez-Mazuecos¹ and C Lafuente-Gormaz¹

¹Albacete. University General Hospital, Albacete, Spain

Introduction: Tako-Tsubo syndrome (TS) is a reversible cardiomyopathy that can mimic clinical acute myocardial infarction, and it is included in the stress cardiomyopathy group. Many patients are discharged from hospital with a suspected diagnosis that requires later confirmation by normalization of myocardial dysfunction following the

criteria of the Mayo Clinic. Cardiac magnetic resonance imaging (MRI) may have added value in diagnosis.

Objective: To analyze the value of the MRI as a diagnostic tool in those patients (p) with solid suspected diagnosis of TS.

Methods: we analyze all discharged patients since January 2009 to April 2015 with diagnosis code 429,83 (TS, CIE-9-MC) included.

Results: Fifty-four p were included, 60% had a main diagnosis of TS and 40% were categorized as infarction/ chest pain with normal coronary arteries and TS was a secondary diagnosis. The mean age was 69 years, 85% female and 52% presented clear cause stressful (mainly psychological). Hypertension was the cardiovascular risk factor more prevalent with 76%, 22% were DM, 40% dyslipidemia, 3,7% had a history of ischemic heart disease, and 25% were hypothyroidism. 22% were presented as Killip III or IV. Emergency coronary angiography was performed for suspected STEMI in 25% of p and 89% p had normal coronary arteries. The mean values of biomarkers were: CK 266, TnT 502. At discharge more than 96% of patients treated with beta blockers, ACE inhibitors/ ARBs, statins and aspirin. Only 6% of patients required vasoactive support during admission. ECG showed during the course of admission negative T waves in precordial leads in 85% of p. 93% p had apical dyskinesia and the remaining 7% had midventricular dyskinesia. At follow-up, the diagnosis of TS was confirmed in 94% of cases following the criteria of the Mayo Clinic. However, using the MRI confirmed in 81,5% (13% AMI and 5,5% myocarditis). Two patients died of non-cardiac causes during follow-up, and two had a CV event (ACS and an episode of heart failure) occurred at a mean of 4 years.

Conclusions: More than 90% of p the diagnosis was confirmed during follow-up according to the diagnostic criteria of Mayo Clinic. However, using MRI as discriminator the diagnostic rate decreases because approximately 20% are reclassified in other diagnoses. MRI is essential for the correct diagnosis of these p, because with only the criterion of improvement in LVEF were included as TS patients with other pathologies, with prognostic implications and long-term treatment that entails.

Non invasive imaging - Echocardiography, CMR, CT and Nuclear Techniques

P732

Diagnostic value of myocardial hypoenhancement in patients with unstable angina and non-ST segment elevation myocardial infarction

N Barysheva,¹ IN Merkulova,¹ MS Shabanova,¹ SA Gaman,¹ TN Veselova,¹ TS Sukhinina¹ and MA Shariya¹

¹Russian Cardiology Research and Production Complex, Emergency cardiology, Moscow, Russian Federation

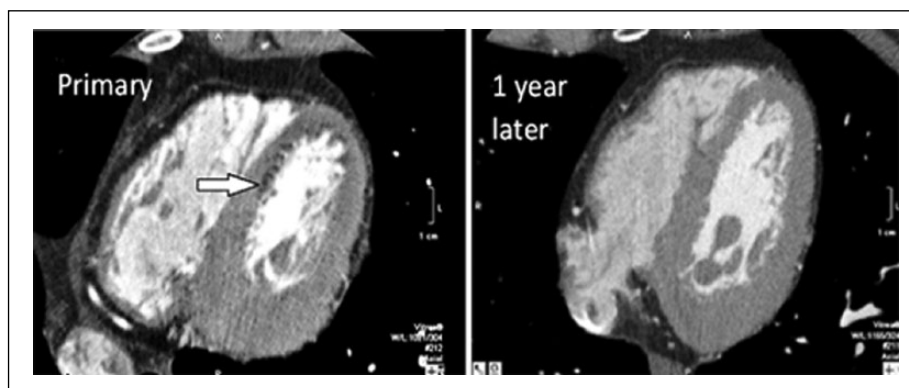
Purpose: To investigate the value of myocardial hypoenhancement by multidetector spiral computed tomography (MDCT) in patients with unstable angina (UA) and non-ST segment elevation myocardial infarction (NSTEMI).

Methods: We enrolled in the study 43 patients with primary non-ST segment elevation acute coronary syndrome, including 21 patients with NSTEMI and 22 – with UA. MDCT was performed before invasive coronarography and revascularization using 64-slice CT scanner (Aquilion, Toshiba, Japan; gantry rotation time 400 ms; 64 x 0.5 mm detector collimation, retrospective ECG gating). Myocardial hypoenhancement area (MHA) was revealed by

MDCT during diastolic phase and in all cases corresponded to symptom-related artery region.

Results: MHAs were found in most patients with NSTEMI (85,7%) and only a few patients with UA (13,6%). In the patients with NSTEMI MHAs were interpreted as image of myocardial damage. Patients with unstable angina and myocardial hypoenhancement (n=4) underwent MDCT in more than 1 year after revascularization. In 2 patients MHAs disappeared as shown in Figure 1 and in 1 patient it decreased in size. In these cases MHA, probably, represent myocardial ischemia, whereas in the remaining patient it represent undiagnosed NSTEMI, because MHA was unchanged.

Conclusions: revealed by MDCT myocardial hypoenhancement areas represent not only myocardium infarction, but also ischemia, if it disappeared after revascularization.



Disappearance of “ischemic” MHA.

P733

Computed tomography characteristics of coronary lesions, subsequently resulting in adverse cardiac events

N Barysheva,¹ IN Merkulova,¹ MS Shabanova,¹ SA Gaman,¹ TN Veselova,¹ TS Sukhinina¹ and MA Shariya¹

¹Russian Cardiology Research and Production Complex, Emergency cardiology, Moscow, Russian Federation

Purpose: To estimate characteristics of coronary atherosclerotic lesions, associated with development of major adverse cardiovascular events (MACE).

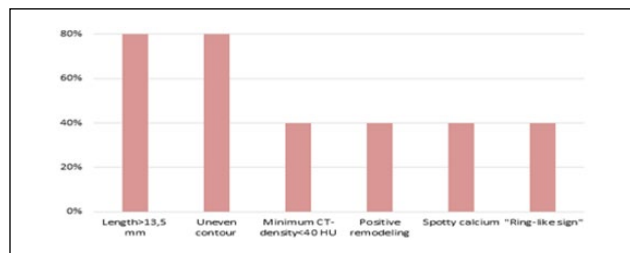
Methods: The study group consisted of 68 patients with non-ST segment elevation acute coronary syndrome (NSTE-ACS), including 47 patients with unstable angina and 21 patients with myocardial infarction, who underwent computed tomography coronary angiography (CTCA) before conventional coronary angiography. CTCA was performed using CT scanner with 64 detector rows (Aquilion, Toshiba, Japan; gantry rotation time 400 ms;

64 x 0.5 mm detector collimation, retrospective ECG gating, intravenous administration of 100-150 mg of non-ionic iodinated contrast agent). All patients were followed up to occurrence of MACE (cardiac death, nonfatal myocardial infarction, unstable angina or coronary revascularization). CTCA analysis included estimation of lumen stenosis, plaque's type (soft, mixed and calcified) and CT-signs of vulnerability, such as minimum CT density < 40 (HU), length > 13,5 mm, presence of uneven contour, spotty calcium, “ring-like sign” and positive remodeling.

Results: During a follow-up period (12,6±2,3 months) 68 patients had 8 MACE (11,8%): 1 cardiac death, 6 unstable angina and 1 stress-test induced ischemia. All patients besides died one (n=7) were underwent coronary revascularization. Among the coronary lesions, caused the development of adverse events (n=5), more than half were soft (60%) and had 50-70% stenosis (60%). The incidence of all instability signs is presented in Figure 1.

Conclusions: most coronary lesions responsible for follow up MACE had mild stenosis (50-70%), but several signs of

unstability, such as length > 13.5 mm, uneven contour and “soft type” plaque.



The prevalence of instability signs.

P734

Assessment of natural changes in plaque composition by multidetector computed tomography.

N Barysheva,¹ IN Merkulova,¹ MS Shabanova,¹ SA Gaman,¹ TN Veselova,¹ TS Sukhinina¹ and MA Shariya¹

¹Russian Cardiology Research and Production Complex, Emergency cardiology, Moscow, Russian Federation

Purpose: to analyze progression of coronary atherosclerosis and changes in plaque composition and morphology in more than 1 year using 64-slice multidetector computed tomography (MDCT).

Methods: We enrolled in the study 19 patients with non-ST segment elevation acute coronary syndrome (NSTE-ACS), who underwent computed tomography coronary angiography (CTCA) using CT scanner with 64 detector rows (Aquilion, Toshiba, Japan; intravenous administration of 100-150 mg of non-ionic iodinated contrast agent). CTCA was performed in 1-3 days after ACS onset and 13,5 ± 3,2 months later. We analyzed changes in coronary lesions average density, length, lumen stenosis and CT-signs of plaque's vulnerability, such as presence of uneven contour, spotty calcium, “ring-like sign” and positive remodeling. The change was considered essential, if the degree of stenosis increased or decreased by 10% or more, average density increased or decreased by 10 HU or more, and length – by 3 mm or more. All patients received statins therapy.

Results: We compared 45 plaques at baseline and after 13,5 ± 3,2 months. The average plaque's density was the most “dynamic index”, which have essentially changed in 35 (77,8%) cases. In the majority of them, that consisted 48,9% of all plaques, average density significantly decreased (p=0,03). Other quantitative CT-characteristics have changed more rarely: the degree of stenosis in 24,4% cases and the length in 15,5%. The appearance or disappearance of plaque's unstability qualitative CT-signs is always combined with changes in the quantitative plaque's characteristics and reflects the basic trend of its changes (“stabilization” or “destabilization”). All changes

were insignificant (p>0,05). In addition our data revealed a significant correlation between the target LDL level achievement and decrease in the number of plaques with an uneven contour (r = 0,57, p <0,05). A more intensive lipid-lowering therapy resulted in a greater reduction in the length of plaques (r = 0,46, p <0,05).

Conclusions: CT quantitative and qualitative characteristics of plaque's structure in patients with NSTE-ACS haven't significantly changed during 13,5 months, besides of plaque's average density decreasing in 48,9% cases (p=0,03). Statins therapy and lipid profile normalization positively affect structural plaque's changes, resulting in a reduction in the length and number of vulnerability's signs.

P735

The myocardial contractility and hibernation in patients with acute coronary syndrome: value of ivabradine

GAYANE Chngryan,¹ TM Solomenchuk,¹ NA Slaba¹ and VV Protsko¹

¹Lviv national medical university n.a. Danylo Halytsky, Lviv, Ukraine

Purpose: To study the dynamics of global and regional myocardial contractility of the left ventricle (LV) in patients with acute coronary syndrome (ACS) with hibernation (viable) and non- hibernated (non-viable) myocardium during treatment with ivabradine.

Materials and Methods: The study involved 59 patients with unstable angina. Patients were randomized into 2 groups: the I group - 27 patients with viable myocardium (mean age 61.94 ± 2.39), the II group - 32 patients with non-viable myocardium (mean age 63.09 ± 2.24). Myocardial viability was improved. LV ejection fraction (EF) improvement of ≥ 5% between the first observation and 14 day was observed. We studied the dynamics of LVEF and LV regional myocardial contractility: wall motion score index (WMSI) and the degree of local contractility (DLC). Depending on the ivabradine administration (5 mg 2 times a day), patients in each group were divided into two groups - A and B patients subgroups: I A (n = 12) and II A (n = 15) against the standard therapy received additional ivabradine, and in subgroups of patients I B (n = 17) and II B (n = 15) – did not receive this drug.

Results: Echocardiography in the 14th day showed in the subgroup I A increase in LVEF by 22.56% (from 38.32 ± 1.68% to 49.48 ± 1.49%, p <0.05) in subjects of I B subgroups - by 15.25% (from 36.48 ± 1.27% to 43.04 ± 1.18%, p <0.05). DLC decreased in subgroup IA by 23.31% (from 1.33 ± 0.09 to 1.02 ± 0.17, p <0.001) in subgroup I B - by 2.82% (from 1.42 ± 0,11 to 1.38 ± 0.09, p <0.05). In the I A subgroup of patients the WMSI decreased by 16.77% (from 1.67 ± 0.06 to 1.39 ± 0.05, p <0.001) in the subgroup I B by – 8.48% (1.77 ± 0.08 to 1.62 ± 0.07, p <0.001). In

particular, LV EF in patients of subgroup II A tends to a certain height (about 2% of $40.03 \pm 2.62\%$ to $40.83 \pm 2.38\%$, $p > 0.05$), while as subgroup II B – regression was registered (from $39.24 \pm 2.03\%$ to $38.87 \pm 1.22\%$, $p > 0.05$). In the subgroup II A significant decrease in DLC was observed by 9.70% (from 1.65 ± 0.18 to 1.49 ± 0.14 , $p < 0.001$) and WMSI - by 8.84% ($p < 0.001$), and in the subgroup II substantial increase of the DLC was observed by 13.7% ($p < 0.05$) and WMSI - by 14.52% (from 1.59 ± 0.15 points to 1.86 ± 0.12 points, $p < 0.05$).

Conclusions: Addition of 10 mg of ivabradine to standard therapy significantly improves global and regional LV myocardial contractility, especially in patients with myocardial hibernation. In patients with no myocardial hibernation ivabradine contributes to maintaining its regional contractility, and if untreated – to the deterioration of regional LV contractility.

P736

Relationship of diastolic function and maximal exercise capacity among patients with low risk for coronary artery disease: a retrospective cross-sectional study

MT Bayuga¹ and RE Ramboyoung¹

¹The Medical City, Department of Internal Medicine, Section of Cardiology, Pasig, Philippines

Background: There is a significant correlation between exercise capacity and diastolic function parameters in patients at high cardiovascular risk and with proven cardiovascular diseases. This study aims to determine the relationship of diastolic function and maximal exercise capacity among patients with low risk for CAD.

Methods: 189 patients were retrospectively studied who underwent stress echocardiography from September 2013 until February 2014 at The Medical City. They were divided into two groups according to their exercise capacity (METs). Group 1 with MET < 7 and Group 2 with $= / > 7$ MET. Diastolic variables were mitral inflow velocities, early diastolic velocity (E), late diastolic velocity (A), E/A ratio, E' wave velocity, E/E' ratio, isovolumetric relaxation time and left atrial volume index.

Results: Among 189 patients, mean age was 45.7 ± 8.68 and mostly were male. Normal diastolic function was observed in 67%; 30% showed grade 1 diastolic dysfunction and 3% showed grade 2 diastolic dysfunction. 16% had increased filling pressures. Clinical parameters that correlated with a low functional capacity were female gender (p -value: 0.003), age (p -value: 0.006), dyslipidemia (p -value: 0.026), family history of heart disease (p -value: 0.002) and a positive treadmill exercise stress echocardiography (p -value: 0.022). In relation to the echocardiographic

parameters, A wave velocity (p -value: 0.000), E/A ratio of the mitral flow (p -value: 0.002), E' wave velocity of the mitral annulus (p -value: 0.001) and the E/E' ratio (p -value: 0.007) were associated with MET < 7 . The comparative analysis of the MET < 7 and MET $= / > 7$ groups in relation to the presence of increased filling pressures (E/E' $= / > 10$), 25.4% of patients with normal functional capacity and 50% with low functional capacity had impaired left ventricular filling pressure.

Conclusion: Diastolic dysfunction by echocardiography is associated with a low exercise capacity even among patients with low risk for coronary artery disease.

P737

Total isovolumic time and the systo-diastolic interaction in cardiothoracic ICU.

G Tavazzi,¹ A Barradas-Pires,² A Duncan,³ D Gibson³ and S Price⁴

¹University of Pavia, Foundation IRCCS Policlinico San Matteo 1st Department of Intensive Care, Pavia, Italy ²Autonomous University of Barcelona, Cardiology Unit, Barcelona, Spain ³Royal Brompton Hospital, Cardiology Unit, London, United Kingdom ⁴Adult Intensive Care Unit, Royal Brompton & Harefield NHS Foundation Trust, London, United Kingdom

The nature of LV dysfunction in the critically ill is poorly understood and some of the echocardiographic indices normally used are less reliable. Prolongation of isovolumic time is affected by a decline in the rate of rise&fall of ventricular pressure. Such changes are the result of some myocardial abnormality, leading to a uniform change in the rate of tension development or to the presence of incoordination.

Methods: Analysis of retrospectively collected data in cardiothoracic ICU patients admitted undertaking echocardiography was performed. Echo data included evaluation of LV/RV systolic & diastolic function including Doppler assessment of isovolumic contraction/relaxation, ejection time (ET)&filling time (FT). tIVT was calculated as $[60 - (\text{total ET} + \text{total FT})]$; the normal cut-off is ≤ 14 s/min. Data are shown as mean \pm SD.

Results: 131 patients (age 59 ± 18.3 ; 61.3 % male; APACHE II 15 ± 7.1), 41% admitted for respiratory failure and 59% for hemodynamic reasons. Results are shown in table 1. t-IVT > 14 s/m was present in 26.7 % of the patients (60% cardiac and 40% respiratory) correlating to QRS in cardiac patients and MR duration, septal and lateral MAPSE in both groups. Only cardiac patients showed a positive correlation between the classic indices of diastolic dysfunction (E/A, E Dec Time, lateral and septal E') and t-IVT > 14 s/m; a weak correlation was found with SV (OR 0.90427 p 0.05) No correlation was found between Ejection Fraction and all the other variables tested.

Conclusion: Long t-IVT is common in cardiothoracic ICU, it is related to systolic longitudinal impairment and diastolic dysfunction regardless the EF. The previous findings on the relation between a longer t-IVT and limited SV

was confirmed. In the lights of those results and the previous findings (1), t-IVT may be considered a sensible index of LV systo-diastolic interaction and electro-mechanics efficacy.

Table 1.

	Cardiac Patient (OR) p [95% CI]	Respiratory patients (OR) p [95% CI]
QRS	(1.01) 0.003 [1–1.02]	(0.99) 0.8 [0.92 – 1.06]
MAPSE lateral	(3.9e–06) 0.000 [6.7e–09 – 0.002]	(5.4e–09) 0.01 [2.28e–15 – 0.01]
MAPSE septal	(2.2e–04) 0.000 [3.5e–06 – 0.01]	(3.8e–03) 0.002 [2.79e–06 – 0.05]
E/A	(0.48) 0.34 [0.1 – 2.2]	(–4.1) 0.015 [–7.5 – –0.8]
MR duration	(1.01) 0.007 [1.005 – 1.03]	(1.22) 0.0001 [0.004 – 0.05]

MAPSE- mitral annular plane systolic excursion.

P738

Myocardial infarction and non-obstructed coronary arteries: the incremental value of cardiac magnetic resonance

J Lujan Valencia,¹ PCP Pedro Caravaca Perez,¹ MCM Marinela Chaparro Munoz,¹ AGG Alberto Garcia Guerrero,¹ MBC Michel Butron Calderon,¹ KMR Kristel Medina Rodriguez,¹ EBP Emilia Blanco Ponce,¹ ARD Ana Ruiz Duthil¹ and ARM Alejandro Recio Mayoral¹

¹Virgen Macarena University Hospital, Sevilla, Sevilla, Spain

Introduction and Objectives: Myocardial infarction with no obstructive coronary atherosclerosis (MINOCA), namely clinical evidence of MI with normal or near normal-coronary arteries on angiography (stenosis severity <50%) ranges between 5-25% of acute coronary syndrome (ASC). Cardiac magnetic resonance (CMR) imaging has the potential to clarify the underlying pathology in patients with MINOCA. We aimed to study the incremental value of CMR in MINOCA patients.

Methods: Patients with MINOCA diagnosis were consecutively included. All patients had a typical clinical presentation, fulfilling the universal definition of myocardial infarction and had normal or nearly normal coronary angiography finding. By using a CMR scan, cine and delayed enhancement images were assessed to achieve the final diagnosis.

Results: In total, 69 patients with MINOCA (mean age 56 ±15 years; 62 % female) were screened. Cardiac biomarkers showed a moderate elevation on admission (median troponin-T ultra-sensitivity serum level 747ng/l [339-1300]). The median time to the realization of CMR was 11 ± 9,7 days. The delayed enhancement was present in 44 (63,8%) patients. Major diagnostic groups were myocarditis (32,2%), takotsubo cardiomyopathy (26,1%) and acute myocardial infarction (20,3%). A 10% were regarded as non-diagnostic.

CMR scan provided incremental prognostic value for definite diagnostic, assuming a change in treatment in 32.2% of MINOCA patients

Conclusions: The study results suggest that the evaluation of MINOCA patients should be complemented by a CMR examination, because the incremental prognostic value and guided treatment.

P739

Cardioembolic profile in patients with ischemic stroke: clinical and echocardiographic findings

M Rodrigues Neto,¹ R Rodrigues,¹ A Correia,¹ A Spinola,² M Rodrigues,³ E Henriques,³ M Gomes Serrao,¹ R Freitas,² A Drumond Freitas¹ and D Pereira¹

¹Hospital Dr. Nélio Mendonça, Cardiology, Funchal, Portugal ²Hospital Dr. Nélio Mendonça, Internal Medicine, Funchal, Portugal ³Hospital Dr. Nélio Mendonça, Funchal, Portugal

Background: Nowadays, the proportion of patients with cardioembolic stroke is increasing and because of their worse prognosis, a prompt identification of these patients is essential.

Purpose: In this study we aimed at defining a clinical and echocardiographic profile able to distinguish cardioembolic from noncardioembolic stroke subgroups.

Methods: Retrospective analysis of prospective collected data of 184 consecutive patients, admitted with an ischemic stroke, in our Cerebrovascular Disease Unit, between February 2013 and September 2014. They were divided in 2 groups, according to its etiology: 1) patients with cardioembolic stroke (n=44; 23.9%) and 2) patients with non-cardioembolic stroke (n=140; 76.1%). We compared them regarding their clinical and echocardiographic profile.

Results: Regarding baseline characteristics group 1 was older (1: 72.8 ± 12.5 years vs 2: 62.42±13.85 years, p<0.001), had more history of previous atrial fibrillation (1: 40.9% vs 2: 3.6%, p<0.001) and less of smoking habits (1: 4.5% vs 2: 19.3%, p=0.019) or dyslipidemia (1: 15.9% vs 37.9%, p=0.007) There were no differences between groups in relation to gender, body mass index nor to other traditional cardiovascular risk factors. At both admission

and discharge, group 1 presented with a worse neurologic deficit evaluated by NIHSS scale (1: 9 and 4.5 points vs 2: 4 and 2 points, $p < 0.004$ and < 0.05 , respectively). During hospitalization, echocardiographic evaluation showed a higher prevalence of dilated left (1: 86.4% vs 2: 48.0%, $p < 0.001$) and right atrium (1: 54.8% vs 2: 9.5%, $p < 0.001$) and more pulmonary hypertension (1: 47.6% vs 21.2%, $p < 0.001$).

Conclusion: In our study, patients with cardioembolic disease were older, had previous history of atrial fibrillation and showed a higher prevalence of pulmonary hypertension. These clinical findings might be useful in identifying patients at higher risk for stroke due to undetected atrial fibrillation.

Risk Stratification

P740

Rationale and design of The POP-HT study: Development and validation of a risk scoring model to predict net adverse cardiovascular outcomes after CABS in patients with hypertension

P Mitrovic,¹ B Stefanovic,¹ M Radovanovic,¹ N Radovanovic,¹ D Rajic,¹ G Matic,¹ R Lasica,¹ A Novakovic,¹ N Mijic¹ and Z Vasiljevic¹

¹University Institute for Cardiovascular Diseases, CCS, School of Medicine, University of Belgrade, Belgrade, Serbia

The patients with coronary artery bypass surgery (CABS) have physiological changes in coronary artery structure. In these patients, risk factors for coronary artery disease have different influence of new coronary events expression, than in patients without CABS. The prognosis of patients after coronary artery CABS has been noted in many studies, but there were no comprehensive hypertension (HT) risk model to predict net adverse cardiovascular events (NACE) after CABS. The primary hypothesis of the POP-HT study (PostOperative Prognosis-HyperTension study) is that an accurate risk prediction may be achieved by using clinical, angiographic, and procedural variables available 30-day after intervention.

The present single-center, longitudinal, cohort study will include 3082 consecutive patients with hypertension, undergoing CABS. The primary end-points of the trial (NACE) include major adverse cardiovascular events (MACE). A logistic regression model will be developed to predict 30-day, 1-year, 5-year, 10-year, 15-year and 20-year NACE after CABS. A risk score derived from study set data will be validated using validation set data.

Until April 1, 1988, 2988 patients have been enrolled. Thirty-day follow-up is available in 2916 patients, 1-year in 2832 patients, 5-year in 2610 patients, 10-year in 2444 patients, 15-year in 2110 patients and 20-year in 1844 patients.

Conclusions: The POP-HT study is designed to develop an accurate risk scoring system, using variables available 30-day after CABS, to predict long-term adverse outcomes in patients with hypertension.

P741

The POP-HT score for prediction of acute myocardial infarction expression in hypertensive patients after coronary artery bypass surgery; A substudy of the POP-HT study

P Mitrovic,¹ B Stefanovic,¹ M Radovanovic,¹ N Radovanovic,¹ D Rajic,¹ G Matic,¹ R Lasica,¹ A Novakovic,¹ N Mijic¹ and Z Vasiljevic¹

¹University Institute for Cardiovascular Diseases, CCS, School of Medicine, University of Belgrade, Belgrade, Serbia

It is well known that patients with coronary artery bypass surgery (CABS) have physiological changes in coronary artery structure. In these patients, risk factors for coronary artery disease have different influence of new coronary events expression, than in patients without CABS. Acute myocardial infarction (AMI) is one of the most important major adverse cardiovascular events (MACE) in patients after previous CABS. This substudy aimed at evaluating the usefulness of the POP-HT score (PostOperative Prognosis-HyperTension score), originally developed for the prediction of 60-day, 1-year, 5-year, 10-year, 15-year and 20-year MACE, after CABS in patients with hypertension (HT).

From April 1988, we analyzed 2018 consecutive patients with HT who underwent CABS. Expression of AMI was the predefined end point. Models discrimination and calibration to predict AMI was tested using receiver-operating characteristics curves and the goodness-of-fit (GoF) test. Sensitivity analyses and 1000-resample bootstrapping were used to evaluate the model's performance. The rate of AMI was 32.7 %, respectively. Compared with controls, the cumulative AMI group was associated with much higher rates of adverse clinical outcomes at 60-day follow-up (adjusted odds ratio (OR) for death 7.20), at 1-year follow-up (adjusted OR for death 7.36), at 5-year follow-up (adjusted OR for death 7.64), at 10-year follow-up (adjusted OR for death 7.92), at 15-year follow-up (adjusted OR for death 8.24) and at 20-year follow-up (adjusted OR for death 8.30). Internal validation confirmed a reasonably good discrimination and calibration of the POP-HT score for the prediction of AMI

(area under the curve (AUC) 0.66, GoF 0.34), after CABS in patients with HT.

Conclusion: The risk of AIM in patients with HT, after previous CABS, could be accurately assessed using the POP-HT score, which might help in deciding upon measures aimed at preventing adverse prognosis.

P742

Rationale and design of The POP-HT study: Development and validation of a risk scoring model to predict net adverse cardiovascular outcomes after CABS in patients with hypertension

P Mitrovic,¹ B Stefanovic,¹ M Radovanovic,¹ N Radovanovic,¹ D Rajic,¹ G Matic,¹ R Lasica,¹ A Novakovic,¹ N Mijic¹ and Z Vasiljevic¹

¹University Institute for Cardiovasculari Diseases, CCS, School of Medicine, University of Belgrade, Belgrade, Serbia

The patients with coronary artery bypass surgery (CABS) have physiological changes in coronary artery structure. In these patients, presentation of heart failure (HF) has different influence of new coronary events expression, than in patients without CABS. The prognosis of patients after CABS has been noted in many studies, but there were no comprehensive HF risk model to predict net adverse cardiovascular events (NACE) after CABS. The primary hypothesis of the POP-HF study (PostOperative Prognosis-HeartFailure study) is that an accurate risk prediction may be achieved by using clinical, angiographic and procedural variables available 30-day after intervention.

The present single-center, longitudinal, cohort study will include 2467 consecutive patients with HF, undergoing CABS. The primary end-points of the trial (NACE) include major adverse cardiovascular events (MACE). A logistic regression model will be developed to predict 30-day, 1-year, 10-year, 15-year and 20-year NACE after CABS. A risk score derived from study set data will be validate using validation set data.

Until April 1, 1988, 2226 patients have been enrolled. Thirty-day follow-up is available in 2169 patients, 1-year in 1980 patients, 5-year in 1610 patients, 10-year in 1382 patients, 15-year in 1100 patients and 20-year in 1002 patients.

Conclusion: The POP-HF study is designed to develop an accurate risk scoring system, using variables available 30-day after CABS, to predict long-term adverse outcomes in patients with heart failure.

P743

The POP-HF score for prediction of acute myocardial infarction expression in patients with heart failure after coronary artery bypass surgery: A substudy of the POP-HF study

P Mitrovic,¹ B Stefanovic,¹ M Radovanovic,¹ N Radovanovic,¹ D Rajic,¹ G Matic,¹ T Jozic,¹ A Novakovic,¹ N Mijic¹ and Z Vasiljevic¹

¹University Institute for Cardiovasculari Diseases, CCS, School of Medicine, University of Belgrade, Belgrade, Serbia

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From April 1988, we analyzed 1868 consecutive patients with HF who underwent CABS. Expression of AMI was the predefined end point. Models discrimination and calibration to predict AMI was tested using receiver-operating characteristics curves and the goodness-of-fit (GoF) test. Sensitivity analyses and 1000-resample bootstrapping were used to evaluate the model's performance. The rate of AMI was 46.4 %, respectively. Compared with controls, the cumulative AMI group was associated with much higher rates of adverse clinical outcomes at 60-day follow-up (adjusted odds ratio (OR) for death 7.20), at 1-year follow-up (adjusted OR for death 7.28), at 5-year follow-up (adjusted OR for death 7.44), at 10-year follow-up (adjusted OR for death 7.88), at 15-year follow-up (adjusted OR for death 8.16) and at 20-year follow-up (adjusted OR for death 8.28). Internal validation confirmed a reasonably good discrimination and calibration of the POP-HF score for the prediction of AMI (area under the curve (AUC) 0.74, GoF 0.34), after CABS in patients with HF.

Conclusion: The risk of AIM in patients with HF, after previous CABS, could be accurately assessed using the POP-HF score, which might help in deciding upon measures aimed at preventing adverse prognosis.

P744

Rationale and design of The POP-HF study: Development and validation of a risk scoring model to predict net adverse cardiovascular outcomes after CABS in patients with heart failure

P Mitrovic,¹ B Stefanovic,¹ M Radovanovic,¹
N Radovanovic,¹ D Rajic,¹ G Matic,¹ T Jozic,¹
A Novakovic,¹ N Mijic¹ and Z Vasiljevic¹

¹University Institute for Cardiovascular Diseases, CCS, School of Medicine, University of Belgrade, Belgrade, Serbia

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Conclusions: The POP-HF study is designed to develop an accurate risk scoring system, using variables available 30-day after CABS, to predict long-term adverse outcomes in patients with heart failure.

P745

Validation of a new score for predicting the need for mechanical ventilation in patients with acute coronary syndrome

F Francisco Aparicio,¹ C Gonzalez-Matos,¹ L Madrona-Jimenez,¹
E Blanco-Ponce,¹ K Medina-Rodriguez,¹
MA Perez-Rodriguez,¹ A Espinola-Pardo,¹ A Recio-Mayoral,¹
JC Garcia-Rubira¹ and R Hidalgo-Urbano¹

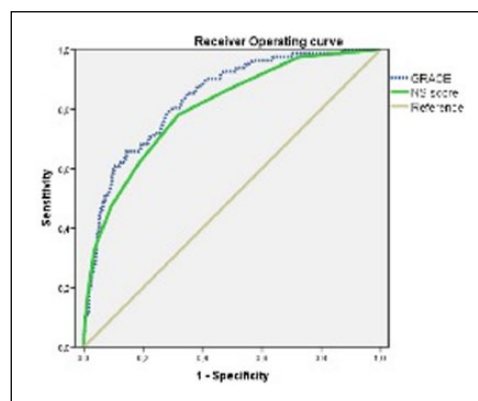
¹University Hospital of Virgen Macarena, Cardiology, Seville, Spain

Purpose: To validate a new clinical score predictor of need for mechanical ventilation (MV) in patients with acute coronary syndrome (ACS).

Methods: A new score (NS) and the GRACE scale were applied to a cohort of patients diagnosed with ACS who were admitted consecutively to our Coronary Unit. The NS score was derived from a previous study with the following variables: diabetes mellitus (1 point), peripheral vascular disease (1 point), diuretic therapy (1 point), age (1 point from 65 to 75 years, 2 points above 75 years), heart rate at admission (1 point between 90-110, 2 points above 110) and Killip class at admission (1, 2, 3 or 4 points from Killip I to IV class). Receiver operating curves to predict the need of MV were obtained for both GRACE and NS scales.

Results: 981 Patients were included, of whom 99 patients required MV. The area under the curve for NS scale was 0.811 (95% confidence interval [CI] 0.764-0.858, $p < 0.001$). The area under the curve for GRACE scale was 0.845 (CI 0.804-0.886, $p < 0.001$).

Conclusions: Both GRACE and NS score are good predictors of the need of MV. The NS score can easily obtained at the first medical contact



P746

Value of electrocardiographic strain pattern in children and adolescents with end stage renal disease

L Maghawry,¹ ALAA E Salama,¹ MNAR M Alzaki,¹
AMR A Atya¹ and DOAA M Tawfek¹

¹Faculty of medicine- Zagazig University, Cardiology and Pediatric departments, Zagazig, Egypt

Purpose: Among several electrocardiographic LVH criteria, LVH strain pattern was implicated as the strongest marker of cardiovascular adverse outcomes. The aim of this work was to investigate the prevalence, clinical relevance and determinants of ECG strain pattern presence in children and adolescents with ESRD

Methods: The study included children and adolescents with ESRD and are undergoing hemodialysis (24 male and 26 female) . They were subjected to laboratory investigations including fasting lipids, serum creatinine , Ca , K , phosphorus, serum albumin, alkaline phosphatase, hemoglobin, pro BNP and parathormone ; standard 12 leads surface electrocardiogram; carotid duplex and echocardiography. They were categorized according to ECG LVH criteria into three groups (group I with no ECG LVH criteria, group II with ECG LVH but no strain & group III with LVH strain pattern).

Results: LVH strain pattern was the commonest ECG presentation of the studied patients irrespective of blood pressure level and it was found to be correlated positively with the occurrence of typical chest pain during dialysis (r 0.34, p 0.003). The prolonged disease duration (p = 0.005), increased LVM (p = 0.007), higher total cholesterol (p < 0.01), lower hemoglobin (p = 0.02) and increased internal carotid velocity (p = 0.05) were the independent variables associated with ECG-LVH strain pattern in the studied patients.

Conclusion: Identification of ECG stain pattern could be helpful in assessing myocardial ischemia risk among children and adolescents with ESRD on HD. In addition, Factors determining ECG strain such as prolonged disease duration, increased LVM, higher total cholesterol, lower hemoglobin and increased internal carotid velocity might be an integral part of management for ESRD patients.

P747

Acute coronary syndromes: 3 decades.. 3 perspectives

A Correia,¹ R Rodrigues,¹ M Neto,¹ B Silva¹ and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Introduction: In recent years we have witnessed an evolution of health resources available to the population and scientific community. New diagnostic means and therapeutic strategies allowed an increase in life expectancy.

Purpose: We aimed to evaluate the clinical profile and prognosis of acute coronary syndromes (ACS) in the elderly population, over 80 years-old, in 3 different periods over the past 3 decades.

Methods: Single-center, retrospective study of 408 consecutive patients, over 80-years old, admitted for ACS in an intensive care cardiac unit. They were divided into 3 groups: between the years of 1989-1993 (Group A: n =91; 42.8% men); between 1999-2003 (Group B: n =159; 38.3% men); and between 2009-2013 (Group C: n =158; 50.0% men). The groups were compared regarding their baseline characteristics, therapeutic procedures and prognosis during in-hospital stay and at 1-year follow-up.

Results: Group C had a lower mortality rate during in-hospital stay (A =33.3% vs B =30.7% vs C =16.7%; p <0.01) and at 1-year follow-up (A =57.8% vs B =53.3% vs C =38.7%; p <0.01). The groups showed no differences regarding gender, age and bone mass index. Group C had more previous history of Diabetes Mellitus (A =13.3% vs B =22.8% vs C =28.7%; p =0.037), dyslipidemia (A =14.7% vs B =34.2% vs C =37.0%; p <0.01) and arterial hypertension (A =57.3% vs B =51.8% vs C =74.7%; p <0.01) while Group A showed more prior angina (A =53.3% vs B =15.8% vs C =26.0%; p <0.01). There were no differences in prior myocardial infarction or coronary artery bypass graft. During hospitalization, group B was more submitted to thrombolysis (A =8.0% vs B =15.8% C =0%; p <0.01) while Group C performed more percutaneous coronary interventions (A =1.3% vs B =4.4% vs C =53.3%; p <0.01). The last was more medicated with aspirin (A =92.0% vs B =77.2% vs C =96.0%; p <0.01) beta-blockers (A =5.3% vs B =14.0% C =29.3%; p <0.01), diuretics (A =56.0% vs B =46.5% vs C =62.0%; p =0.042), ACEi (A =16.0% vs B =0% vs C =62.7%; p <0.01). There were no statistically differences in Killip-class, cardiogenic shock, cardiac arrest or arrhythmias during hospitalization, but Group A had a higher rate of post-infarction angina (A =22.7% vs B =10.5% vs C =1.3%; p <0.01). After multivariate adjustment, the mortality of patients taking beta-blockers was lower (adjusted OR 0.26; 95% CI: 0.069-0.973; p =0.045).

Conclusion: In the past 3 decades we have been challenged with an increasing number of patients over 80 years-old presenting with ACS. They now have a different risk profile and a more favorable prognosis.

P748

Crusade score - what impact

A Correia,¹ R Rodrigues,¹ B Silva,¹ M Neto¹ and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Purpose: The evaluation of hemorrhage risk in non-ST segment elevation acute coronary syndrome (NSTE-ACS)

is essential for optimizing the selection of antithrombotic treatment and invasive strategy. Crusade score (CrS) defines the hemorrhage risk and this study aims to evaluate its impact.

Methods: Prospective study of 307 consecutive patients admitted for NSTEMI-ACS between October 2009 and October 2012. They were divided into 3 groups. Patients with: CrS<30 (group A: n=140; 45.6%; 85.7%men); CrS [30;40] (group B: n=75; 24.4%; 66.7%men); and CrS>40 (group C: n=92; 30.0%; 48.9%men). We compared them regarding the composite primary endpoint (CV death, non-fatal MI or stroke) at 1-year follow-up.

Results: Group A had a lower mortality rate during in-hospital stay (A=0.7% vs B=2.7% vs C=15.2%; $p<0.01$) and composite primary endpoint at 1-year (A=5.0% vs B=12.0% vs C=41.3%; $p<0.01$). Group C had higher history of ACS (A=18.6% vs B=30.7% vs C=35.9%; $p<0.01$), stroke (A=2.1% vs B=8.0% vs C=14.1%; $p<0.01$) and Diabetes Mellitus (A=11.4% vs B=28.0% vs C=55.4%; $p<0.01$). Group A had higher levels of hemoglobin [A=15.00 (interq(iq)=1.77) vs B=14.3 (iq=1.6) vs C=1.00 (iq=0.36); $p<0.01$] and lower of BNP [A=100 (iq)=160) vs B=173 (iq=375) vs C=618 (iq=942); $p<0.01$]. They had, less frequently, Killip>1 at admission (A=4.3% vs B=8.0% vs C=46.7%; $p<0.01$) and at 72h (A=6.5% vs B=12.2% vs C=51.2%; $p<0.01$). Group C was less treated invasively (A=97.1% vs B=97.2% vs C=80.0%; $p<0.01$) and had more hemorrhage complications (A=2.9% vs B=6.7% vs C=14.1%; $p<0.01$). At discharge, they were less medicated with aspirin and clopidogrel.

Conclusions: This study concludes that CrS is a prognostic predictor. The greater the score the higher are hemorrhage complications and mortality.

P749

Comparison of the HEART and GRACE risk stratification tools in predicting significant coronary artery disease in patients presenting with non ACS chest pain to the emergency department

Table 1.

Risk stratification	HEART score		GRACE score	
	+CAD	-CAD	+CAD	-CAD
Low	15 (20.8%)	57 (79.2%)	34 (27.4%)	90 (72.6%)
Intermediate	23 (34.3%)	44 (65.7%)	7 (43.8%)	9 (56.2%)
High	4 (100%)	0 (0%)	1 (50%)	1 (50%)
Total	42	101	42	101

OE Amoran,¹ RB Pharithi,¹ S Ingram¹ and N Kelly¹

¹Adelaide & Meath Hospital, Cardiology Department, Dublin, Ireland

Introduction: Chest pain is one of the most common presenting complaints in the Emergency Department (ED) accounting for approximately 10% of total ED visits. Clinicians are often challenged in differentiating chest pain associated with significant coronary artery disease (CAD) from non-significant. Both HEART score and GRACE score are often used to risk stratify patients with chest pain in ED. No study has previously compared the two scores in prediction of the presence of significant CAD in a non ACS population. Objective

To compare the HEART score with the GRACE score amongst non ACS chest pain patients discharged from ED to chest pain clinic follow up with a confirmed diagnosis of CAD.

Method: Retrospective data analysis on non ACS chest pain patients who attended the chest pain clinic. Both HEART score and GRACE scores were calculated on each patient and stratified into low, intermediate and high risk of MACE in both indexes. Presence of CAD was confirmed or excluded by either visual coronary angiography or CT coronary angiography. Primary end point is the evidence of significant coronary artery disease needing treatment.

Result: A total of 143 out of 408 patients had CT coronary angiography or coronary angiography. Mean age was 59.0±10.4 years. 39.2% (n=56) male and female 60.8% (n=87). A total of 71.3% (n=102) patients had coronary angiogram while 28.7% (n=41) had CT coronary angiogram. Heart score was more sensitive and specific than GRACE; High risk 100% vs 50% ($p<0.05$) and low risk 79.2% vs 72.6% in detection or exclusion of the presence of significant CAD. See Table.

Conclusion: HEART score has shown to be a statistically significant predictor for the diagnosis or exclusion of CAD when compared to the GRACE score, therefore, the preferred risk stratification tool for the everyday evaluation of patients who present to our ED with chest pain.

ST-elevation myocardial infarction - ACS

P751

P750

Complete revascularization in second time or not in multivessel patients undergoing primary angioplasty. Introduction: In recent years the publication of several studies on the impact of multiple or

MI Barrionuevo Sanchez,¹ JG Cordoba Soriano,¹
J Jimenez Mazuecos,¹ A Gallardo Lopez,¹
A Gutierrez Diez,¹ J Navarro Cuartero,¹
MJ Corbi Pascual,¹ G Gallego Sanchez,¹
D Prieto Mateos¹ and D Melehi El Assali¹

¹Albacete University Hospital, Cardiology, Albacete, Spain

Introduction: In recent years the publication of several studies on the impact of multiple or no revascularization on prognosis of patients initially treated with primary angioplasty (PCI) have led to controversy regarding the criteria for revascularization of vessels not guilty a second stage. The aim is to assess such impact prognosis in a cohort of patients undergoing primary PCI in our center.

Methods: We evaluated the hospital outcome of two groups of patients with multivessel disease (2 or more diseased vessels) depending on the type of revascularization (complete (CR) or Incomplete (IR)) included in a register of primary angioplasty. CR was defined as that performed in all angiographically severe injury of any main artery or vessel of ≥ 2 mm caliber. The decision on the type of revascularization was left to the cardiologist responsible for each patient. The emergence of a combined endpoint of death, MI or stroke (MACE) and net adverse events (MACE + AMI complicated (Killip III-IV, measures need intensive support)) in each group is evaluated.

Results: Among 983 patients undergoing primary PCI between 2005-2012, 518 (53%) were patients with multivessel disease. 79% males with mean age 67 ± 12 years and more frequently (32%) diabetics. The combined endpoint of MACE during hospitalization appeared in 3.7% of the CR group IR vs 6.9% ($p = 0.08$), while the net rate of adverse events was 14.8% vs 18.3 in RC group % in IR group ($p = 0.18$).

Conclusion: The percentage of patients who undergo primary PCI and having multivessel disease is high. In this register of real world there is a tendency to better hospital outcome and lower incidence of complications of AMI in patients undergoing CR in the second half. They are required records with more patients to check these results.

A New Risk Stratification Score for Assessment of In-hospital Mortality in Patients with Left Main Acute Coronary Syndrome

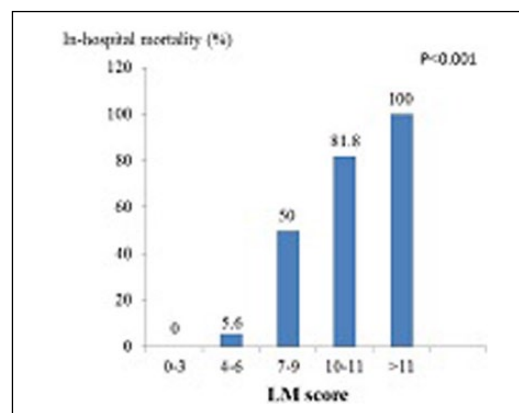
T Itoh,¹ T Iida,² F Tanimura,² K Takahashi,² H Nakamura,²
S Nakajima,¹ M Nakamura³ and Y Morino¹

¹Division of Cardiology, Department of Internal Medicine, Memorial Heart Center, Iwate Medical Univ., Morioka, Japan ²Iwate Medical University, Morioka, Japan ³Iwate Medical University, Division of Cardiovascular Medicine, Nephrology and Endocrinology, Morioka, Japan

Background: The purpose of this study was to establish a new clinical risk stratification score for assessment of in-hospital mortality of left main acute coronary syndrome (LM-ACS) patients.

Methods: Seventy-nine consecutive LM-ACS subjects were selected from 2,903 consecutive ACS patients (2.7%) admitted to our institute. The study patients were divided into two groups; those who survived and those who died. Patient characteristics and electrocardiogram on admission were then retrospectively analyzed. A new LM risk score was calculated and then compared with established risk scores.

Results: In-hospital mortality was 26.6%. The following characteristics were significantly higher in the deceased group than in the survival group: severe pump failure (100.0% vs. 40.0%; $p < 0.001$), unconsciousness level (47.6% vs. 3.4%; $p < 0.001$), presence of aVL ST elevation (63.6% vs. 22.2%; $p = 0.001$). Width of V3 lead QRS complex was significantly wider (175.2 ± 61.9 msec. vs. 107.1 ± 25.1 msec. $p < 0.001$) and absolute value of difference (5 - number of ST-segment elevations) [due to the highest in-hospital mortality (77.8%) in the five leads ST elevation group] was significantly smaller (1.3 ± 1.3 vs. 3.4 ± 1.6 ; $p < 0.001$) in the deceased group than in the survival group. Thus, the LM risk score (maximum 13 points) composed of these factors



LM score and In-hospital Mortality.

in the deceased group was significantly higher than in the survival group (10.3 ± 1.9 vs. 3.1 ± 2.9 ; $p < 0.001$). The area under receiver operating characteristic curve values for the GRACE risk score, the shock score and the new LM risk score were 0.866, 0.930, and 0.967 (sensitivity: 95%, specificity: 87%) respectively.

Conclusions: The new risk stratification LM score is more accurate than established risk scores in assessing prognosis in patients with LM-ACS.

P752

Istanbul primary percutaneous coronary intervention study (I-PCI study):

A Oncul,¹ S Emet,¹ A Elitok,¹ I Onur,¹ M Sezer,² S Umman,¹ T Goren,¹ M Ozcan,¹ F Mercanoglu¹ and H Oflaz¹

¹Istanbul University, Faculty of Medicine, Department of Cardiology, Istanbul, Turkey ²Koc University, Cardiology, Istanbul, Turkey

Purpose: In the present study, We analysed clinical spectrum, angiographic characteristics, treatments and managements of 362 persistent ST elevation myocardial infarction patients treated with primary PCI in our cathlab. Our aim is to expose independent predictors of in early (24 hours) hospital mortality and ejection fraction.

Methods: Istanbul University Istanbul Faculty of Medicine, Medical Record system and patients database of the Catheter Laboratory in Department of Cardiology were retrospectively reviewed to identify patients with persistent ST segment elevation myocardial infarction.

Results: In logistic regression analysis; age, gender, chest pain duration, diabetes mellitus, number of diseased vessel, target vessel diameter and length of diseased segment, systolic blood pressure, fasting glucose, type of myocardial infarction and heart rate were tested to determine the independent predictors for ejection fraction and early hospital mortality. Target vessel diameter, systolic blood pressure and troponin T levels were independent predictors for early in hospital mortality, while target vessel diameter, troponin T level, heart rate and chest pain duration were the independent predictors for ejection fraction of 50% and above (Table 1).

Conclusion: According to our study, independent predictors of left ventricular ejection fraction are target vessel diameter, troponin T level, heart rate and chest pain duration. On the other hand, the independent predictors of early total mortality are target vessel diameter, systolic blood pressure and troponin T level.

Table 1.

Independent factors for Mortality	P value	Odd's ratio	95 % Confidence interval	
			Lower	Upper
Target vessel diameter	0.001	0.05	0.01	0.30
Systolic blood pressure	<0.001	0.82	0.74	0.90
Troponin T	0.007	1.38	1.09	1.76
Independent factors for EF>50%				
Target vessel diameter	0.03	1.55	1.05	2.29
Troponin T	<0.001	0.75	0.67	0.84
Chest pain duration	0.001	0.89	0.83	0.95
Heart rate	0.001	0.96	0.94	0.98

P753

Long-term clinical outcomes after primary angioplasty for acute myocardial infarction: role and impact of baseline renal failure

S Colangelo,¹ R Garbo,¹ G Boccuzzi,¹ F Ugo,¹ S Ariotti² and M Valgimigli³

¹Interventional Cardiology, San Giovanni Bosco Hospital, Turin, Italy ²Erasmus Medical Center, Rotterdam, Netherlands ³Erasmus Medical Center, Thoraxcenter, Rotterdam, Netherlands

Cardiovascular disease is the leading cause of death among patients with renal failure (RF). RF is associated with increased cardiovascular mortality in patients with acute coronary syndromes (ACS) even if treated with percutaneous coronary intervention (PCI). This study address the impact of RF on major adverse cardiovascular events (MACE) in patients undergoing primary PCI (pPCI) for acute myocardial infarction (AMI).

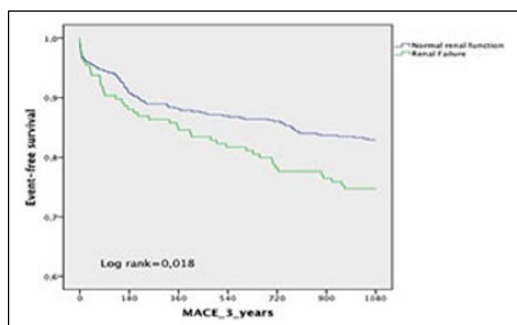
745 patients has been enrolled and divided on the basis of glomerular filtration rate (GFR). Normal renal function has been defined as $GFR \geq 60$ ml/min.

Univariate analysis is summarized in Table 1: RF exhibit a significantly correlation with MACE at 3-years as like

Table 1.

Parameter	OR	95% CI	p
3-vessel disease	0,433	0,193–0,974	0,043
EF<50%	0,377	0,160–0,888	0,026
Age > 75 years	0,290	0,114–0,740	0,010
Renal failure	0,259	0,100–0,675	0,006
LM culprit vessel	0,062	0,006–0,601	0,016

Multivariate logistic regression for predictors of 3-years cardiovascular death.



Event-free survival from MACE at 3 years.

as 3-vessels disease, EF<50%, age >75 years, and LM disease.

Event-free survival curves for MACE at 3-years (Figure 1) show a significantly reduction in patients with RF compared with those with normal renal function.

Our study confirm that even in patients with AMI treated with successful pPCI, RF proved to be significantly associated with MACE at 3-years.

P754

Results of coronary angiography (culprit artery situation) in STEMI patients undergoing pharmacoinvasive strategy. The BIHOTZEEZ registry

A Tramullas,¹ A Loma-Osorio,¹ J Vaquero,¹ A Castaneda,¹
A Torres,¹ J Artaetxeberria,² M Telleria,²
A Andres,³ JR Rumoroso⁴ and R Blanco⁵

¹University Hospital of Araba, Cardiology, Vitoria, Spain ²University Hospital Donostia, Donostia, Spain ³Hospital de Basurto, Bilbao, Spain ⁴Hospital of Galdakao, Bilbao, Spain ⁵Hospital de Cruces, Bilbao, Spain

Aims: Pharmacoinvasive strategy is considered a valid approach in selected patients with ST-segment Elevation Myocardial Infarction (STEMI). The aim of our study is to asses the artery flow observed in the angiography immediately before deferred percutaneous coronary intervention (d-PCI) and rescue PCI (r-PCI) performed after pharmacoinvasive strategy. BIHOTZEEZ registry is part of a regional multicentric network dedicated to STEMI care and conducted in the Basque Country (Spain).

Methods and results: We retrospectively analysed angiographies from 2,010 consecutive STEMI patients (August 2012-April 2015). 1586 patients were treated with primary PCI (p-PCI), 1284 of them (81%) showed 0 or 1 TIMI flow in the angiography before PCI. The results showed high reperfusion rates with 2 or 3 TIMI flow in 1543 patients (97.3%) after p-PCI, with 6.94% 30-day mortality (from any cause). 424 STEMI patients were treated with

pharmacoinvasive strategy if they presented in the first 3 hours with a Killip class less than III, and if p-PCI was not immediately available. No reperfusion was performed in 11 patients (4.6%) due to medical criteria. TIMI flow was analyzed before and after the angiography. d-PCI was performed in patients with reperfusion criteria (n=240; 56%) in the next 24-48 hours since the beginning of the symptoms. Basal 2 and 3 TIMI flow was observed in 208 patients (90.9% of d-PCI) and 223 patients (97.3%) after d-PCI. r-PCI was performed in patients with no reperfusion criteria (n=184; 44%). Basal 2 and 3 TIMI flow was observed in 98 patients (53.2% of r-PCI patients) before PCI and 179 patients (97%) after r-PCI. No major complications were observed in any of the patients. 30-day mortality from any cause in pharmacoinvasive patients was 2.92% in the d-PCI group and 4.89% in the r-PCI group (no significant differences; p=0.5). Using as reference patients with p-PCI presented with Killip class I or II their 30-day mortality was 4.53%. Mortality at 180 days was 3.75% in the d-PCI group and 4.89 in the r-PCI group.

Conclusion: In our patients with STEMI treated with a pharmacoinvasive strategy, the coronary angiography frequently showed a good flow in the culprit artery, even in those patients that the procedure was performed with r-PCI purposes. Our data supports the existing evidence in favour of the pharmacoinvasive strategy as a very effective one for an adequately selected group of patients with comparable outcomes to p-PCI.

P755

A Quality of Life Questionnaires Study Comparing Medium-term Outcome of Facilitated PCI Versus Primary PCI in STEMI Patients

A Scafa Udriste,¹ L Calmac,¹ V Bataila,¹ CI Zaharescu,¹
B Dragoescu,¹ O Tautu,¹ GP Tatu-Chitoiu¹ and
M Dorobantu¹

¹Emergency Hospital Bucharest, Bucharest, Romania

Background: Today the health sector is evolving dramatically due to the new concepts of the holistic approach regarding the patients' quality of life after the hospital interventions. Primary percutaneous coronary intervention (PCI) is the preferred treatment for ST-segment elevation myocardial infarction (STEMI). A pharmacoinvasive strategy consists of thrombolysis followed by coronary angiography might be a practical solution, This study is to compare, from the point of view of the STEMI patients the efficacy of pharmacoinvasive strategy versus primary PCI.

Methods: A total number of 316 consecutive STEMI patients referred to our department between 2012-2013 were enrolled in the study. Primary reperfusion therapy

consisted in primary PCI in 293 cases and thrombolysis in 23 cases. Patients were followed up by questionnaire. Descriptive statistics and multivariate survival analyses were employed to compare the medium term outcomes : angina recurrence, re-hospitalization, re-interventions (PCI, by-pass), minor and major bleedings, physical exertional capacity and heart failure. The patients were followed up for 2 years.

Results: The 2 study groups were similar regarding age (64 ± 11.56 years vs. 60.48 ± 8.46 years; $p = 0,070$) and gender distribution (M:F – 196:84 vs. 17/6; $p = 0.693$). There was no difference in recurrent angina ($p=0,851$), subsequent revascularization ($p=0,428$), re-hospitalization ($p=0,851$), bleeding risk and strokes. The events of heart failure were similar in both groups ($p=0,408$) and the patients from both groups seem to show the same physical exertional capacity.

Conclusions: This pilot study shows that a thrombolysis followed by coronary angiography strategy may be a reasonable solution in the absence of a center able to perform primary angioplasty. Because of the small number of thrombolysed patients larger studies are needed to confirm these findings.

P756

Are patients with chronic aspirin therapy a subgroup at highest risk in the context of STEMI undergoing primary PCI?

J Navarro Cuartero,¹ JGCS Juan Gabriel Cordoba Soriano,¹ JJM Jesus Jimenez Mazuecos,¹ MJCP Miguel Jose Corbi Pascual,¹ MIBS Maria Isabel Barrionuevo Sanchez,¹ DPM Daniel Prieto Mateos,¹ GGS Gonzalo Gallego Sanchez,¹ SCN Sofia Calero Nunez,¹ CRJ Cristina Ramirez Guijarro¹ and CLG Cristina Llanos Guerrero¹

¹Albacete University Hospital, Cardiology, Albacete, Spain

Introduction: chronic aspirin (ASA) pretreatment has been classically used as a prognostic marker in risk scores of patients with acute chest pain and in patients with both stable and unstable coronary artery disease. However, its usefulness as a prognostic marker in patients undergoing primary angioplasty (PCI) for STEMI has not been established.

Methods: retrospective study that evaluates the value of chronic aspirin therapy as a marker of hospital outcomes in a cohort of patients undergoing primary PCI for STEMI. The incidence of mayor adverse cardiovascular events (MACE) as a combined endpoint of mortality, reinfarction or stroke and net adverse events (MACE + complicated AMI defined as Killip III-IV or need to intensive support measures) was evaluated in terms of being in chronic pretreatment with aspirin or not.

Results: Between 2005-2012 was performed 918 PPCI; 124 (13.5%) of them were performed in patients with chronic ASA treatment before the index event. Previous ASA treatment defined a subgroup of patients with higher cardiovascular risk: Diabetes Mellitus (45.2% vs 10.2%); Hypertension (78.2% vs 56.8%); Dyslipidemia (54% vs 39.7%), chronic renal failure (33.3% vs 19.4% ($p < 0.002$)), prior ischemic heart disease (51.6% vs 6.4%, $p < 0.005$) and peripheral artery disease (19.4% vs 6.4%, $p < 0.005$). Similarly, patients in this group had worse hospital prognosis, with higher incidence of MACE (12.9% vs 5.4%, $p < 0.05$) and net adverse events (27.2% vs 16.7%, $p = 0.009$).

Conclusion: previous chronic ASA treatment define a subgroup of patients with STEMI undergoing PPCI with higher global cardiovascular risk and worse hospital prognosis. This is therefore useful to stratify the risk of these patients and to plan a strategy for treatment and monitoring.

P757

Percutaneous interventions and mortality in octogenarian STEMI patients: a single center experience

N Gotcheva,¹ A Alexandrov,¹ E Trendafilova,¹ H Mateev,¹ A Bankova,¹ G Vladimirov,¹ E Kostova¹ and I Petrova¹

¹National Heart Hospital, Sofia, Bulgaria

Background: Octogenarians represent a large number of patients with ST-elevation myocardial infarction (STEMI) as the lifetime expectancy increases. Treatment strategies for STEMI patients have been evaluated in large trials mainly for patients younger than 80 years.

Methods: The in-hospital mortality and the effect of PCI treatment on mortality in the octogenarian group are evaluated with retrospective analysis.

Results: Between January 2011 and March 2015 a total of 1148 patients with STEMI were treated in our center. 139 patients (12.1%) were octogenarians of mean age 84.6 ± 3.5 years and 56.8% were female. The group of over 80 comprised a high risk population – 61.1% were diabetics, 92% had arterial hypertension, 16.7% with a prior stroke. 75.1% of octogenarian group had more than one vessel disease and more frequently they presented with heart failure (57.4% had Killip class >1). In-hospital mortality in the octogenarian group is higher compared to the group under 80 years (18% vs 7.1%, $p < 0.001$). PCI was also performed more infrequently in the octogenarian group (70.5 vs 89.5 $p < 0.001$). There was a significant difference in the in-hospital mortality rates in PCI vs non-PCI group – 10.8% vs 18.7% $p < 0.001$.

Conclusions: STEMI in patients over the age of 80 is not rare and the in hospital mortality is high. Invasive treatment is not so often performed in those patients although it seems to reduce in-hospital mortality.

P758

Prognostic impact of renal failure in patients undergoing primary angioplasty for STEMI.

JG Cordoba Soriano,¹ J Navarro Cuartero,¹ J Jimenez Mazuecos,¹ MI Barrionuevo Sanchez,¹ G Gallego Sanchez,¹ FM Salmeron Martinez,¹ MJ Corbi Pascual,¹ S Calero Nunez,¹ C Ramirez Guijarro¹ and D Prieto Mateos¹

¹Albacete University Hospital, Cardiology, Albacete, Spain

Introduction: presence of renal failure (RF) has been associated with poor prognosis in patients with acute coronary syndrome. However, few data regard the prognostic value of RF in patients treated for STEMI undergoing primary angioplasty (PCI). Our objective is to evaluate the impact of RF in a cohort of patients undergoing primary PCI in our center.

Methods: RF was defined as creatinine clearance ≤ 60 ml / min according to the Cockcroft-Gault equation of the first value in serum creatinine (Cr) at admission. We compared the incidence of a combined primary endpoint of major cardiovascular events (death, MI, stroke) and net adverse events: MACE + major bleeding (according to BARC criteria) and MACE + complicated AMI (Killip III-IV or need intensive support measures) in two groups based on the presence of RF or not.

Results: Among 775 patients with available Cr value at admission undergoing to primary PCI in 2005-2012, 166 of them (21.4%) had RF. This group of patients were older (77 ± 11 years) and more frequently women, hypertensive, they had more prevalence of peripheral arterial disease and previous coronary revascularization. These patients had higher mean hospital stay. In addition, the prior stent thrombosis as a cause of AMI was more frequent in the RF group (5.4% vs 1.1%; $p = 0.002$). The primary objective of the study was significantly higher in patients with RF (13.9% vs 3.9%, $p < 0.005$) due to a higher mortality (10.2% vs 3%, $p < 0.0001$) and this group had higher incidence of secondary endpoints: major bleeding (BARC ≥ 3) (21.7% vs 5.6%, $p < 0.001$) and complicated AMI (32.9% vs 13.3%, $p < 0.001$). In the multivariate analysis, RF was a strong independent predictor of events (OR, 5.9; 95% CI: 2.7 to 12.6).

Conclusion: The presence of baseline RF in patients undergoing primary PCI for STEMI is a strong predictor of major adverse cardiac events, bleeding complications and predicts need to intensive support of AMI and long hospital stay. Early identification is necessary of these patients to anticipate the most common complications in the presence of RF.

P759

Temporal trends from a metropolitan STEMI Registry (2003-2009): Patients characteristics, delay times and long-term mortality

B Jaeger,¹ S Farhan,¹ M Rohla,¹ G Christ,² W Schreiber,³ A Podczec-Schweighofer,² F Weidinger,⁴ T Stefanelli,⁵ G Delle-Karth⁶ and K Huber¹

¹Wilhelminen Hospital, Vienna, Austria ²SMZ-South, Vienna, Austria ³Medical University of Vienna, Vienna, Austria ⁴Rudolfstiftung Hospital, Vienna, Austria ⁵Donauspital, Vienna, Austria ⁶Hietzing Hospital, Vienna, Austria

Background: Aim of the study was to describe temporal trends in patient characteristics, delay times and long term all-cause mortality in a local STEMI network of a metropolitan area between 2003 and 2009.

Methods: Registry-based observational real world study. Baseline parameters, delay times (Pain-to-First Medical Contact (FMC), FMC-to-Reperfusion (Rx), and total ischemic time (TIT)) and 3-year all-cause mortality were documented in 2492 individuals presenting with STEMI from 2003 to 2009 to our local STEMI-Network.

Results: Presentation in cardiogenic shock ($p < 0.001$), prevalence of dyslipidaemia ($p < 0.001$) and active smoking ($p = 0.043$) declined over time, while history of hypertension was documented more often in later years ($p < 0.001$). Mean age, proportion of female sex and other clinical characteristics did not significantly change over time ($p > 0.05$ for trend). Pain-to-FMC (median of all years: 95min IQR: 56-180), FMC-to-Rx (110 min IQR: 85-154) and TIT (225 min IQR: 146-364) were significantly reduced from 2003 to 2009 (all: $p < 0.001$ for trend). In-hospital mortality ($p < 0.01$ for trend) and 3-year all-cause mortality ($p < 0.05$ for trend) decreased over time. After adjustment for identified and well known risk factors, 'year of infarction' was an independent predictor of 3-year mortality ($p < 0.05$)

Conclusion: Delay times were significantly shortened between 2003 and 2009 in our local STEMI-network. This was accompanied by reduced in-hospital and long-term mortality.

P760

ST elevation myocardial infarction as a first coronary event in the elderly: genetics or lifestyle?

R Costa Rodrigues,¹ A Correia,¹ M Neto,¹ MG Serrao,¹ S Gomes,¹ B Silva,¹ N Santos,¹ G Caires,¹ AC Alves¹ and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Purpose: therapeutic advances in the last decades allowed for better health care services and to an increase in life expectancy. The incidence of coronary acute syndromes

is increasing in older patients and in this population ST elevation myocardial infarction (STEMI) as a first coronary event is not well defined.

Purpose: We intended to compare the clinical profile of elderly (≥ 80 years old) patients (pts) presenting with STEMI with the younger patients.

Methods: Single center study from a prospective database in the period October 2009-September 2014. We excluded pts who had history of myocardial infarction or had been submitted to PCI or CABG. We then analyzed 477 consecutive pts, admitted for STEMI as first coronary event presentation in an intensive care unit of a tertiary hospital. We divided the pts in two groups: pts ≥ 80 years (y) old (group A: n=64, years, 83[80-97]y, 13.4%; 42.2% men) and pts < 80 y old (group B: n=413, 60[26-79]y, 86.6%; 78.7% men). We compared them in relation to baseline characteristics, therapeutic procedures and prognosis during in-hospital stay.

Results: group A had a worse in-hospital prognosis presenting higher total mortality (A=20.3% vs B=5.6%; $p<0.01$) and composite primary endpoint - total mortality + stroke + re-infarction - (A=21.9% vs B=7.0%; $p<0.01$). Regarding baseline characteristics, group A had more history of HTN (A=65.6% vs B=50.4%; $p<0.05$) and stroke (A=10.9% vs B=4.6%; $p<0.05$) but less history of smoking (A=7.8% vs B=44.1%; $p<0.01$) and a tendency for less family history of coronary disease (A=5.6% vs B=0.0%; $p=0.57$) while no differences were found in diabetes, dyslipidemia or CKD. No differences in STEMI location or culprit vessel, but group A had less frequently 1 vessel disease (A=20.3% vs B=49.4%; $p<0.01$) and evolved more frequently in Killip > 2 (A=67.2% vs B=25.4%; $p<0.01$). In terms of in-hospital treatment group A was less submitted to primary PCI (A=62.5% vs B=84.7%; $p<0.01$). No differences between groups in use of aspirin and ACEi/ARB, but group A was less medicated with clopidogrel and beta-blocker (BB) but more with diuretics (A=67.2% vs B=2.8%; $p<0.01$) and inotropes (A=29.7% vs B=11.9%; $p<0.01$). At discharge group A was undermedicated with aspirin, clopidogrel, statin, BB and ACEi/ARB.

Conclusions: patients ≥ 80 years old presenting with STEMI as a first coronary event have a higher mortality than younger patients. Risk profile reveals higher prevalence of HTN and less smoking habits in the elderly while other modifiable risk factors tend to have no significant differences. They are frequently undermedicated during in-hospital stay and at discharge.

P761

Are diabetics with acute myocardial infarction less painful? Data from an observational registry

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C El Khoury,¹ S Charreyre,² E Flocard,³ M Bischoff,³ P Serre⁴ and E Bonnefoy⁵

¹Hospital Center Lucien Hussen, Emergency Department, Vienne, France

²Edouard Herriot Hospital, Hospices civils de Lyon, Emergency Department, Lyon, France ³Hospital Center Lucien Hussen, RESUVal, Vienne, France

⁴General Hospital Fleury, Emergency Department, Bourg en Bresse, France

⁵Cardio-vascular Hospital, Hospices Civils de Lyon, ICCU, Lyon, France

Introduction: It is commonly said that diabetic patients with STEMI present with atypical symptoms, particularly blunted chest pain. We explored this topic in contemporary patients through an analysis of the RESCUE network registry.

Materials and Methods: This analysis concerns consecutive patients prospectively included in the registry from June 1, 2010 to October 14, 2014. The RESCUE network in Rhône-Alpes region (France) includes 35 Emergency Departments and 19 Mobile Intensive Care Units. Assessment of pain was performed at first medical contact and during transfer with a numerical scale (0-10).

Results: 4884 STEMI were included, of them 845 diabetics. The prevalence of atypical presentations (sickness, dyspnea, epigastric pain) was equivalent in both groups (25% vs 24%, p ns). The initial pain assessment showed as lower pain intensity in diabetics (median 5 [2-7] vs 6 [3-8] in non diabetics, $p < 0.05$). Absence of pain was observed in 21% of diabetics vs 13% in non-diabetics. The presence of diabetes did not change management: 97% of STEMI with pain ≥ 6 benefited from treatment with an analgesic, and morphine was given in 40% of patients in both groups. In-hospital (9% vs 6%, $p=0.004$) and one month mortality (15% vs 9%, $p<0.001$) were higher in diabetics unrelated to pain intensity.

Discussion: Data from a contemporary registry confirm that diabetics patients with STEMI are more likely to present with a lower intensity pain. Atypical presentations is no more frequent in diabetics. A higher level of alert is still warranted in diabetic patients with chest pain and atypical presentation.

P762

Gender and secondary prevention after myocardial infarction. Still no equal.

C El Khoury,¹ M Bischoff,² E Flocard,² N Eydoux,² A Peiretti,² P Serre³ and E Bonnefoy⁴

¹Hospital Center Lucien Hussen, Emergency Department, Vienne, France

²Hospital Center Lucien Hussen, RESUVal, Vienne, France ³General Hospital Fleury, Emergency Department, Bourg en Bresse, France ⁴Cardio-vascular Hospital, Hospices Civils de Lyon, ICCU, Lyon, France

Introduction: The RESCUE network registry in Rhône-Alpes region (France) prospectively monitors patients with STEMI up to one year after the inceptive event. Follow up

is done in coordination with the general practitioner (GP). We looked at the effect of gender on secondary prevention in this structured network.

Methods: This analysis included 1422 consecutive STEMI patients from July 2010 to November 2013. We analysed the characteristics of prescriptions, lifestyle and dietary recommendations and their compliance to the National Authority for Health (HAS) clinical practice indicators.

Results: In 94% of cases, the GP was in contact with the patient's cardiologist. The percentage of men (75%) was stable in time. Women were significantly older than men (median age 74 years vs 60 years; $p < 0.001$), they were more likely to have hypertension (60% vs 40%; $p < 0.001$) and diabetes (20% vs 15%; ns) but less likely to be active smokers (22% vs 45%, $p < 0.001$). 45% of them had a body mass index (BMI) < 25 against 36% of men. One year follow-up shows equivalent prescription in men and women of betablockers (95% in women vs 93% in men), antiplatelet agents (99% vs 100%) and statins (96% vs 98%). Prescription of ACE inhibitors was lower in women (87% vs. 94%, $p < 0.01$) with more intolerance in women than men (10.5% vs 5%). Cardiac rehabilitation program was performed by 28% of women vs 48% of men ($p < 0.001$); 33% of women were physically active vs 56% of men ($p < 0.001$). Lipid and diabetes control was done in 72% of women vs 78% of men ($p < 0.05$). Their diet was described as more balanced (79% vs 73%; ns).

Conclusion: We found that after STEMI, women had less ACE inhibitors and cardiac rehabilitation. Continuous information of health professionals on the risk of gender bias is warranted.

P763

After eightys.. the differences 30 years apart

A Correia,¹ B Silva,¹ R Rodrigues,¹ M Neto¹ and D Pereira¹

¹Hospital Funchal, Funchal, Portugal

Introduction: In recent years we have witnessed an evolution of health resources available to the population and scientific community. New diagnostic means and therapeutic strategies allowed an increase in life expectancy.

Purpose: We aimed to evaluate the clinical profile and prognosis of ST-segment elevation myocardial infarction (STEMI) in the elderly population, over 80 years-old, in 3 different periods over the past 3 decades.

Methods: Single-center, retrospective study of 186 consecutive patients, over 80-years old, admitted for

STEMI in an intensive care cardiac unit. They were divided into 3 groups: between the years of 1989-1993 (Group A: n=51; 43.1% men); between 1999-2003 (Group B: n=75; 37.8% men); and between 2009-2013 (Group C: n=60; 40.0% men). The groups were compared regarding their baseline characteristics, therapeutic procedures and prognosis during in-hospital stay and at 1-year follow-up.

Results: Group C had a lower mortality rate during in-hospital stay (A=35.3% vs B=36.0% vs C=21.7%; $p=0.154$) and at 1-year follow-up (A=61.8% vs B=59.3% vs C=40.0%; $p < 0.05$). The groups showed no differences regarding gender, age and bone mass index. Group C had more previous history of Diabetes Mellitus (A=7.8% vs B=20.0% vs C=28.3%; $p=0.024$), dyslipidemia (A=13.7% vs B=33.3% vs C=35.0%; $p < 0.041$) while Group A showed more prior angina (A=45.1% vs B=13.3% vs C=11.7%; $p < 0.01$). There were no differences in prior arterial hypertension, smoking habits, myocardial infarction or coronary artery bypass graft. During hospitalization, group B was more submitted to thrombolysis (A=11.8% vs B=24.0% C=0%; $p < 0.01$) while Group C performed more percutaneous coronary interventions (A=2.6% vs B=6.3% vs C=64.2%; $p < 0.01$). The last was more medicated with aspirin (A=94.1% vs B=77.3% vs C=98.3%; $p < 0.01$) beta-blockers (A=2.0% vs B=16.0% C=20.0%; $p=0.015$) and ACEi (A=15.7% vs B=0% vs C=61.7%; $p < 0.01$). At 72h Group B had higher Killip-class > 1 (A=31.4% vs B=55.4% vs C=37.9%; $p=0.018$) There were no statistically differences in cardiogenic shock, cardiac arrest or arrhythmias during hospitalization, but Group A had a higher rate of post-infarction angina (A=23.5% vs B=8.0% vs C=1.7%; $p < 0.01$).

Conclusion: In the past 3 decades we have been challenged with an increasing number of patients over 80 years-old presenting with STEMI. They now have a different risk profile and a more favorable prognosis.

P764

Radial approach and door-to-balloon time in patients with STEMI undergoing primary PCI

R Montisci,¹ R Floris,¹ M Cadeddu,¹ G De Candia,¹ G Lai,¹ R Pirisi,¹ M Ruscazio¹ and L Meloni¹

¹Clinical Cardiology University of Cagliari, Cagliari, Italy

Objective: The purpose of this study was to further explore the relationship between the use of radial approach and time to reperfusion in patients with ST-segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (pPCI).

Background: Although radial pPCI reduces the risk of bleeding and vascular complications as compared to femoral approach, there is some concern about the possible delay in reperfusion time in STEMI patients.

Methods: We prospectively examined 281 STEMI patients transported by the Emergency Medical System (EMS) to our hospital for pPCI between January 2008 and June 2014 during the implementation of a pre-hospital ECG tele-transmission program with direct referral to the cardiac catheterization laboratory (cath-lab). Radial pPCI was performed in 157 patients, femoral approach in 124 patients.

Results: Radial pPCI progressively increased over the 5-year study period from 28.6% in 2008 to 80.8% in 2012 (p for trend <0.0001) with directional increase in proportion of patients who were directly routed to the cath lab (from 44% in 2008 to 88% in 2014). Overall, the use of radial approach was associated with shorter door-to-balloon time as compared to the femoral approach (53 min [IQR 41 – 75] vs 43 min [IQR 34.5 – 61], $p = 0.002$) and higher percentage of patients having door-to-balloon time < 90 min (88.5% vs. 83.9%, $p=0.05$). This finding was due to an improvement in intra-hospital delay. In fact, the door-to-cath lab time was significantly shorter in patients with radial pPCI compared to patients with femoral pPCI (12 min [IQR 5 – 25.5] vs. 20 min [IQR 10 – 38], $p = 0.002$, respectively). There were no differences between the two approaches in procedural time calculated as cath-lab to balloon time (30 min [IQR 20-35] vs. 30 min [IQR 22-40], $p=NS$, respectively).

Conclusions: The door-to-balloon time was shorter in patients undergoing radial pPCI. This finding suggests a mechanism by which radial pPCI may improve survival in STEMI patients. Finally, radial pPCI did not influence negatively the procedural times after adequate training.

P765

Hospital Registry for Acute Coronary Syndrome in Serbia: management practices and hospital outcome during five-year period from 2007 to 2011

Z Vasiljevic-Pokrajacic,¹ G Krljanac,¹ N Mickovski,² I Cvorovic,³ M Asanin,¹ B Stefanovic,¹ D Rajic,³ N Radovanovic,¹ A Karadzic³ and A Milosevic³

¹University Clinical Center of Serbia, Medical Faculty, Belgrade, Serbia
²Institut of Public Health, Batut, Belgrade, Serbia ³Clinical Center of Serbia, Belgrade, Serbia

Background: It is well known that reperfusion therapy with primary percutaneous coronary intervention (pPCI)

improve prognosis in all ST elevation myocardial infarction patients (pts). Objective: We aimed to investigate the use and type of reperfusion therapy in patients admitted with STEMI in Serbia and the impact of applied pPCI therapy on intrahospital mortality during five-year period from 2007 to 2011.

Methods: Data from the Hospital Registry for Acute Coronary Syndrome in Serbia (HORAKS) and prospective registry of STEMI pts hospitalized in CCU in Clinical Center of Serbia were analyzed.

Results: There were 3961 consecutive STEMI pts, mean age 62.0 ± 12.2 years, m/f 68.5%/31.5%. The use of pPCI treatment increased from 54.2% in 2007 yr to 67.1% in 2011, $p=0.000$. There was significant decrease in use of fibrinolytic therapy (FT) from 10.2% to 3.5% and significant decrease in the number of pts without reperfusion therapy (NRT) from 36% in 2007 to 29.4% in 2011. In spite of better reperfusion treatment the overall STEMI mortality was not significantly lower: in 2007 it was 9.4% and in 2011 it was 9.2%. Male mortality was reduced from 8.8% to 6.4% ($p=0.036$) during five years, however female mortality was increased from 10.8% to 14.9%. In pPCI group mortality was reduced from 6.3% to 4.2% ($p=0.032$) during five years, but significantly only in male (5.6%-2.9%, $p=0.006$) and was not in female pts (8.3%-7.0%, $p=0.751$). In the same time FT group and NRT group mortality was higher: in FT group from 15.9% to 16.3% and in NRT group from 12.4% to 20.0%. In older pts >75 yr, pPCI was applied rarely, only in 50.7% male and in 41.7% female pts. The significant predictors of mortality in pPCI group were HF, age, diabetes, CVI, hypertension and gender, also. In multivariate analysis significant predictors of mortality were only HF (OR 22.46, CI 12.88-39.19), age (OR 2.10, CI 1.65-2.68) and diabetes (OR 1.43, CI 1.10-1.84).

Conclusion: Despite the higher percent of pPCI treatment and better conditions in medical centers for STEMI pts in Serbia, expectation of lower mortality has not been achieved, especially in older pts, pts with heart failure and comorbidity, in whom pPCI was less applied.

P766

Prehospital thrombolysis and transfer achieves optimal outcomes in st-segment elevation myocardial infarction despite large transport distances - a regional australian experience (PURE registry)

A A Khan,¹ A J Boyle,¹ P Fletcher,¹ L Savage¹ and T Williams¹

¹John Hunter Hospital, Department of Cardiology, Newcastle, Australia

Background: Delivering reperfusion therapy for ST-segment elevation myocardial infarction (STEMI) throughout the Hunter New England Local Health District (HNELHD), which covers 130,000 km² or an area comparable in size to England, with only one 24/7 Cardiac Catheterization Laboratory (CCL), remains challenging. The systems of care in HNELHD for STEMI patients involves ambulance based Pre-Hospital Thrombolysis (PHT) for patients > 60minutes from the CCL and Pre-hospital Assessment for Primary Angioplasty (PAPA) mediated Primary Percutaneous Coronary Intervention (PPCI) for patients who can get to CCL within 60minutes.

Methods and Results: We assessed 1-year all-cause mortality of STEMI patients undergoing PHT in the HNELHD and compared with the PPCI group. 150 patients (mean age: 61.7±12.6 years, Males: 76%) were administered PHT and 334 patients (mean age: 64.7±13.1 years, Males: 75.1 %) underwent PPCI from August 2008 to August 2013. The median time from first medical contact to PHT and door to balloon were 35min (Range: 6 - 95min) and 90min (Range: 25 - 240min) respectively. 24.7% (n=37) needed rescue PCI (median time: 4hours, Range: 2 -10hours) in the PHT group. At 1-year, all-cause mortality rates (6.7% vs 6.9%) were similar for PHT and PPCI treated patients. This compares favorably with the STREAM and the FAST-MI' trials. Age was the only independent predictors of mortality. The incidence of TIMI major bleeding was 1.3% vs 0% in PHT and PPCI groups respectively. The median distance to CCL was 119 km (Range: 8 - 483).

Conclusion: Our experience shows that PHT followed by early transfer to a PCI-capable center is a safe and effective reperfusion strategy for patients remote from PPCI centers and outcomes similar to RCTs can be achieved, despite challenging real-world transfer logistics.

Table 1. End points.

	PPCI (n=334)	PHT (n=150)
Age, y (mean ±S.D)	64.7±13.1	61.7±12.6
30-day all- cause mortality - n (%)	18(5.4%)	7(4.7%)
1-Year all-cause mortality - n (%)	23(6.9%)	10(6.7%)
1-Year Cardiac mortality - n (%)	13(3.9%)	9(6%)
Major Bleeding-n (%)	0	2(1.3%)
Total shock - n (%)	21(6.3%)	8(5.3%)
1-year all-cause mortality with shock - n (%)	7(33.3%)	3(37.5%)

P767

The prognostic value of admission mean platelet volume to platelet count ratio (MPV/Plt) in ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention

I Bolat,¹ H Pusuroglu,² O Akgul,² HA Cakmak,³ U Somuncu,² SO Ozyilmaz,² V Ornek⁴ and M Gul²

¹Fethiye Government Hospital, Cardiology, Fethiye, Turkey ²Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Training and Research Hospital, Cardiology, Istanbul, Turkey ³Rize Kackar Government Hospital, Cardiology, Rize, Turkey ⁴Mehmet Akif Ersoy Thoracic and Cardiovascular Surgery Training and Research Hospital, Clinical Biochemistry, Istanbul, Turkey

Purpose: Mean platelet volume to platelet count ratio (MPV/Plt) has been demonstrated to be a good indicator of long-term mortality in patients with non-ST-segment elevation myocardial infarction (NSTEMI). However, the prognostic value of MPV/Plt in STEMI is not reported. The aim of this study was to determine whether the MPV/Plt ratio on admission has any predictive value for major adverse cardiac events including short-and long-term mortality in STEMI.

Methods: In this prospective study, 470 STEMI patients who underwent primary percutaneous coronary intervention (PCI) were enrolled. The patients were divided into three groups based on the MPV/Plt ratio on admission. The first group (n=149) was defined as MPV/Plt ratio ≤ 0.029, second group (n=154) 0.029-0.038, and third group (n=159) ≥ 0.038. Primary clinical outcomes consisted of the sum of cardiovascular (CV) mortality, non-fatal re-infarction and stroke. Secondary clinical outcomes were CV mortality, non-fatal re-infarction, target-vessel revascularization (TVR), stroke, and advanced heart failure.

Results: There was no difference between study groups regarding the primary (p>0.05) and the secondary outcomes (p>0.05) except one-year non-fatal re-infarction rate, which was found to be significantly higher in the highest MPV/Plt ratio group (p=0.045). Age, Killip class > 1, and left ventricular ejection fraction were found to be independent predictors of long-term CV mortality in multivariate analysis (p= 0.009, p= 0.035, and p< 0.001, respectively).

Conclusion: While the MPV/Plt ratio was demonstrated to be associated with one-year non-fatal re-infarction, it was not related to in-hospital, one-month, and one-year cardiovascular mortality in patients with STEMI who underwent primary PCI. Moreover, even after adjusting for various risk factors, age, LVEF, and Killip class were found to be independent predictors of long-term CV mortality in STEMI patients. Further investigations are required to clarify whether calculation of MPV/Plt ratio could be used as a marker for predicting major adverse cardiovascular events including CV mortality in this setting.

Non ST-elevation myocardial infarction - ACS

P768

Mortality trends in patients admitted with acute myocardial infarction managed with initial conservative strategy.

KASHIF Naeem,¹ TAMER Mahmoud¹ and NAJIBA Abdulrazzaq¹

¹Al Baraha Hospital., Cardiology, Dubai, United Arab Emirates

Purpose: Acute myocardial infarction (AMI) is a common cause of mortality and morbidity worldwide. Although enough data exists to warrant early invasive strategy for these patients, hospitals without percutaneous coronary intervention (PCI) facility still manage these patients with initial conservative treatment. We analyzed the outcome of AMI patients presenting to our center without PCI facility that were treated with initial conservative strategy.

Methods: A retrospective analysis of 125 consecutive patients admitted with AMI (Non-ST-elevation and ST-elevation MI) to our center was performed. All patients who fulfilled the criteria according to the Universal Definition of Myocardial Infarction were included. Patients who discharged against medical advice after admission were excluded. Data was analyzed for in-patient mortality, adverse events like heart failure, cardiogenic shock and cardiac arrest, and transfer to a PCI center for urgent revascularization.

Results: A total of 125 patients were included. Eleven patients were excluded who self-discharged against medical advice. Of 114 patients, mean age was 51 years (range 27-93), 92% were male, 37% were diabetics and 42% were hypertensives. 56% were diagnosed as non-ST-elevation MI and 44% were diagnosed as ST-elevation MI. Initial treatment included aspirin (99%), clopidogrel (100%), beta-blockers (75%), ACE-inhibitors (77%), statins (93%), glycoprotein 2b3a inhibitors for high-risk non-STEMI (49%) and fibrinolysis with IV tenecteplase (40%) for STEMI patients. In-hospital mortality was 6.1%. 16 patients (14%) were transferred to the PCI center for urgent revascularization due to ongoing ischemia. 18% developed heart failure, 9.6% had cardiogenic shock, and 1.7% had cardiac arrest. 79.8% of patients were discharged home in a stable condition after conservative treatment.

Conclusion: Although urgent revascularization remains the treatment of choice in patients with AMI, efficient initial medical treatment remains the cornerstone of management. The mortality in our center without PCI facility is comparable to the overall mortality in the region including PCI centers¹.

P769

Predictors of Absence of Revascularization in Non-ST-Segment Elevation Acute Coronary Syndromes: The Risk Stratification Paradox

J Carmo,¹ J Ferreira,¹ J Brito,¹ C Aguiar,¹ RC Teles,¹ P Goncalves,¹ L Raposo,¹ HM Gabriel,¹ M Almeida¹ and M Mendes¹

¹Hospital de Santa Cruz, Lisbon, Portugal

Introduction: A relatively large proportion of patients undergoing coronary angiography in non-ST-segment elevation acute coronary syndrome (NSTEMACS) does not undergo percutaneous (PCI) or surgical revascularization (CABG).

Objective: To identify predictors of absence of revascularization in patients with NSTEMACS and obstructive coronary disease.

Methods: We studied 3822 consecutive patients with NSTEMACS submitted to coronary angiography since 2009. We identified the baseline characteristics associated with the absence of revascularization with logistic regression models.

Results: The population had a mean age of 67 ± 12 years and 35% were female. Coronary angiography was normal in 504 patients (13.2%) and 178 showed coronary stenosis <50% (4.6%). Of the remaining 3140 patients (82.2%) with coronary stenosis ≥ 50%, 454 patients underwent CABG, 1895 patients underwent PCI, while 785 (24.8%) were proposed for optimal medical therapy. Predictors of absence of revascularization in patients with coronary stenosis 50% were: prior myocardial infarction (OR 1.40, 95% CI 1.07 to 1.84), previous CABG (2.45; 1.77 to 3.39), creatinine clearance (0.98, 0.98 to 0.99), atrial fibrillation (1.52; 1.02 to 2.24) and unstable angina (1.90; 1.42 to 2.55).

Conclusions: One out of four patients with NSTEMACS and obstructive coronary disease does not undergo myocardial revascularization and the absence of revascularization is associated with clinical features of poor prognosis.

P770

Presenting symptoms in type 1 vs. type 2 myocardial infarction: a prospective study

L Saaby,¹ L Sarkisian,¹ TS Poulsen,¹ J Hallas,¹ ACP Diederichsen,¹ O Gerke,² S Hosbond,¹ TB Larsen,³ K Thygesen⁴ and H Mikkley¹

¹Odense University Hospital, Odense, Denmark ²Odense University Hospital, Department of Nuclear Medicine, Odense, Denmark ³Aalborg University

Hospital, Aalborg, Denmark ⁴Aarhus University Hospital, Cardiology, Aarhus, Denmark

Introduction: The classification of myocardial infarction (MI) into five types was introduced in 2007 as a component of the Universal definition. However, data outlining clinical symptoms in different MI types are limited.

Purpose: To describe the presenting symptoms in patients with type 1 MI vs. type 2 MI.

Methods: During January 2010-January 2011 unselected patients admitted to a single hospital with a catchment area of 300.000 residents were studied. All patients having cardiac troponin I measured on clinical indication were considered and had a supplementary history taken with focus on the debut symptoms at the time of MI. The diagnosis and classification of MI were according to the Universal definition. Thus, a rise/fall pattern of troponin values was required with at least one value above the 99th percentile of the upper reference limit. Also, clinical evidence of myocardial ischemia had to be present. Results: During the inclusion period 360 patients with a type 1 MI were identified, whereas 119 patients had a type 2 MI. As shown in the Table patients with type 1 MI more frequently had chest pain/discomfort than type 2 MI patients. However, patients with type 2 MI more often presented with dyspnea, palpitations or dizziness. The duration of symptoms in the two MI subtypes did not differ significantly.

Conclusion: By use of a prospective design we found that the majority of patients with type 1 MI presents with symptoms of chest pain/discomfort, whereas the most frequent debut symptom in patients with type 2 MI appears to be dyspnea.

Table 1.

	Type 1 MI (n=360)	Type 2 MI (n=119)	p-value
Age years - mean (SD)	70 (13)	75 (11)	<0.0001
Male	230 (64%)	63 (53%)	0.4
Chest pain/discomfort	280 (78%)	46 (39%)	<0.01
Dyspnea	163 (45%)	84 (71%)	<0.01
Palpitations	54 (15%)	32 (27%)	<0.01
Dizziness	99 (28%)	41 (34%)	<0.01
Lipothymia	40 (11%)	22 (18%)	0.04
Symptom duration (min)	120 (IQR, 50-330)	180 (IQR, 45-570)	0.3

Symptoms in type 1 vs. type 2 MI.

P771

Impact of revascularization on outcome after acute coronary syndrome among elderly patients in the era of new generation coronary stents

K Blanchart,¹ M Couedel,¹ N Azzoug,¹
L Bobillo,¹ M Benjelloun,¹ J Wain-Hobson,¹
V Roule,¹ R Sabatier,¹ PU Milliez¹ and
F Beygui¹

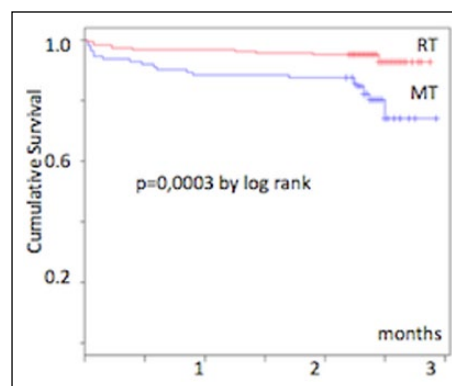
¹University Hospital of Caen, Department of Cardiology, Caen, France

Purpose: The purpose of our study was to assess the effect of revascularization on outcome in patients >75 years old admitted for acute coronary syndrome (ACS).

Methods: We conducted a single center, observational, prospective cohort study of consecutive patients >75 years admitted for ACS and followed-up for 3 months. Patients treated medically (MT) were compared with those undergoing coronary revascularization (RT). The primary endpoint was mortality at 3 months follow-up. Secondary end points included rehospitalization, the composite of recurrent coronary event, cardiovascular rehospitalization or heart failure and BARC >1 bleeding.

Results: A total of 301 patients were included among whom 91% had an invasive approach but only 69% revascularization (RT). Compared to MT those with RT were younger (81.6±4.82 versus 83.8±4.65, p<0.001), less frequently female (p<0.001), with higher BMI (p=0.02), lower creatinine clearance (p<0.001), and higher Crusade score (p<0.001). At 3 months RT was associated with lower rates of death (5.3% versus 18.6%; adjusted HR 0.27, 95% CI [0.1296-0.5845]), the composite endpoint (28.1% versus 40.6%, p=0.03) and cardiovascular rehospitalization (28.1% versus 37.7%, p=0.09). Bleeding rates were low and similar between groups (8.1% versus 9.4%, p=0.69).

Conclusion: A majority of elderly patients admitted for ACS can benefit from coronary revascularization. Revascularization in such patients is associated with a reduction of mortality and major events without increasing bleeding risk.



Kaplan-Meier survival curve.

P772

High sensitive cardiac troponin T in low risk profile acute coronary syndrome

B Morawiec,¹ M Tapponnier,² JO Prior,³ S Fournier,² JF Iglesias,² O Boulat,⁴ D Bardy,⁴ E Eeckhout,² O Hugli⁵ and O Muller²

¹2nd Department of Cardiology, Medical University of Silesia, Zabrze, Poland

²University Hospital Centre Vaudois (CHUV), Department of Cardiology, Lausanne, Switzerland ³University Hospital Centre Vaudois (CHUV), Department of Nuclear Medicine, Lausanne, Switzerland ⁴University Hospital Centre Vaudois (CHUV), Department of Laboratory, Lausanne, Switzerland ⁵University Hospital Centre Vaudois (CHUV), Department of Emergency Medicine, Lausanne, Switzerland

Background: Negative standard cardiac troponin (cTn) patients with chest pain are a recurrent diagnostic challenge in the emergency room. The aim of the study was to assess the diagnostic value of the newly highly sensitive troponin T assay (Hs-TnT) in a population of patients with negative standard cTn.

Methods: 48 consecutive patients with chest pain in last 24h, a non-conclusive ECG and negative standard cTn at admission and after 6 hours were enrolled. Hs-TnT were measured simultaneously at T0 and T6. All patients underwent rubidium-82 positron emission tomography/computed tomography (PET/CT) and invasive coronary angiography when PET/CT detected significant myocardial ischemia.

Results: In the sample population, 12.5% had significant increase in Hs-TnT. Among these patients, 50% have been identified by PET/CT as having significant myocardial ischemia and underwent coronary angiogram which revealed at least one significant epicardial coronary artery stenosis. In the rest of the sample population (87.5% with non significant increase in Hs-TnT), 93% had non significant myocardial ischemia at PET/CT and 7% had myocardial significant ischemia at PET/CT which was confirmed in all patients at coronary angiography. The sensitivity, specificity, positive, negative predictive value and diagnostic accuracy of hs-TnT with a cutoff value of 14ng/L identifying significant ischemia at PET/CT were 50%, 93%, 50%, 93% and 88%, respectively.

Conclusions: The present study confirms that hs-TnT assay in a population of low-risk profile for ACS has a low positive predictive value and a not sufficient negative predictive value to rule out significant myocardial ischemia detected at PET/CT.

P773

Isolated right ventricular myocardial infarction in a patient with sleep apnea

G Baltat,¹ I Manitiu² and G Eminovici²

¹Sibiu Emergency Clinical Hospital, Cardiology I Department, Sibiu, Romania

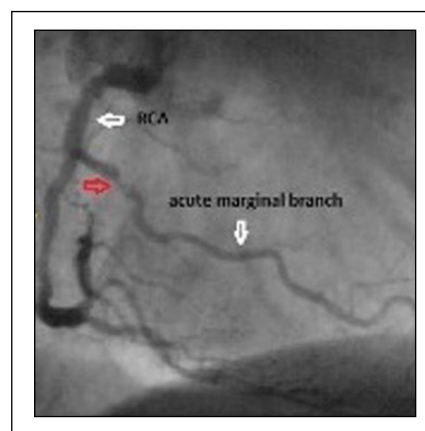
²Lucian Blaga University Sibiu, Faculty of Medicine, Sibiu, Romania

Isolated right ventricular myocardial infarction is a rare entity (under 3 % of all cases of acute coronary syndromes). Reperfusion therapies have improved the prognosis in acute myocardial infarction and hospital mortality dropped below 2%. That is not the case if the right ventricle is also interested. Despite these data, right ventricle remains too often the “forgotten room” and requires more “wake up calls” for having the correct consideration.

We present a 62 years old patient with no history of chronic obstructive pulmonary disease admitted through Emergency Service with severe acute respiratory failure and severe hypercapnia (pCO₂ = 87mmHg). The computed tomography of pulmonary vessels was negative for pulmonary embolism. In evolution, the quickly impaired respiratory and hemodynamic status imposed mechanical ventilation and inotropic support. Coronary angiography reveals acute marginal branch proximal segment (close to the emergence from right coronary artery) with a short and severe stenosis looking like intracoronary thrombus (Figure 1).

The diagnoses difficulties in this case derived from atypical presentation - without angina, with severe hypercapnic respiratory failure and the absence of specific electrocardiographic changes in ‘classic’ leads - interpreted in the context of isolated right ventricular infarction and the non association with inferior infarction .

We appreciate that the pulmonary hypoperfusion (secondary to the right ventricle infarction) turned a chronic respiratory pathology in a critical, life-threatening condition. Sleep apnea syndrome (subsequently documented by polysomnography study) with the possibility of long “silent” evolution, explains severe hypercapnia in a patient without any apparent causes of hypoventilation.



P774

Sustained ventricular tachycardia associated with worse short-term prognosis in patients with NSTEMI-ACS undergoing successful early PCI

F Cordeiro,¹ S Leao,¹ P Magalhaes,¹ C Ferreira,¹ A Baptista,¹ A Ferreira,¹ PS Mateus¹ and JI Moreira¹

¹Hospital Center of Tras-os-Montes and Alto Douro, Cardiology, Vila Real, Portugal

Purpose: Data regarding the incidence and prognosis of sustained ventricular tachycardia (VT) in non-ST segment elevation acute coronary syndromes (NSTEMI-ACS) undergoing early percutaneous coronary intervention (PCI) is limited. We sought to evaluate the incidence and the effect on short-term outcomes of sustained VT in patients with NSTEMI-ACS undergoing early successful PCI.

Methods: From Oct 2010 to Oct 2014, patients with NSTEMI-ACS enrolled in a national multicenter registry who underwent successful PCI in the first 24 hours since admission were selected. These patients (n= 2137) were divided in 2 groups: G1 – with sustained VT during the index hospitalization; G0: without sustained VT during index hospitalization. In-hospital mortality was compared between groups. Logistic regression modelling was used to identify baseline characteristics associated with sustained VT incidence and to compute adjusted odds ratio of in-hospital death.

Results: Sustained VT occurred in 17 (0.8%) patients: 15 (0.7%) patients had sustained VT until PCI day and 2 (0.1%) patients after PCI day. Patients with sustained VT were older (71±17 vs. 64 ± 13, p=0.03) and more likely to have multivessel disease (82.4% vs. 49.9%, p=0.008). Right bundle branch block (OR: 12.86, 95% CI: 2.44-67.72, p=0.003), Killip class IV at admission (OR: 55.29, 95% CI: 5.76-530.65, p<0.001) and severe left ventricular dysfunction (OR: 27.81, 95% CI: 4.72-163.96, p<0.001) were independent predictors of sustained VT during hospitalization. Sustained VT patients showed higher incidence of heart failure (52.9% vs. 8.3%, p<0.001), atrial fibrillation (23.5% vs. 3.0%, p=0.002), high-grade AV block (11.8% vs. 1.0%, p=0.014) and resuscitated cardiac arrest (24.4% vs. 0.9%, p<0.001) during hospitalization. In-hospital death was more frequent in patients with sustained VT (29.4% vs. 0.5%, p<0.001). In a multivariable model, sustained VT was associated with in-hospital death (OR: 19.58, 95% CI: 3.97-96.50, p<0.001). Prior myocardial infarction (OR: 4.87, 95% CI: 1.16-20.54, p=0.031) and heart failure during hospitalization (OR: 58.2, 95% CI: 7.0-485.3, p<0.001) were other predictors of in-hospital death.

Conclusions: In this observational nationwide study, sustained VT was associated with poor LV function and

was an adverse short-term prognostic marker in the setting of NSTEMI-ACS.

Sudden death / resuscitation

P775

Why we don't cool? Implementation of therapeutic hypothermia in Polish intensive cardiology units.

L Koltowski,¹ K Malesa,¹ M Tomaniak,¹ D Puchta,¹ J Stepinska,² B Sredniawa,³ R Kowalik,¹ G Karpinski¹ and G Opolski¹

¹Medical University of Warsaw, 1st Department of Cardiology, Warsaw, Poland ²Institute of Cardiology in Anin, Intensive Cardiac Therapy Clinic, Warsaw, Poland ³Silesian Center for Heart Diseases (SCHD), Department of Cardiology Medical University of Silesia, Zabrze, Poland

Background: The current guidelines recommend use of therapeutic hypothermia (TH) to increase neurological outcome and survival in comatose cardiac arrest patients. We evaluated the implementation of TH procedure in Poland and identified the obstacles preventing wide deployment of TH in cardiac units.

Methods: A telephone survey, fax and online inquiry form was used to assess the implementation of TH among Polish units in the management of unconscious patients after a CA. The questions addressed the issue of local TH protocol design, reasons for not using TH and outcomes of CA patients.

Results: We obtained information from 73 units out of 150 asked (48.6%). At the time of the survey, 20 units (27.4%) were using TH as part of their post-CA management. The collected data revealed that among 709 patients with CA, over 235 (33.2%) were cooled and 143 recovered and were discharged from hospital (20.2%). Of all CA patients managed by cardiologists, 45% were underwent TH in cardiac intensive care units (CICU), 40% in the Coronary Care Unit (CCU) and 15% in the Intensive Care Unit (ICU). The major barrier of not implementing TH was lack of knowledge and experience (74.7%).

Conclusions: The amount of cardiology units that provide TH for comatose CA patients is low. The main limiting factor for wider use of TH is lack of knowledge and experience. There is a clear need for urgent educational activities for cardiology units. The benefit of TH still has not reached its potential in Poland.

Table 1. Barriers for wide deployment of TH in Po.

Barriers of not using TH	
lack of knowledge, experience	37% (20/54)
lack of reimbursement	18.5% (10/54)
lack local protocol	5.6% (3/54)
lack of medical staff	1.9% (1/54)
lack of equipment	18.5% (10/54)
lack of confidence in method	3.7% (2/54)
>3 of mentioned above	14.8% (8/54)
Did your centre participated in a TH training course	
yes	37% (20/54)
no	63% (34/54)

TH- therapeutic hypothermia.

P776

How long should we wait to assess neuron-specific enolase in patients with sudden cardiac death?

J Sans Rosello,¹ A Duran Cambra,¹ M Vila Perales,¹ M Sanchez Martinez,¹ JI Llao Ferrando,¹ P Jorda Burgos,¹ E Fernandez Peregrina¹ and A Sionis¹

¹Hospital de la Santa Creu i Sant Pau, Cardiology - Coronary Care Unit, Barcelona, Spain

Introduction and Objectives: In patients with sudden cardiac death (SCD), assessment of neuron-specific enolase (NSE) in first 72h has been proposed as a marker of neurological outcome although there is no consensus about when a single determination of NSE could give us more information about neurologic prognosis. Our objective was to characterize the predictive value of a single NSE assessment at admission or during hospitalization in a cohort of patients with SCD.

Methods: Analysis of the 118 patients admitted to our hospital with a diagnosis of SCD in whom NSE was evaluated in the first 24 hours, 48h and 72h from April 2011 to April 2015 inclusive, was performed. Various clinical and analytical parameters, as well as neurological status at discharge using the Cerebral Performance Category scale were determined.

Results: Mean age was 61.45 ± 14.36 years. 81.36% were male, 57.6% hypertensive, 26.3% diabetic, 51.7% had dyslipidaemia, and 35.6% were smokers. 70.3% of SCD cases were of ischemic origin (of which 81.9% corresponded to acute coronary syndrome). Cardiac catheterization and PCI at 0 hours were performed in 72% and 57.6% respectively. SCD occurrence was 11%

in-hospital, 39.8% at home and 49.2% in a public place. SCD was witnessed in 93.2% of cases. In 66.9% the initial rhythm was shockable. In 83.1% therapeutic hypothermia was performed. Mean NSE at 24h, 48h and 72h was 47.43 ng/ml, 74.26 ng/L and 62.49 ng/L respectively. There was 41.5% in-hospital mortality. Neurological outcome: 52.5% good neurologic outcome (CPC 1-2) and 44.1% poor neurologic outcome (CPC 3-5), 3.4% was impossible to determine neurologic outcome (death before proper neurologic evaluation). Area under an ROC curve for NSE at 24h, 48h and 72h was 0.800, 0.964 and 0.932 respectively ($p=0.002$).

Conclusions: Assessment of NSE at 48h of admission in patients with SCD allows us a better discrimination their neurologic prognosis.

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Which the best cut off point for neuron-specific enolase in patients with sudden cardiac death?

J Sans Rosello,¹ M Vila Perales,¹ JI Llao Ferrando,¹ A Duran Cambra,¹ M Sanchez Martinez,¹ P Jorda Burgos,¹ E Fernandez Peregrina¹ and A Sionis¹

¹Hospital de la Santa Creu i Sant Pau, Cardiology - Coronary Care Unit, Barcelona, Spain

Introduction and Objectives: Early assessment of neurological outcome in patients admitted for sudden cardiac death (SCD) is a clinical challenge. Neuron-specific enolase (NSE) has been proposed as a marker of adverse neurological outcome although its cut off point to establish poor neurologic outcome is controversial. Our objective was to evaluate the predictive value of the NSE determination in a cohort of patients with SCD and analyse its sensibility (Se) and specificity (Sp) to determine its best cut off point.

Methods: Analysis of the 118 patients admitted to our hospital with a diagnosis of SCD in whom NSE was evaluated in the first 72 hours from April 2011 to April 2015 inclusive, was performed. Various clinical and analytical parameters, as well as neurological status at discharge using the Cerebral Performance Category scale; Glasgow-Pittsburgh (CPC) were determined.

Results: Mean age was 61.45 ± 14.36 years. 81.36% were male, 57.6% hypertensive, 26.3% diabetic, 51.7% had dyslipidaemia, and 35.6% were smokers. 70.3% of SCD cases were of ischemic origin (of which 81.9% corresponded to acute coronary syndrome). Cardiac catheterization and PCI at 0 hours were performed in 72% and 57.6% respectively. SCD occurrence was 11% in-hospital, 39.8% at home and 49.2% in a public place.

SCD was witnessed in 93.2% of cases. In 66.9% the initial rhythm was shockable. In 83.1% therapeutic hypothermia was performed. Mean NSE was 52.2 ng/ml (6.37-370 ng/ml). There was 41.5% in-hospital mortality. Neurological outcome: 52.5% good neurologic outcome and 44.1% poor neurologic outcome, 3.4% was impossible to determine neurologic outcome (death before proper neurologic evaluation). Area under an ROC curve for NSE was 0.857. NSE best cut off point was 42.19 ng/L (Se 73.1%, Sp 91.9%). Sp of 100% (no false positives) was achieved with a value of 84.3 ng/L (Se 36.5%).

Conclusions: NSE is a prognostic marker of neurologic outcome in patients with SCD. Values above 42 ng/L could properly identify patients with poor neurologic outcome.

P778

NT-proBNP is not correlated with hemodynamic parameters in comatose OHCA-patients.

MF Frydland,¹ J Kjaergaard,¹ J Hartvig Thomsen,¹ J Bro-Jeppsen¹ and C Hassager¹

¹Rigshospitalet - Copenhagen University Hospital, Cardiology, Copenhagen, Denmark

Purpose: Increased N-terminal pro B-type natriuretic peptide (NT-proBNP), a biomarker reflecting heart failure severity, has also been shown associated with a dismal

prognosis in comatose out-of-hospital cardiac arrest (OHCA) patients. We assessed NT-proBNP in relation to measures of cardiac function in these patients.

Methods: The Target Temperature Management (TTM) trial assessed mild hypothermia of 33°C vs. 36°C for 24 hours in comatose OHCA-patients, finding no differences in mortality. NT-proBNP was measured in 647 patients after 24, 48, and 72 hours of TTM-initiation. Of these, 136 from our center had cardiac output (CO) and pulmonary capillary wedge pressure (PCWP) measured by a Swan Ganz catheter after 16 hours. Left ventricular ejection fraction (LVEF) was measured by echocardiography (n=100). Ln(NT-proBNP) was used as dependent variable in a general linear model adjusting for demographic and prehospital factors.

Results: A twofold increase in NT-proBNP was associated with higher mortality (HR 1.14, CI 1.04 – 1.24, p<0.01) and poor neurological outcome (OR 1.05, CI: 1.03 – 1.08, p<0.0001) – (ESC 2015). NT-proBNP correlated inversely with LVEF (–2.2%, CI -3.8 – -0.6, p<0.01), but was not related to PCWP (p=0.37) or CO (p=0.09). The models identified age and time to return of spontaneous circulation (ROSC) as significant predictors of NT-proBNP levels (Table). Correlations did not change after 48 and 72 hours.

Conclusions: NT-proBNP is related to time to ROSC and age but not consistently to hemodynamic parameters after cardiac arrest, suggesting that NT-proBNP is a weak marker of cardiac function in comatose OHCA patients undergoing TTM.

Table 1.

	Multivariate estimate (change in NT-proBNP)	P	Multivariate estimate (change in NT-proBNP)	P	Multivariate estimate (change in NT-proBNP)	P
CO	-11.6%	ns	-	-	-	-
PCWP	-	-	1.9%	ns	-	-
LVEF	-	-	-	-	-2.2%	<0.01
Age / year	2.0%	<0.05	2.2%	<0.05	2.7%	<0.01
Lactate on admission	3.6%	ns	3.7%	ns	2.6%	ns
STEMI	30.5%	ns	26.6%	ns	18.8%	ns
Bystander CPR	-22.1%	ns	-19.2%	ns	-16.9%	ns
Time to ROSC / min.	1.9%	<0.01	1.9%	<0.01	1.3%	<0.05
Initial Rhythm	-23.0%	ns	-32.5%	ns	-85.4%	<0.05

P779

Correlation between somatosensory evoked potentials and neurological outcome and in-hospital mortality in patients undergoing therapeutic hypothermia after a cardiac arrest

C Llanos-Guerrero,¹ M J Corbi-Pascual,¹ MI Barrionuevo-Sanchez,¹ G Gallego-Sanchez,¹ JG Cordoba-Soriano,¹ I Lopez-Neyra,² C Ramirez-Guijarro,¹ S Calero-Nunez,¹ J Jimenez-Mazuecos¹ and C Lafuente-Gormaz¹

¹Albacete. University General Hospital, Albacete, Spain

²Hospital de Hellin, Hellin, Spain

Introduction: Approximately 275 000 Europeans per year experience out-of-hospital cardiac arrest. Sudden cardiac arrest survivors suffer from a global ischemia-reperfusion injury called post cardiac arrest syndrome which may lead to poor neurological outcome and death. Treatment directed at minimizing the inflammatory response and cell death in the reperfusion period may improve prognosis following cardiac arrest. Therapeutic hypothermia, defined as a reduction of body temperature to 32°C to 34°C for 12 to 24h, has been recommended to reduce the global cerebral injury.

Objective: Define the relationship of neurological outcome at discharge and hospital mortality with Rankin scale and the results of somatosensory evoked potentials (SEP) performed a group of patients undergoing to therapeutic hypothermia within the protocol postresuscitation care.

Methods: Prospective observational study with consecutive patients with cardiac arrest since January 2006 to January 2015. We analyze neurological outcomes and mortality compared with the results of the SEP.

Results: We prospectively included 82 patients with cardiac arrest. 78% cardiovascular cause. Sixty-one percent of patients was performed at 72 hours a study of SEP classifying patients into 3 groups: good prognosis (presence of N20 and N70 bilateral), poor prognosis (absence of SEP) and uncertain prognosis (intermediate data). The remaining 39% did not realize SEP because they died in the first 24-48hours or lack of protocol. We compared each result of the SEP with Rankin scale that classifies them into 5 groups: 1. Without sequels; 2. mild disability; 3. Severe disability; 4. Dependent and 5. In-hospital death. Patients with SEP with good prognosis: 69.8% without neurological sequelae at discharge, 7.7% with mild disabilities, 7.7% with severe disabilities and 4% dead. SEP of uncertain prognosis: 50% discharged without neurological sequelae and 50% dead. SEP with poor prognosis: 88.9% in-hospital mortality and 11.2% are dependent for everything, without any P live without neurological sequelae or with some degree of disability. We confirmed the correlation between SEP and neurological outcome at discharge and in-hospital mortality.

Conclusions: In patients undergoing therapeutic hypothermia after a cardiac arrest, SEP are good predictors of neurological outcomes at discharge and in-hospital mortality assessed by Rankin scale. Somatosensory evoked potentials are a test with high diagnostic accuracy and should be included in the protocols of therapeutic hypothermia

P780

Clinical outcomes of cardiopulmonary resuscitation of cardiac arrests inside the intensive care unit.

Y S Nassar,¹ S Fathy,¹ A Gaber¹ and M S Mokhtar¹

¹Critical Care Department Cairo University, Cairo, Egypt

Aim: Clinical assessment of cardiopulmonary resuscitation procedures of witnessed cardiac arrests inside the intensive care units and follow up of patients surviving to discharge.

Patients and Methods: Data were collected prospectively from patients who were witnessed in cardiac arrest inside the ICU and underwent CPR at Cairo University hospitals ICU in the period from Jan 2013 to Dec 2014. Resuscitation protocol was done according to the latest recommendation of the European Society of Cardiology. Clinical data were recorded and surviving patients were clinically followed daily until hospital discharge.

Results: The study included 110 patients; 41 females (37%) and 69 males (63%). There were 26 (24%) patients under 50 years and 84 (76%) patients were above 50 years. The predominant illness was Respiratory 35(32%), Cardiac diseases 6(6%), Liver and gastrointestinal diseases 7(6%), Neurologic diseases 31(28%), Metabolic diseases 18(17%), Sepsis 6 (5%) Shock 29(28%)

CPR was unsuccessful in 50 (45%) while it was successful in 60 (55%) patients, but out of those successful CPR patients 38 (35%) died inside the hospital before discharge and the total in hospital death was 88 (80%). Total patient survival to hospital discharge occurred in 22 patients (20%). Out of the survivors to hospital discharge 13(12%) were functionally dependent, 4 pts(4%) with neurologic injury, 4 pts(13%) with cognitive impairments and 20 pts(18%) with psychiatric diseases. The underlying primary illness of the survived to discharge patient was respiratory 8(7%), 3(3%), Liver and GIT 3(3%), neurology 11(10%), metabolic and sepsis 7(6%), shock 14(13%). The success rate was nonsignificantly different regarding age or sex. ($p < 0.05$) Multiple CPR cycles were done in (27.3% vs 10.9%, $p < 0.001$) in Nonsurvivors vs Survivors respectively. Single CPR cycle was done in (18.2% vs 43.6%, $p < 0.001$) in Nonsurvivors vs Survivors respectively. In Nonsurvivors, 76% of patients had MPM3 score > 10 vs 24% of patients had MPM3 score < 10 was ($p = 0.015$)

Conclusions: CPR in the ICU may achieve a high rate of short term survival, but survival to hospital discharge remains associated with high morbidities.

CPR success was associated with low MPM3 score (<10) and single CPR cycles.

CPR failure was associated with high MPM3 score (>10) and multiple CPR cycles.

P781

Post-ROSC ECG: really an accurate predictor of coronary artery disease in out-of-hospital cardiac arrest patients?

R Belfiore,¹ S Rakar,¹ S Scapol,¹ V Antonaglia,²
V Campanile,³ A Perkan,¹ G Vitrella,¹ A Salvi¹
and G Sinagra¹

¹University Hospital Riuniti, Department of Cardiology, Trieste, Italy

²Emergency Medical System, Trieste, Italy ³University Hospital Riuniti, Intensive Care Unit, Trieste, Italy

Purpose: Investigate if ECG after restoration of spontaneous circulation (ROSC), is a reliable predictor of significant coronary artery disease (CAD) in out-of-hospital cardiac arrest (OHCA) survivors in our community.

Methods: We retrospectively analyzed 684 consecutive cases of OHCA of presumed cardiac origin occurred in our city, from January 2010 to December 2014. Survivors were referred to coronary angiography (CA) according to post-ROSC ECG. Patients (pts) with ST elevation (STEMI) immediately underwent CA. On the other hand, no-STEMI pts were previously subjected to a fast rule out of extra coronary etiology. Comatose survivors were referred to

therapeutic hypothermia (HT) or normothermia (NT) protocol.

Results: Among 177 (26%) pts with ROSC, 146 pts (83%) were admitted alive to hospital. Post-ROSC ECG was available in 121 pts (83%): STEMI was found in 50 pts (41%), no-STEMI in 71 pts (59%). Comparing no-STEMI pts to their STEMI counterparts, no-STEMI pts were more likely to be female (71 vs 29%; p 0.03), with PEA or asystole as initial rhythm (74 vs 26%; p 0.01) and with longer ROSC times (25 ± 18 vs 20 ± 16 min). CA was performed in 94% (47) of STEMI pts (1 dead, 2 too old) and 51% (36) of no-STEMI pts (excluded prolonged OHCA, extra coronary causes, old age and comorbidities). Comparing STEMI and no-STEMI pts, CA revealed: normal anatomy or not critical CAD in 13 vs 11 pts (28 vs 30 %), critical CAD in 17 vs 11 pts (36 vs 30 %) and coronary occlusion in 17 vs 14 pts (36 vs 39 %). No-STEMI pts less frequently underwent either PCI (28 vs 72%; p 0.008) or the combined approach "PCI + NT/HT" (30 vs 70%; p 0.001), affecting long-term mortality. We observed a better long-term survival for pts treated with PCI alone (no-STEMI p 0.029; STEMI p 0.005) or with the combined approach (no-STEMI 0.049; STEMI 0.024), regardless of post-ROSC ECG.

Conclusion: In our population, post-ROSC ECG revealed as a poor diagnostic tool to predict significant CAD. All pts who survived OHCA of suspected cardiac origin, should be referred to a centre with the availability of CA, regardless of post-ROSC ECG. This approach seems to be the only reliable one, to rule out CAD, in order to improve prognosis.

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