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24th Annual Meeting of the ALPE ADRIA ASSOCIATION OF CARDIOLOGY (AAAC)

Vienna, April 21st–23rd, 2016

■ Moderated Posters I – April 21st, 2016, 12.30–13.15, Moderation: D. Aradi (HU)

I/1 Cardiac Arrest in a 10-year Primary Percutaneous Coronary Intervention Registry: Incidence, Features and Outcome

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Purpose Three-quarters of deaths consequent to acute coronary syndrome occur in pre-hospital phase, probably caused by cardiac arrest (CA). There are limited data about survival of patients (pts) with STEMI and out-of-hospital cardiac arrest (OHCA) treated with primary PCI (PPCI), because of their exclusion from interventional trials and registries due to their extremely poor survival. Further, ESC STEMI Guidelines just in 2012 recommended the treatment with PPCI of those patients.

Methods We retrospectively analyzed the data of 1289 consecutive pts with STEMI admitted for PPCI in our tertiary center from December 1, 2003–December 31, 2012. Pts were divided in two groups: STEMI and STEMI-OHCA. Afterwards, we grouped STEMI-OHCA patients as following: STEMI-OHCA comatose or not and STEMI-OHCA with CA before (strictly out-of-hospital, OH) or after (intra-hospital, IH) Emergency Medical System (EMS) call.

Results In our population there were 82 (6.4%) pts with STEMI-OHCA, 54 comatose (65.8%) and 52 (63.4%) with CA strictly OH. CA was due to shockable rhythm in 95% of pts. In comparison to STEMI group pts from STEMI-OHCA were younger (62 vs 66 yr, $p = 0.014$), haemodynamically more frequently instable (higher TIMI index, Killip class, percentage of shock; all $p < 0.05$), with more frequent LAD lesions (66 vs 47%, $p = 0.002$) and LM (4 vs 0.7%, $p = 0.02$). Again the in-hospital, 30-day and overall mortality of pts from STEMI-OHCA group was higher (20 vs 6%, 20.7 vs 6.6%, 31.7 vs 10.5%; $p < 0.001$), but peculiarly more events were observed among those comatose (30 vs 0%, 32 vs 0%, 37 vs 28%; $p < 0.001$) and with OH (28.8 vs 3.3%, $p = 0.05$; 28.8 vs 6.7%, $p = 0.017$; 38.5 vs 20%, $p = 0.08$). The presence of shock was associated with very bad outcome (HR 3.775, $p < 0.001$), either in STEMI and STEMI-OHCA pts.

Conclusions Pts with STEMI-OHCA treated with PPCI have higher short, mid e long-term mortality than pts with STEMI without CA. However, pts with STEMI-OHCA non-comatose and with CA after EMS call have short and mid-term similar to pts with other STEMI.

I/2 Long-term Outcome Data of the Bioabsorbable Everolimus-eluting Coronary stent system (ABSORB) – Preliminary Results from a Single Centre Registry

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Background It was shown that the bioabsorbable everolimus-eluting ABSORB stent (Abbott Vascular, USA) has a similar safety profile in terms of target lesion revascularisation, stent thrombosis and restenosis compared to third generation drug eluting stents, but there are also controversial data in the literature. We assessed long-term outcomes

using optical coherence tomography in patients who received an ABSORB stent in order to compare our own experience with this device with international data.

Methods and Results Between January 2013 and December 2015, 49 patients received an ABSORB stent, of whom 43% initially presented with stable or unstable angina (no troponin elevations) and 57% with an acute coronary syndrome (ACS).

Mean age of our patients was 53 ± 10 years, 94% were male and 63% had one-vessel disease. In total, 1.7 ± 0.9 ABSORB stents were implanted per intervention and patient. Thirty-eight patients (78%) did not experience recurrent symptoms and/or a cardiovascular events until December 2015, of whom 14% ($n = 7$) had an angiographic follow-up at two years without any significant restenosis. Three patients (6%) experienced a coronary event not related to the ABSORB-stented lesion. In 8 (16%) patients target lesion failure was diagnosed, which was a composite of ischemia-driven target lesion revascularization (ID-TLR), Non-ID-TLR, including also the angiographic detection of in-stent restenosis (ISR) of $> 50\%$.

ID-TLR occurred in 4 (8%), of which 3 events were definite stent thromboses and 1 was a high grad ISR accompanied with troponin elevation. Non-ID-TLR occurred in 4 (8%) patients, of which 2 events were due to high-degree ISR, while, one was a de-novo, lipid rich thin-cap atheroma, and one an ISR of $> 50\%$ not suitable for revascularization. Events occurred primarily in patients implanted in the first year of experience (2013, time to event 11.8 ± 7.1 months), while only 1 of 8 events occurred in a patients implanted later.

Conclusion In contrast to previously published findings, target lesion failure was frequent (16%) in patients undergoing implantation of ABSORB stents in our hands with main problems in the first year of experience with this stent at a time when the optimal implantation technique was not known or not made accessible for the user. After improvement of clinical routine by stepwise optimization of the implantation technique the ABSORB bioresorbable scaffold behaved comparable to second generation drug-eluting stents when used in the correct indication.

I/3 Role of D-dimer in Diagnostics of Acute Aortic Dissection

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Background Acute aortic dissection is rapidly fatal medical emergency, for which early diagnosis and treatment are critical. Chest pain, as most common symptom, classes it with large differential diagnosis group of chest pain, but it is life saving to differ them from each other because of big impact of specific therapy on prognosis and mortality. A 60-year old woman misdiagnosed with aortic dissection by computed tomography without electrocardiogram (ECG) gating scan underwent needless surgery of aorta, the authors retrospectively evaluated difficulties in diagnostics of patients with acute aortic dissection.

Methods There are 75 patients diagnosed with acute aortic dissection (male subjects comprised 56 of the series), who were admitted at Department of Cardiac Surgery in our institute from January 2012 until February 2016. Diagnosis was confirmed by computed tomography (CT) aortography and/or echocardiography. The authors com-

pared some biomarkers as D-dimer, troponins, C-reactive protein and N-terminal pro B-natriuretic peptide (NT-proBNP) which are frequently used in differential diagnosis of chest pain. Other point of author's interest was to determine what clinical signs and imaging methods resulted to diagnosis of acute dissection.

Results D-dimer was sampled in 32 patients and was positive in all of them (100%). Troponin was sampled in 30 patients, 21 (70%) of them were negative, NT-proBNP was sampled in 8 patients, 1 patient (12,5%) was negative, C-reactive protein was sampled in 28 patients and 17 (60,7%) were negative. Elevated white blood cells count had 23 (74,2%) from 31 patients. Aortic dissection was firstly considered as pulmonary embolism in 9 patients (28,1%), same rate as correctly diagnosed aortic dissection at first sight. Aortic dissection was thought to be acute coronary syndrome in 8 patients (25%). Imaging method, that most often led to diagnosis of aortic dissection was CT aortography in 13 patients (40,6%), as an accidental finding in CT pulmonary angiography in 11 patients (34,4%) and remaining 8 patients (25%) were diagnosed by echocardiography. Clinical sign that helped mostly to choose next diagnostic step and made correct diagnosis of aortic dissection was appearance of symptoms in 14 patients (43,7%), elevation of D-dimer in 5 patients (15%), pericardial effusion in 6 patients (18,8%) and new diastolic murmur in 3 patients (9,4%).

Conclusion D-dimer in combination with imaging techniques plays an important role in diagnostics of chest pain. When suspicion is early said, history carefully asked, D-dimer helps in early diagnosis and thus affects prognosis.

I/4 Impact of Day and Time of Admission on Short- and Long-term Mortality in the Vienna-STEMI-Registry

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Introduction Several studies have shown contradictory findings regarding mortality and time or day of admission to tertiary hospitals. The aim of this study was to assess the impact of time or day of admission on short- and long-term mortality in the Vienna STEMI network (2003–2009).

Methods The study population consisted of 2452 patients. Patients were stratified for weekend-admission (Saturday and Sunday) or weekday-admission (Monday–Friday) and for admission-time during official (Monday–Friday, 07:00–14:00) or after official (weekdays 14:01–06:59 and weekends) working times of catheter laboratories. Outcome analysis was performed using univariate and multivariate Cox-regression analysis. As endpoint all-cause mortality was investigated after 30 days and 3 years of follow-up.

Results Mean age was 61.25 ± 13.6 years, 70.9% were male, 48.0% presented with anterior wall infarction.

With respect to 30-day mortality, weekend-admission was correlated with a significantly better outcome compared to weekday-admission in multivariate Cox-regression analysis adjusting for established risk factors and confounders (HR 0.583 [95%-CI: 0.419–0.802] $p = 0.001$). On Mondays, the trend for mortality was highest but did not reach statistical significance in multivariate analysis compared with the other weekdays ($p = 0.636$). As the most reliable explanation, computed with the Chi-quadrat test patients admitted on Mondays had a prolonged ischemic time (e. g. had the lowest rate of patients admitted within 120 minutes [12.0% vs 21.6% $p < 0.001$] and the highest rate of patient admitted later than 12 hours after onset of pain [9.9% vs 6.3%; $p < 0.001$]), thus resulting in fewer immediate percutaneous coronary interventions (70.4% vs 80.0%, $p < 0.001$) as pa-

tients admitted on other days of the week. Admission-time (HR 0.965 [95%-CI: 0.660–1.410] $p = 0.854$) had no impact on 30-day mortality.

With respect to 3-year mortality, we did not detect significant differences for admission-time (HR 1.081 [95%-CI: 0.836–1.398] $p = 0.553$) or admission-day (HR 0.928 [95%-CI: 0.742–1.161] $p = 0.513$) in univariate or multivariate Cox-regression analysis.

Discussion Admission-time had no significant effect on short and long-term mortality in the Vienna STEMI network. Interestingly, multivariate regression analysis revealed that short-term mortality was higher on weekdays compared with weekends, while this difference was no more seen for long-term mortality.

I/5 Epicardial Adipose Tissue and its Predictive Effect on Cardiovascular Outcome in Patients with Acute Coronary Syndromes Undergoing Percutaneous Coronary Intervention

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Aims We sought to investigate the association between epicardial adipose tissue (EAT) thickness and cardiovascular outcomes in a cohort of high-risk acute coronary syndrome (ACS) patients undergoing percutaneous coronary intervention (PCI).

Methods and Results Of 1198 patients undergoing PCI, 438 had a transthoracic echocardiography performed during index hospitalisation. EAT thickness was measured in the parasternal long-axis view, perpendicularly on the free wall of the right ventricle at end-systole in 3 consecutive cardiac cycles and was then averaged. As primary outcome measure, a composite of major adverse cardiovascular events (MACE), including cardiovascular death, non-fatal myocardial infarction (MI) and non-fatal stroke, was investigated after 3 years of follow-up.

Patients were included between 2004–2012, 293 (66.9%) were male. Median EAT thickness was 2.65 mm (IQR 2.00–3.00). EAT was correlated with body-mass-index ($R = 0.404$; $p < 0.001$) weight ($R = 0.314$; $p < 0.001$), baseline creatinine ($R = 0.118$; $p = 0.014$) and baseline glucose ($R = 0.129$; $p = 0.007$). After a follow-up of 3 years, MACE occurred in 64 patients (14.6%) corresponding to 36 (8.2%) with cardiovascular death, 21 (4.8%) with MI and 7 (1.6%) with stroke. Regarding the primary endpoint, EAT thickness revealed a significant predictive effect upon univariate Cox-regression (HR = 1.479 [95%-CI: 1.192–1.953]; $p = 0.006$) and multivariate Cox-regression analysis (HR = 1.408 [95%-CI: 1.015–1.953]; $p = 0.04$) after adjusting for established cardiovascular confounders.

Conclusions In a high-risk cohort of ACS patients undergoing PCI, EAT was associated with established markers of cardiovascular death. Moreover, EAT was an independent predictor for 3-year cardiovascular outcome, also after adjustment for established cardiovascular risk factors.

I/6 Toward Cross-Border Networks for STEMI in Europe: A Pilot Experience between Italy and Slovenia

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Aim The main goal of treatment in STEMI patients is to restore reperfusion of the heart tissue as soon as possible and primary percutaneous coronary intervention (pPCI) is the most effective method to do it. Since relative mortality after one year increases by approximately 1% for every 3 minute delay in receiving treatment, optimal organization of systems to minimize time delays, and the availability of pPCI, is key to improving outcomes. However, access to pPCI can be difficult in national periphery regions where the nearest cath lab may be located across the border.

Purpose We tested a cross-border access to pPCI model from Slovenia to Italy.

Methods and Analysis Our center, in the Nord-East of Italy, is the nearest cath lab for people living in Slovenian and Croatian coastal region, but many economical and political barriers still exist to reach it. In summer 2013, after the approval of a bilateral agreement, the up-grading of cross-border EKG teletransmission and writing of a transfer protocol, we started a pilot project for referring in Italy tourists or people temporary staying in that region, who affected a heart attack.

Results From 2013–2014 19 pts have been referred to our center: 16 male (84%), 63 average years old (62.9 ± 10.6 , range 49–84), mainly tourists (79%), Italians (52%; 21% from Germany, 27% from Austria, Hungary, Switzerland, Belgium and the Czech Republic), 58% coming from Croatia and 42% from Slovenia, and affected (70%) an acute coronary syndrome (60% STEMI). The call-to-balloon time (first medical contact-balloon) was 100' from Slovenia and 200' from Croatia, in relation to the distances (ranged from Slovenia between 21–57 km and from Croatia between 45–102 km). The in-hospital mortality was 0%, despite 1 case of out-of-hospital cardiac arrest.

Conclusion Italy and Slovenia have the same level of national access to pPCI, but with different range of equality in peripherals regions, where can work a cross-border solution. The results of our pilot experience are very encouraging to start a structured STEMI network, supported by firm belief, will and perseverance of all healthcare providers. Political and economical solutions will come as a consequence, because barriers difficult to overcome does not exist in front of certain benefit of our cross-border population.

I/7 Survival from Out-of-hospital Cardiac Arrest in a Community: Measure to Improve

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Purpose The knowledge of the incidence and the survival rate of out-of-hospital cardiac arrest (OHCA) in a community is crucial to test and to enhance the response of healthcare system.

Methods We retrospectively analyzed the data of patients (pts) who experienced OHCA during two-year period (October 1st, 2011–September 30th, 2013) in our small Province (212 km², 207,800 inhabitants; one General Hospital and one Emergency Medical System-EMS). Data were collected from EMS, Hospital (Emergency Room, Cardiology Department, Catheterization Laboratory, Intensive Care Unit, Pathology Department) and Forensic Medicine records.

Results A total of 485 pts (1.16/1000 inh/y) with OHCA were assessed by teams of our EMS, and in 244 (50.3%; 0.58/1000 inh/y) resuscitation was attempted. 198 (40.8%; 0.48/1000 inh/y; 70.9 y, 59 % male) of OHCA were of presumed cardiac etiology, 29.5% due to shockable rhythm, 63% occurred at home, 72% witnessed, but only 18% treated by bystander. A sustained return of spontaneous circulation (ROSC) was reported in 63 pts (31.8%) and 55 (28%) were admitted alive to our hospital. 35 pts (63.6%) were treated with mild hypothermia (MIH) and percutaneous coronary intervention (PCI) was performed in 17 pts (30.9%; 50% of 35 coronary angiographies). A total of 23 pts (11.6%) were discharged from the hospital alive, 9.5% with cerebral performance categories of 1 or 2, 5 (2.5%) treated with ICD, while 5 pts stay still in hospital because of neurological complications. At 1 year 26 pts (13.1%) were alive. One-year survival was better in pts underwent to CA ($p = 0.003$) and CA plus MIH ($p = 0.005$).

Conclusions Survival rates of OHCA are still low in pre-hospital, hospital and post-hospital settings of our Province. Efforts should be focused on higher bystander CPR and more extensive post-resuscitation care.

I/8 Copeptin Levels in Patients with Chest Pain with Type-1 and Type-2 Myocardial Infarction

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Background Copeptin, a C-terminal end of vasopressin, is used in emergency medicine as a stress biomarker for the early ruling out of acute coronary syndrome (ACS) (two marker strategy, ESC NSTEMI guidelines 2015). Whether Copeptin determination allows differentiation between type-1 and type-2 myocardial infarction (MI) or not, has not yet been investigated.

Objectives This study evaluated whether there is a difference between Copeptin concentrations of type-1 and type-2 MI.

Methods We examined 99 consecutive patients, presenting with chest pain at the emergency department of Wilhelminenhospital in Vienna. The subjects underwent a Troponin I and a Copeptin test at presentation and underwent further diagnostic measures to differentiate between type-1 and type-2 MIs. Furthermore, patients with a negative Troponin I at two consecutive blood samples (0.3 hour strategy) were included into the group of no-MI.

Results Median (25th; 75th percentile) Copeptin levels were 35.4 pmol/l (10.0; 132.6) in patients with type-1 MI, 23.3 pmol/l (8.7; 48.9) in patients with type-2 MI and 5.3 pmol/l (2.9; 11.7) in no-MI patients. There was a highly significant difference in Copeptin concentrations between both MI-types and no-MI subjects ($p < 0.001$), while the difference between type-1 and type-2 MI was not significant ($p = 0.68$). Using a cut-off of 10 pmol/l, 76.5% of patients with type-1 MI, 69.2% of patients with type-2 MI, but also 31.9% of patients with no-MI showed elevated Copeptin level at presentation.

Conclusion Copeptin as a stress biomarker has an equal increase in patients with type-1 and type-2 MI, which does not allow a differentiation between MI-types. Unspecific elevation in almost 1/3 of no-MI patients deserves further investigation.

I/9 Circulating Copeptin and High-sensitive Troponin I in Patients with Chest Pain After a Recent Syncope

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Background Copeptin, a surrogate biomarker for arginine vasopressin, is useful in combination with troponin in the early rule-out of chest pain patients with suspected acute myocardial infarction (AMI). It may also be helpful in the diagnosis and prognosis of other clinical situations such as diabetes insipidus, pneumonia, stroke, septic shock and heart failure. Recently, pilot studies have assessed the utility of copeptin as circulating biomarker with respect to syncope albeit with contrasting results. To date, no evidence is available on the baseline characteristics and copeptin values of chest pain patients presenting with syncope in the emergency setting.

Methods We measured copeptin (ThermoScientific BRAHMS, Hennigsdorf, Germany) and high-sensitivity cardiac troponin I (hs-cTnI, Siemens Healthcare, Newark, USA) in 500 consecutive emergency department patients who presented with chest pain between February and June 2011. Retrospectively, we selected only patients with a concomitant syncopal episode. Copeptin cut-off values above 10 pmol/L were considered positive. Variables were measured as frequencies, means, medians and standard deviations.

Results Twelve patients (males = 6) presenting with chest pain and concomitant syncope were found. Their mean age was 74.1 ± 20.4 years; with time since symptom onset ≤ 6 h in 11 of 12 patients. All patients exhibited elevated copeptin levels (median 54.3 pmol/L, IQR 32.0–129.3 pmol/L) and no statistical significant difference ($p = 0.337$) was found in copeptin values between males and females. Only 3/12 patients with a history of recent syncope had elevated

Table 1. K. G. Vargas et al. Baseline characteristics and biomarker values of included patients.

Patient number	Age (years)	Sex	Symptom onset (hr)	Copeptin (pmol/L)	hs-cTn I level	Other findings
1	91	F	6	75.74	Normal	HTN, left carotid artery stenosis, dehydration
2	75	M	3	28.40	Elevated	HTN, DVT/PE, GERD, duodenitis
3	96	F	6	19.53	Normal	HTN, hypertriglyceridemia, dehydration
4	92	F	1.25	42.70	Normal	HTN, tricuspid valve insufficiency, mitral valve insufficiency, chronic renal failure
5	42	M	6	80.32	Normal	Ethanol consumption
6	71	M	6	53.88	Normal	DM2, COPD, aortic stenosis, congestive heart failure, hyperlipidemia, smoking
7	74	F	3.5	189.60	Elevated	RBBB, PCI (< 24 hr before re-admission), chronic renal insufficiency, smoking
8	59	M	8–12	145.60	Elevated	HTN, AMI
9	94	M	6	246.90	Normal	HTN, hypothyroidism, hyperlipidemia
10	32	F	6	16.55	Normal	None
11	78	F	6	54.73	Normal	HTN, carotid artery stenosis, COPD, chronic venous insufficiency, dehydration
12	79	M	3	45.89	Normal	HTN, congestive heart failure

HTN = hypertension; DVT = deep venous thrombosis; PE = pulmonary embolism; GERD = gastroesophageal reflux disease; DM2 = diabetes mellitus type 2; COPD = chronic obstructive pulmonary disease; RBBB = right bundle branch block; PCI = percutaneous coronary intervention; AMI = acute myocardial infarction

hs-cTnI values on admission or several hours thereafter (0/3 hours detection strategy) and presented with the following additional diagnoses: deep venous thrombosis/pulmonary embolism in one case and acute coronary syndromes in two cases. In 6/9 patients with normal troponin values, syncope was most likely due to worsening of their co-morbidities including valvular insufficiency, congestive heart failure, venous insufficiency and dehydration thus most likely leading to transient cerebral hypoperfusion (Tab. 1). The remaining three patients in this group may have experienced a vasovagal syncope as no major co-morbidities were found. From the classical risk factors, hypertension was present in 67% of patients, hyperlipidemia in 25%, while diabetes mellitus type 2 and past smoking habit were documented in one and two patients only.

Conclusion Elevated circulating copeptin levels in combination with normal troponin levels are mainly seen in patients experiencing non-coronary chest pain and syncope. Further larger-sampled studies are warranted in order to determine associations between underlying causes for syncope and reveal potential confounding factors.

■ Moderated Posters II – April 22nd, 2016, 12.30–13.15, Moderation: L. Geller (HU)

II/1 Cerebral Microembolization during Convergent Procedure for Treatment of Atrial Fibrillation

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Purpose The rate of cerebral microembolization (CM) during the convergent procedure (CP) for treatment of atrial fibrillation (AF) is unknown. Our aim was to assess the incidence of CM.

Methods A prospective study included 22 consecutive patients (age 58.9 ± 6 yrs, 68.2% [15/22] male) that underwent CP for treatment of paroxysmal AF. CP included epicardial left atrial radiofrequency ablation (RFA) combined with endocardial catheter RFA for pulmonary vein isolation. Patients received intravenous heparin to reach the ACT of at least 300 seconds before the transseptal punctures. Cerebral magnetic resonance scans (diffusion weighted and FLAIR) were performed the day before and the day after the procedure. Presence of new cerebral ischemic lesions was assessed.

Results One patient (4.5%, 1/22) had two new ischaemic cerebral lesions (diameter 1–2 mm) and was without any clinically detectable neurological deficit. There were no new ischaemic lesions in other patients.

Conclusion Incidence of periprocedural CM in patients with paroxysmal AF undergoing CP is low.

II/2 Fluorless Transseptal Puncture in Pediatric Patients

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Purpose Transseptal puncture (TP) during catheter ablation of left-sided tachycardias in children and adolescents carries a potentially harmful effect of radiation exposure when performed with the use of fluoroscopy. Our aim was to observe feasibility and safety of transseptal puncture without the use of fluoroscopy in pediatric population.

Methods Seventeen consecutive TPs in 16 children and adolescents (13 boys and 3 girls, age 12 ± 3 yrs) were performed for ablation of left-sided accessory pathway (15/16, 94%) and left-sided focal atrial tachycardia (1/16, 6%). All TPs were performed without the use of fluoroscopy and guided only by intracardiac echocardiography (ICE).

Results TP success rate was 100% and there were no procedure related complications.

Conclusion In pediatric patients fluorless TP guided only by ICE is feasible and safe.

II/3 Screening for Sodium Channel Gene Mutations in Patients with ION Channel Diseases by Next-Generation-Sequencing

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Genetic alterations in genes encoding cardiac sodium channels are important causes of human ion channel diseases. Mutations in the major cardiac sodium channel gene *SCN5A* lead to long QT syndrome type 3 (LQT3) and Brugada syndrome type 1 (BrS1), while mutations in genes *SCN4B*, *SCN1B* and *SCN3B* cause LQT10, BrS5 and BrS7, respectively.

We aimed to screen for genetic variants in sodium channel genes using next generation sequencing in a cohort of ion channel patients.

We examined 44 patients with a suspected or proven diagnosis of ion channel disease (mainly long QT syndrome; 14 males, 30 females, avg. age: 28 ± 13 years). Genotyping was performed by next-generation sequencing and validated by capillary sequencing. Six sodium channel genes (*SCN1B*, *SCN2B*, *SCN3B*, *SCN4B*, *SCN5A* and *SCN7A*) were targeted.

Genetic screening identified altogether 178 sodium channel gene variants. Out of these, there were 7 non common (minor allele fre-

quency < 1%), possibly disease causing variants that led to amino acid change: 2 *SCN5A* variants (Val138Ile and Arg214Gln), 3 *SCN5A* variants (Ala997Thr, Phe2004Leu and Glu1784Lys) and 2 *SCN7A* variants (Ala994Asp and Val187Ile). *SCN5A* variants and the Val187Ile *SCN7A* variant occurred as one of the multiple variants identified in three patients, while all the *SCN5A* variants and the Ala994Asp *SCN7A* variant were present as the only genetic variant in the other four patients. The Ala997Thr and the Glu1784Lys *SCN5A* variants were identified in patients with a LQT3 phenotype, while the Phe2004Leu *SCN5A* variant was found in a patient with drug induced QT prolongation. The Ala994Asp *SCN7A* variant was identified in a patient with QT prolongation and progressive AV block.

Our results suggest that sodium channel gene mutations are not an infrequent cause of QT prolongation. The cases we describe here are the first LQT3 cases with proven *SCN5A* gene mutations reported in Hungary. *SCN7A* may represent a novel disease gene for long QT syndrome.

II/4 Genotype-Phenotype Correlations in Long-QT-Syndrome-Patients Genotyped by Next-Generation-Sequencing

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Long-QT-syndrome (LQTS) is a genetically determined arrhythmogenic disease affecting ion channels of the heart. Several studies suggested that LQTS patients carrying multiple genetic variants may exhibit a more malignant phenotype. The aim of our study was to examine genotype-phenotype correlations in LQTS patients genotyped for 69 ion channel genes.

Thirty-one LQTS patients (9 male, 22 female, avg. age: 28 ± 13 yrs) were included. Genotyping was done by next-generation sequencing, sequencing 69 ion channel genes in total. Identified rare variants were defined as causative mutations or variants of unknown significance (VUS). Variants were considered causative mutations if literature data proved causation, or predictive models indicated a damaging effect.

A total of 64 variants (17 causative mutation and 47 VUS) were detected in the 31 patient (2.06 variants/patient). The average QTc (QT-cavg) showed a trend to increase in mutation carriers (499 ± 46 vs 489 ± 69 ms, $p = 0.641$), and tended to rise in correlation with the number of variants. The trend for increased QTcavg were also represented in carriers with > 1 variants (499 ± 66 vs 484 ± 38 ms; $p = 0.497$), in carriers with > 2 variants (529 ± 85 vs 481 ± 39 ms; $p = 0.159$) or if the patient carried a causative mutation and multiple VUS (518 ± 67 vs 479 ± 22 ms; $p = 0.226$). The average age at the time of first symptoms were lower in causative mutation carriers (18 ± 17 vs 31 ± 13 year; $p = 0.024$); if they carried > 1 variant (24 ± 15 vs 35 ± 15 year; $p = 0.06$), or a mutation and multiple VUS (11 ± 9 vs 23 ± 16 year; $p = 0.128$). Identical, trend-like differences were observed with regard to maximal QTc and the average age at the time of diagnosis.

Our findings suggest that the presence of multiple variants or variants with a dominant effect (i.e. causative mutation) may lead to more severe form of the disease in LQTS patients. The trend-like differences, showing no significant changes, might be explained by the relatively low number of cases.

II/5 Zero-Fluoroscopy Catheter Ablation for Treatment of Atrial Fibrillation

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Introduction Catheter ablation (CA) of atrial fibrillation (AF) carries a potentially harmful effect of radiation exposure when performed with the use of the fluoroscopy. Our aim was to assess the feasibility and the safety of zero-fluoroscopy CA for treatment of AF.

Methods Twenty-four patients (17 male and 7 female, age 60 ± 11 yrs) with AF (18 with paroxysmal AF and 6 with persistent AF) underwent CA with a procedural endpoint of antral pulmonary vein isolation (PVI). All procedures were performed with the use of the three-dimensional (3D) mapping system (NavXTM and CartoTM) and without any use of the fluoroscopy. Intracardiac echocardiography (ICE) was used in all cases. CartosoundTM mapping system was used in some cases.

Results The procedural endpoint of PVI was achieved in all patients (24/24, 100%). The average procedural duration was 187 ± 52 minutes. There were no procedure related complications.

Conclusion Zero-fluoroscopy CA for treatment of AF is feasible and safe.

II/6 Out-of-Hospital Cardiac Arrest: It's the Time of a Multidisciplinary Task

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Purpose Survivors of out-of-hospital cardiac arrest (OHCA) has very poor intrahospital outcome, mainly due to cardiological and neurological complications. Coronary artery disease is the main cause of the OHCA. Early coronary angiography (CA) and percutaneous coronary intervention (PCI), independently of the ECG at presentation, and mild induced hypothermia (MIH) improve the prognosis.

Methods In October 2011 we drafted a multidisciplinary OHCA protocol among local Emergency Medical System (EMS), Emergency Room, Cardiology Department and Intensive Care Unit. We retrospectively analyzed the data about the consecutive comatose survivors after an OHCA occurred from October 2011 to October 2013, early treated with MIH and underwent to CA and PCI.

Results During the study period 55 pts comatose survivors after OHCA were admitted in our tertiary hospital (male 59%, age 68.3 yrs, shocable rhythm 50%, witnessed 83%). Their ECG after return of spontaneous circulation (ROSC) was 36% STEMI, 58% no-STEMI and 6% not available. 35 (64%) pts were treated with MIH. 34 (62%) pts underwent to early CA (63% through direct access in cath lab) and 17 to PCI (31%), mainly (78%) through radial approach. 41% of PCI had LAD as target vessel and 71% was completed with stenting. 14 CA (41%) were performed in no-STEMI ECG, with 7 (50%) consequent PCI. 11 CA (32%) were performed in no-shockable rhythm, with 4 consequent PCI (36%). A total of 23 pts (42%) were discharged from the hospital alive, 19 (34.5%) with cerebral performance category ≤ 2.5 (9%) treated with ICD, while 5 pts (9%) stay still in hospital because of neurological impairment. At 1 year 26 pts (47.2%) are overall alive. One-year survival was better in pts underwent to CA ($p = 0.003$) and CA plus MIH ($p = 0.005$), but not in those treated with lonely MIH ($p = 0.214$).

Conclusions Early CA and PCI in combination with MIH are feasible in comatose pts resuscitated after OHCA, despite their rhythm and ECG presentation, and improve 1-year survival. It is time to develop a multidisciplinary network for OHCA along with the STEMI network.

II/7 Out-of-Hospital Cardiac Arrest: Is LUCAS a Basic Advanced CPR Tool?

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Background Out of hospital cardiac arrest (OHCA) is a major cause of death in the Western world. The most of patients (pts) with OHCA died before arriving to the hospital. The quality of external chest compression (ECC) can improve the survival. A prompt action, re-

ducing the pauses and improving the quality of CPR with mechanical device could be the key, even if 3 recent RCT missed this goal. Based on these results, the last ILCOR 2015 Guidelines recommend the use of mechanical device only in special circumstances.

Methods and Analysis We report our experience using LUCAS among 591 cases of OHCA of presumed cardiac origin in our province, from January 2011 to December 2014. It is a retrospective and observational study about the safety of this device and its impact on survival.

Results Among 591 OHCA of presumed cardiac etiology, 142 (24%) pts have been treated with LUCAS by EMS because of refractory cardiac arrest. These pts were mainly male (72 vs 55%; $p = 0.000$), younger (67 vs 75 yr, $p = 0.007$), with OHCA in public place (39.3 vs 26%, $p = 0.019$) and ventricular fibrillation (VF) as initial rhythm (32% vs 23.4%, $p = 0.049$). They had a more frequent ROSC (36.6 vs 22.9%, $p = 0.001$) but no difference in hospital (10 vs 11%, $p = 0.723$) and 1-year survival (5.8 vs 6.6%, $p = 0.717$), despite a more aggressive postresuscitation care (emergent coronary angiography 22 vs 10.7%, $p = 0.001$; target temperature management 19 vs 7%, $p < 0.0001$). But if we pay specific attention to the 45 pts (31.7%) with shockable initial rhythm, they had a better pre-hospital (44.4 vs 27.1%, $p = 0.040$), hospital (24.4 vs 3.1%, $p = 0.000$) and 1-year (11.9 vs 3.1%, $p = 0.042$) outcome. The incidence of complication was 3.9%, all non fatal.

Conclusions Contrary the most recent RCT we used LUCAS not as basic but as advanced life support device in refractory OHCA, with good results on safety and survival, especially in case of shockable rhythms. Now we are waiting for new evidences about selection of patients that have to be treated.

II/8 Out-of-Hospital Cardiac Arrest: Does the Chain-of-Survival Work in Trieste?

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Background Out-of-hospital cardiac arrest (OHCA) is a very high mortality event (about 90% at discharge). Nevertheless there is a wide regional variability of the outcome and the bystander cardiopulmonary resuscitation (B-CPR) can be the key, because an immediate basic treatment can triple the survival of the victims.

Methods and Analysis We retrospectively analysed the cases of OHCA from presumed cardiac origin in the Province of Trieste from January 2011 to June 2015, evaluating the rate of B-CPR and its impact on survival.

Results Among 638 cases of OHCA from presumed cardiac origin, the data about B-CPR was available in 70% patients (446, pts). This population was mainly male (61.7%), 71 (± 7) year-old, with onset by non-shockable rhythm (72%), cardiac arrest occurring in private place (68%) and witnessed (64.5%), but little treated (B-CPR 17.9%), despite of an intensification of the population-training programme in the same period (2820 people, 63% on BLSD and 37% on hands-only CPR). The 80 pts (17.9%) treated with B-CPR compared to those not treated (366 pts, 82.1%) had higher rate of shockable rhythm (36.4% vs 24.3%, $p = 0.093$), occurrence in public place (51.6% vs 28.9%, $p = 0.000$), witnesses (82.7% vs 60.5%, $p < 0.001$) and post resuscitation care (coronary angiography 25% vs 14.8%, $p = 0.026$; percutaneous coronary intervention 15% vs 6%, $p = 0.017$; target temperature 17.5% vs 9.6%, $p = 0.041$). Furthermore they had a better outcome: pre-hospital survival 42.5% vs 29% ($p = 0.018$), in-hospital survival 21.5% vs 10.4% ($p = 0.007$), neurological outcome (CPC ≤ 2 20% vs 6.9%, $p < 0.0001$), 30-days survival 22.5% vs 11.2% ($p = 0.007$) and 1-year survival 17.9% vs 7.5% ($p = 0.004$). B-CPR was a positive predictive factor for outcome in pre-hospital (OR = 1.813 [95%-CI: 1.102–2.982]), hospital (OR = 2.360, [95%-CI: 1.253–4.444]), 30-days (OR = 2.301 [95%-CI: 1.242–4.266]) and 1-year (OR = 2.706 [95%-CI: 1.346–5.442]) settings and for neurological outcome (OR = 3.405 [95%-CI: 1.697–6.829]).

Conclusions Our experience confirms the crucial role of chain-of-survival in the outcome of OHCA. Nevertheless it does not work very

well in our Province, despite a high rate of witness and a long history of population-training. The focus on schools, self-instruction-CPR, hands-only CPR and dispatch-CPR programs will be essential.

II/9 Bundle Branch Block Increases In-Hospital Mortality in Acute Coronary Syndrome Patients: Results of the Croatian ISACS Registry

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Purpose The aim was to study early outcomes of patients with bundle branch block (BBB) from the national ACS registry (part of International Registry of Acute Coronary Syndromes in Transitional Countries [ISACS-TC]).

Methods We analysed data from ISACS-TC that included patients from single center in the period from January 2013 to January 2015. Study population included 1197 consecutive ACS patients (pts) (563 STEMI, and 630 NSTEMI+UA (4 pts missing, 825 male, mean age 66 ± 11 yrs). Overall, median hospital length of stay was 5 days (3–8). Patients were divided in 2 groups based on the presence of BBB. The univariate and multiple binary logistic regression model with in-hospital death as primary outcome for groups of pts, adjusted for age, gender, diabetes mellitus and LVEF was used for statistical analysis.

Results The rate of primary outcome was significantly higher in the BBB group (47 pts, odds ratio [OR] = 3.613, 95%-CI: 1.430–9.127, $p = 0.013$). Older age (OR = 1.092, 95%-CI: 1.059–1.125, $p < 0.001$), female gender (OR = 2.515, 95%-CI: 1.391–4.547, $p = 0.002$), diabetes mellitus (OR = 3.524, 95%-CI: 1.907–6.513, $p < 0.001$) and LV EF (OR = 0.892, 95 %-CI: 0.856–0.929, $p = 0.008$) were also significant independent factors for primary outcome in univariate regression analysis. After adjusting for significant covariates, lower LVEF ($p < 0.001$) and female gender ($p = 0.03$) remained significant independent primary outcome predictors. In multiple binary regression model without LVEF, which is often unavailable at initial presentation, BBB (OR = 3.079, 95%-CI: 1.123–8.443, $p < 0.001$), together with age ($p < 0.001$) and DM ($p = 0.009$) was independent in-hospital death predictor.

Conclusion The presence of a BBB was independently associated with a higher in-hospital mortality.

■ Moderated Posters III – April 23rd, 2016, 11.30–12.30, Moderation: P. Haller (AT)

III/1 Management of Patients with Chronic Systolic Heart Failure at Heart Failure Outpatient Clinic Improves Survival after CRT and/or ICD Implantation

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Background Despite novel medical and device treatment of patients with chronic systolic heart failure (HFrEF), mortality still remains high.

Aim The aim of the study was to investigate the effect of management at heart failure outpatient clinic on mortality among HFrEF patients after device (CRT and/or ICD) implantation.

Patients and Methods We followed 195 HFrEF patients (150 male, mean age: 65.3 ± 10.6 yrs, NYHA: 2.4 ± 0.8 , EF: $27.1 \pm 6.8\%$, ischaemic etiology: 57.4%) who received ICD (33.3%) CRT-P (14.9%) or CRT-D (51.8%) according to current guidelines, between 2010 and 2014. Every patient received optimal medical therapy and was followed at our electrophysiology clinic. The possibility of management at our heart failure outpatient clinic was offered for every patient, 116 of them accepted it. We compared the mortality of patients

who participated in heart failure management and who did not, using Kaplan Meier method and log-rank test. The impact of heart failure management was evaluated with Cox regression.

Results During follow-up period (mean: 41.7 ± 19.8 months) 72 patients died. Survival of patients who managed at heart failure outpatient clinic proved to be better significantly than who did not. (HR: 0.493; CI: 0.310–0.784, $p = 0.003$). The survival benefit remained statistically significant (HR: 0.409; CI: 0.238–0.703, $p = 0.001$), after adjustment with relevant baseline parameters (age, diabetes, ischaemic/non-ischaemic etiology, type of implanted device, LVEF, LVEDD, difference in ACEi and BB use and dosage).

Conclusion Heart failure patients with CRT-P, CRT-D or ICD have survival benefit from management at heart failure outpatient clinic besides controlling their devices by electrophysiologists.

III/2 Screening for Fabry Disease in Hypertrophic Cardiomyopathy with Multiorgan Involvement

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Background Fabry-disease is an X-linked inherited lysosomal storage disorder caused by mutations in the *GLA* gene, which leads to deficiency in the enzyme of α -galactosidase A. Due to impaired function of the enzyme glycosphingolipid deposition occurs in the target organs, leading to organ-specific or systemic Fabry disease. The cardiac involvement as left ventricular hypertrophy, hypertrophic cardiomyopathy, or conduction disorders are present in 60% of patients with Fabry disease. Our aim was to perform screening for Fabry disease, including genetic analysis of the *GLA* gene, in cases of suspected Fabry disease with cardiac and potential multi-organ involvement.

Patients and Methods A total of 21 patients (14 women, 7 men; mean age 50 ± 15 yrs), with suspected Fabry disease, underwent screening. Hypertrophic cardiomyopathy/left ventricular hypertrophy was present in 18 cases, while restrictive and dilated cardiomyopathy, one case each, was also included. In one case the diagnosis of cornea verticillata indicated the screening. Non-cardiac signs included neurological, renal, ocular or dermatology symptoms. During the screening protocol genetic analysis of the coding regions of the *GLA* gene was performed.

Results We identified 4 *GLA* mutations in 4 patients (19%) out of 21 patients we screened (4 women, average age 49 ± 15). Fabry disease with extended organ manifestation (hypertrophic cardiomyopathy, renal failure) was observed in case of mutation p.Ile239Met. In case of mutation p.Tyr397Stop the disorder manifested in the form of hypertrophic cardiomyopathy and neurologic symptoms. The mutation c.548-57_-56dupTA led to phenotype of atypical, rapidly progressive restrictive cardiomyopathy. The mutation p.Glu358Lys caused ocular symptoms without substantial cardiac alterations.

Conclusion Our data show that Fabry-disease is not negligibly rare in the background of hypertrophic cardiomyopathy, especially if other symptoms, indicating multi-organ involvement, are present.

III/3 Identification of a Mitochondrial Gene Mutation in a Systemic Disease Manifesting Primarily as Hypertrophic Cardiomyopathy

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Mitochondrial diseases belong to a heterogeneous group of multisystemic diseases as rare systemic disorders caused by gene mutations in the mitochondrial genome (mtDNA). The disease primarily affects the central nervous system and skeletal muscle, but numerous other forms are known, in which disease-specific symptoms may be pre-

sent. The disease typically shows maternal inheritance. In our study genetic analysis was performed in a patient presenting with the cardiac phenotype of hypertrophic cardiomyopathy.

A 32-years-old female patient, with short stature (140 cm), came to medical attention at the age of 27 when she presented with exertional dyspnea and chest discomfort. Hearing disorder was known for years, which was attributed to bilateral cochlear lesion. ECG showed short PQ interval and signs of left ventricular hypertrophy. Echocardiographic and MRI examinations confirmed non-obstructive hypertrophic cardiomyopathy, enlarged left atrium, severe concentric left (LV_{max}: 15 mm) and right ventricular hypertrophy (RV_{max}: 8 mm). During the course of the disease type I diabetes mellitus developed, and then visual disturbances appeared, due to a confirmed retinal dystrophy. Her laboratory findings showed elevated LDH, CK, troponin T, and proBNP values. Neurological status was negative. Her brother was known to have stroke, epilepsy, septal hypertrophy, hyperhomocysteinaemia, and he died at age of 17 due to recurrent strokes. Her mother has been known for having hearing disorder and diabetes.

Genetic screening for sarcomere gene mutations and Fabry disease causing mutations for the *GLA* gene was negative. Analysis of the mitochondrial genome confirmed a typical mutation of MELAS (mitochondrial encephalomyopathy, lactic acidosis, stroke-like episodes) syndrome.

Our case draws attention to a possible mitochondrial disease and the need for genetic testing in cases of hypertrophic cardiomyopathy with systemic involvement.

III/4 Post-ROSC ECG: Really an Accurate Predictor of Coronary Artery Disease in Out-of-Hospital Cardiac Arrest Patients?

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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, Non-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%), Non-STEMI in 71 pts (59%). Comparing Non-STEMI pts to their STEMI counterparts, Non-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 Non-STEMI pts (excluded prolonged OHCA, extra coronary causes, old age and comorbidities). Comparing STEMI and Non-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%). Non-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 (Non-STEMI $p = 0.029$; STEMI $p = 0.005$) or with the combined approach (Non-STEMI $p = 0.049$; STEMI $p = 0.024$), 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.

III/5 Comparison of Clinical Judgement and SYNTAX Score II Treatment Recommendation on Myocardial Revascularization in a Country with High Gross Domestic Product and an Institution with Cardiac Surgery On-site as well as in a Country with Low Gross Domestic Product and an Institution without Cardiac Surgery On-site

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Introduction Every cardiologist being interventional and/or clinical has dilemmas if coronary artery bypass grafting (CABG) or percutaneous coronary intervention (PCI) was the right decision, especially in case of complications. Very often asked by the patients: “Doctor, what would you do if you were in my feet?”, cardiologists today are struggling to find out the best myocardial revascularization modality for their patients. We aimed to investigate whether indications for PCI or CABG based on the most educated intuitive judgment of PCI-operators with and without cardiac surgery on-site in routine clinical practice in the era before the SYNTAX Score II (SSII) approximate to the treatment recommendation of the recently published SSII.

Methods From the Wilhelminenhospital, Vienna, Austria (WS), and University Clinical Centre, Banja Luka, Bosnia and Herzegovina (UCC), consecutive, hemodynamically stable patients with angiographically ($\geq 50\%$ diameter stenosis) proven 3-vessel coronary artery disease (CAD) and/or significant unprotected left main CAD, who were treated with PCI or referred to other institutions for CABG between January 1, 2008, and December 31, 2010 were retrospectively recruited. All-cause mortality was ascertained from Mortality Registries or by telephone contacts. The SSII was calculated for each patient using an electronic calculator available only to the investigators of the SYNTAX II Trial.

Results After the post-hoc classification according to the SSII in WS, 85 patients had treatment recommendations in favour of CABG, of which 34/85 (40.0%) patients had actually CABG, with the remainder (51/85, 60.0%) who were treated with PCI. Three patients were classified for PCI, 2/3 patients (66.7%) underwent PCI and 1/3 patients (33.3%) underwent CABG. The remaining 302 patients were allocated by the SSII in a group favouring equally CABG and PCI of which 137/302 (45.4%) underwent CABG and 165/302 (54.6%) underwent PCI.

Based on the post-hoc classification according to the SSII in UCC, CABG would have been the treatment of choice in 257/651 (39.5%) patients, PCI in 7/651 (1.1%) patients and CABG or PCI in 387/651 (59.4%) patients. Out of 257 patients in whom the treatment recommendations by the SSII was CABG, 113/257 (44.0%) patients had actually CABG, while the remaining 144/257 (56.0%) underwent PCI. Seven patients had SSII recommendations exclusively favouring PCI, 3/7 patients (42.9%) were treated with PCI and 4/7 patients (57.1%) were referred for CABG. Out of 387 patients with the SSII recommendations favouring equally CABG and PCI, 125/387 (32.3%) underwent CABG and 262/387 (67.7%) underwent PCI.

Overall mortality in the CABG and PCI group in WS at 4-year follow-up was 11.6% and 9.7%, respectively (log rank $p = 0.18$). A trend to have higher observed mortality was shown in the patient group in whom the post-hoc classification according to the SSII favoured CABG although treated with PCI compared with CABG/PCI and PCI recommended group treated with PCI (13.7% vs 8.5% vs 0.0%, respectively, log rank $p = 0.11$).

In UCC, 4-year mortality was 9.4% (CABG: 10.3% vs PCI: 8.8%, log rank $p = 0.29$). The post-hoc classification according to the SSII showed that 144/257 patients with treatment recommendations in favour of CABG who were treated with PCI had significantly higher mortality at 4 years when compared with patients with treatment recommendation for PCI or equally favouring CABG and PCI (12.5% vs 0.0% vs 6.9%, respectively, log rank $p = 0.04$).

Conclusion The present study demonstrated that intuitive (most educated) decision-making for choosing optimal myocardial revascularisation method for individual patient, irrespective of presence of cardiac surgery on-site, differed from the SSII recommendation for CABG only. Discordance between the SSII recommended revascularisation strategy and the clinical decision was met with a higher 4-year mortality.

All authors declare that the study complies with the Declaration of Helsinki. The relevant ethic committee approved the research protocol.

III/6 Midregional Pro-A-Type Natriuretic Peptide for the Early Rule Out of Non-ST Elevation Myocardial Infarction in Patients with Cardiac Chief Complaints in the Emergency Department

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Purpose MR-pro-ANP is produced in atrial, and in the states of extensive left ventricular overload, in left ventricular myocardium. Accordingly, plasma levels of ANP are elevated in patients with acute myocardial infarction and are strong predictors of mortality independent of troponin levels. We have investigated the effect of combined measurement of MR-pro-ANP and cardiac Troponin I levels for early identification of pats. with NSTEMI.

Methods This was a prospective bicentre study of consecutive pats. admitted to ED with chest pain suggestive of ACS. We included a total of 829 pats. All pats. had baseline MR-pro-ANP and hs-cTnI and sensitive c-TnI measurements. Cut-off for MR-pro-ANP was set at 97.5th percentile (85.2 pmol/L). Troponin I was measured with different assays at the respective study centers: high-sensitive troponin I (hs-cTnI) assay (Abbott Laboratories) was used at the Charit   Berlin site. The 99th percentile of this assay is 26.2 ng/l. A sensitive troponin I assay (Siemens Dimension) with the 99th percentile of a normal reference population at 56 ng/L was used at the Wilhelminen Hospital of the city of Vienna.

Results In total, 88/829 (10.6%) pats. had an angiography-proven diagnosis of NSTEMI. Levels of MR-pro-ANP at admission were significantly higher among pats. with proven NSTEMI then in pats. with non-AMI diagnosis (227 pmol/L [IQR = 226] vs. 108.6 pmol/L [IQR = 152.7]; $p < 0.001$). Negative MR-pro-ANP and hs-cTnI at admission ruled out NSTEMI in 301/829 (36.3%) pats. with NPV of 99.6% (98.0–100; 95%-CI). There were 12 NSTEMI pats. with negative baseline cTnI (false negative) and 11/12 (91.7%) of these pats. were recognized with positive MR-proANP (> 85.2 pmol/L). By employing the ‘dual biomarker’ concept, MR-pro-ANP increased the NPV of cTnI for NSTEMI from 98.1% (96.7–99.0; 95%-CI) to 99.6% (98.0–100). This favourable effect was also confirmed in time-related subgroups. In ‘early presenters’ group (onset of symptoms < 6 h; 29.0 % of the overall study population) NPV increased from 97.5 (93.8–99.3) for cTnI alone to 100% (93.4–100) and in ‘late presenters’ (outside 6h) NPV for NSTEMI increased from 98.2 (95.1–99.8) to 99.5% (94.1–99.9).

Conclusions High sensitivity of MR-pro-ANP in pats. with ACS symptoms was reflected in its high value of NPV for NSTEMI when combined together with cTnI ($> 99\%$), regardless of the time since onset of symptoms. Utilization of ‘dual biomarker strategy’ with MR-proANP could result in an early, rapid and reliable rule-out of NSTEMI. It had the potential to rule out NSTEMI in ca. 36.3% of pats. without serial blood draws.

III/7 Better Compliance with the ESC Heart Failure Guideline in Patients Followed-up in a Specialist-led Outpatient Clinic – Results from the EORP One Centre Cohort

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Background In the large randomized trials which proved the favourable effect of neurohormonal antagonists (NHA) on the outcome of chronic systolic heart failure (HFrEF), the proportion of patients receiving the target doses (TD) of these drugs reached about 60–70%. Contrary to that, in observational studies, and even in the recently published ESC Heart Failure Long-term (EORP) Registry the proportion of pts receiving TD of these drugs was significantly lower.

Aim To assess the proportion of pts receiving the ESC guideline recommended treatment in patient cohort (PC) suffering from HFrEF followed at our heart failure outpatient clinic (HFOC) participating in the EORP Registry.

Patients and Methods We analysed the data of 154 consecutive ambulatory pts with HFrEF followed at our HFOC (LVEF: $34.6 \pm 10.3\%$; NYHA: 1.7 ± 0.8 ; blood pressure: $119.3 \pm 19.2/68.3 \pm 11.1$ mmHg; ischemic: 57.1%; diabetes: 31.8%; male: 79.8%; age: 66.7 ± 13.3 yrs; eGFR: 52.1 ± 22.5 ml/min/1.73m²) at the time of inclusion to EORP Registry and 1 year later. The majority of pts was managed at our HFOC for more than 1 year before inclusion.

Results Treatment at baseline were: ACEi/ARB in 95.4% (at TD: 55.1% of pts of PC), BB in 97.4% (at TD – 62.3% of pts) and MRA in 77.2%. CRT-P/CRT-D was implanted in 32.4% and ICD in 17.5%. At 1-year follow up (FU) the proportion of pts receiving TD of an ACEi/ARB and a BB increased slightly (59.8% and 65.8%, i.e.). In total, 57.1% of pts were suitable for ICD, and 78.4% of them had already undergone the implantation, while 40.2% fulfilled the criteria for CRT-P/CRT-D and 90.3% had already have the device. 1-year survival of our PC was 90.3%.

Conclusions Although the worldwide rate of pts receiving the cornerstone NHA regime of HFrEF has increased within the last years, the proportion of pts receiving the TD of these drugs is still moderately low. FU of these pts at a HFOC, and the effort and motivation to optimize the treatment by specialists can make it possible to reach the doses of NHA that is similar to that were used in the large landmark HFrEF trials.

III/8 Changes in Left Ventricular Ejection Fraction after Primary Prevention ICD Implantation and its Correlation with Appropriate ICD Shocks

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Background Left ventricular ejection fraction (LVEF) lower than 35% is a key criterion in determining eligibility for implantable cardioverter defibrillator (ICD) for primary prevention (PP) in patients (pts) with chronic systolic heart failure (HFrEF). Although HFrEF pts may experience an improvement in LVEF after PP ICD implantation (particularly after CRT-D implantation), it is unknown whether LVEF improvement affects subsequent risk for sudden cardiac death (SCD).

Aim The aim of our study was to assess the changes in LVEF after ICD implantation and the implication of this parameter on ICD shocks.

Methods We analysed the data of 99 HFrEF pts referred for PP ICD implantation between 2010 and 2014 (mean age: 63.4 ± 9.9 years, male: 75.8%, ischemic: 56.6%, NYHA: 2.4 ± 0.8 , LVEF: $26.0 \pm 5.8\%$), who received their devices according to current guidelines (CRT-D: 80 pts, ICD: 19 pts). Each pt got optimal medical therapy at least 3 months before device implantation. The change in LVEF was assessed 6 months after device implantation. The occurrences of ICD shock was observed during the follow-up (mean: 31.5 ± 12.7 months) of the pts.

Results Six months after ICD implantation LVEF improved at least 5% in 73 pts (73.7%). 35.4% (35 pts) had an LVEF improvement to above 35%. During follow-up 31 pts died and we observed appropriate ICD shocks in 12 pts and inappropriate ICD shocks in 6 pts. Among pts with LVEF improved above 35% there was no appropriate ICD shocks at all, in contrast with the 12 pts with appropriate ICD shocks observed in the group of pts with LVEF < 35% six months after device implantation ($p = 0.0072$).

Conclusion Remarkable number of pts has an improvement in LVEF after PP ICD implantation. It seems that the improvement in LVEF reduces the risk of appropriate ICD shocks. To avoid unnecessary implantations we should identify HFrEF pts with baseline LVEF < 35% who benefit most from ICD therapy by determining additional markers predicting the risk of SCD more specifically than LVEF alone.

III/9 An Unusual Treatment Strategy and an Infrequent Comorbidity in Chronic Heart Failure with Reduced Ejection Fraction

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Background Chronic heart failure with reduced ejection fraction (HFrEF) is a complex clinical syndrome with significant morbidity and mortality. Patients with therapy-refractory severe heart failure often require prolonged hospitalization. Considerable attention is needed to handle all comorbidities in heart failure patients, which is especially important in patients with prolonged hospitalisation due to the reason of iatrogenic diseases.

Case Report We report the case of a 71 year old cachectic man who was admitted to our department with refractory HFrEF (LVEF: 15%), in NYHA III–IV functional class. He had a history of COPD and a previous continuous hospitalization for 5 months because of advanced HFrEF. At the time of admission he had received neither ACEi nor beta blocker because of intolerance. But in the effect of the direct vasodilator regime (dihydralazine and nitrate) the patient later was able to tolerate an ACEi and a BB. We could even titrate successfully the doses of these drugs and it was possible to reach the optimal medical treatment of HFrEF.

During the hospitalization we have taken some blood cultures by the reason of persistent elevated inflammatory markers (CRP: 54.4 mg/L, WE: 100 mm/h, WBC: 9.5 G/L), which were positive for MRSA. The CT angiography (CTA) conducted as part of our investigation because of the significant weight loss, the persistent atypical chest pain and MRSA bacteraemia documented a pseudo-aneurysm (PA) of the descending thoracic aorta. After a negative result of a TOE a PET-CT scan was done for the detection of MRSA bacteraemia source as part of complex investigation, it visualized the PA as the only positive region. Based on the results of the afterwards performed control CTAs, PA size progression was confirmed. Because of the MRSA infected PA of descending thoracic aorta an aorta stent graft implantation was proposed after six-week antibiotic therapy (vancomycin iv.) by the interdisciplinary consultation (vascular surgeon, infectologist and cardiologists). After the successful operation and a further six-week targeted treatment with antibiotics (vancomycin and gentamycin iv.) the patient was discharged clinically stable with optimal medical treatment of HFrEF and with triple oral antibiotic combination (rifampicin, doxycycline, sumetrolim). 3 month postimplant follow-up tests verified normal conditions, and the control CTA showed the device in normal position without sign of inflammation. 1 year after the procedure the patient is still in stable condition both cardiology and infectious point of view (LVEF: 35%, NYHA I–II, CRP: 5.5 mg/L, WBC: 5.9 G/L, WE: 20 mm/h).

Conclusions The care of HFrEF patients is a complex problem and requires special attention. We frequently encounter comorbidities, which have great impact on hospitalisations and mortality. Sometimes literary rare diseases occur among these comorbidities, like the MRSA aortitis, which can be a life-threatening disorder. The rapid and accurate diagnosis of the disease can be a challenge for the clinicians. The close collaboration between different medical professions is essential for the proper treatment.

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