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Lausanne (Switzerland), June 19–21, 2024

JOINT ANNUAL MEETING OF THE SWISS SOCIETIES OF CARDIOLOGY AND CARDIAC SURGERY

LAUSANNE, JUNE 19–21, 2024

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RAPID FIRE ABSTRACT SESSION - CLINICAL CASES

O01

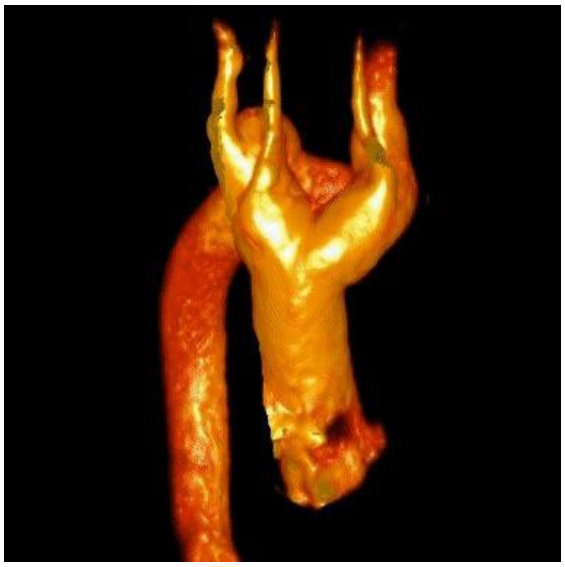
A TRIAS OF DOUBLE AORTIC ARCH, BICUSPID VALVE AND AORTIC DILATATION: TREATTHE RIGHT LESION!

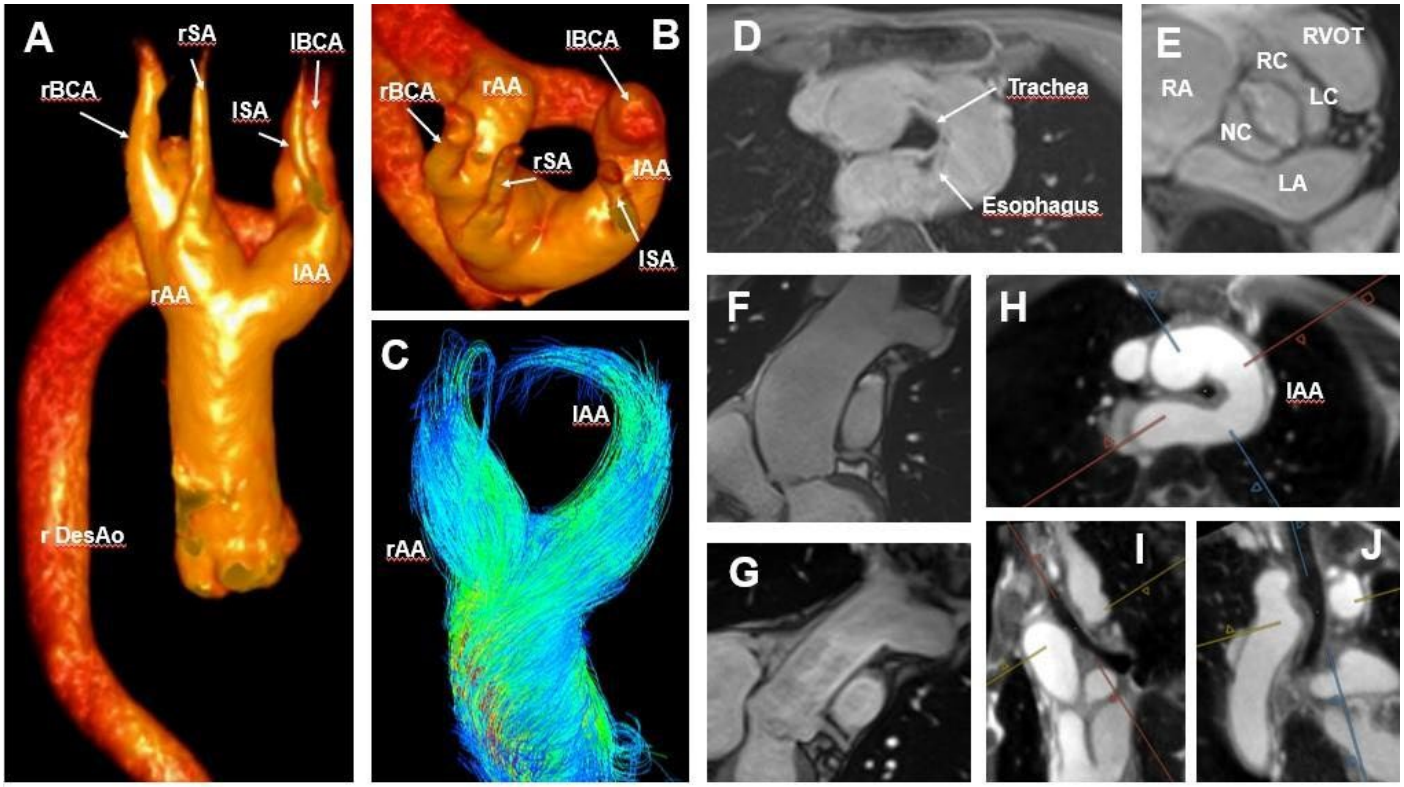
Fabienne Dirbach*[1], Chistopher Roy[2], Judith Bouchardy[1], Magalie Ladouceur[1], Jürg Schwitter[1], RenéPrêtre[3], Matthias Stuber[2], Tobias Rutz[1]

[1]Service of Cardiology, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland, [2]Department of Radiology, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland, [3]Department of Cardiac Surgery, Lausanne University Hospital and Universityof Lausanne, Lausanne, Switzerland

Introduction: In a 71-year-old patient with good general health, an enlarged mediastinum was noticed on a chest X-ray performed for persistent cough after an upper respiratory tract infection.

Computed tomography revealed a double aortic arch (DAA), a rare congenital heart lesion deriving from a non-involution of the fifth aortic arch during organogenesis. For further characterization, a cardiac magnetic resonance (CMR) with 4D flow was performed. CMR showed the DAA with relatively balanced aortic arches (flow left arch: net 20 ml/heartbeat, right arch: net 15 ml/heartbeat, panel A-C, movie), an esophageal and tracheal compression (panel D, movie) and a fusion of both arches into a right-sided descending aorta. Although the images would suggest a highly symptomatic vascular ring, the patient never presented any cardiac, respiratory, or esophageal symptoms. CMR revealed further a bicuspid aortic valve (panel E) with dilatation of the ascending aorta of 52mm (panel F).





A and B : 3D volume rendering of the free-running cardiac and respiratory motion-resolved 5D whole-heart; C : 4D flow cardiac magnetic resonance of both aortic arches; D : VIBE showing the compressed trachea and esophagus pre-operatively; E: Still frame of 2D SSFP cine showing the bicuspid aortic valve; F: Dilated ascending aorta before replacement; G: 28mm Gelweave tube in the position of the ascending aorta; H-J: Multiplanar reconstruction in axial (E), sagittal (F) and coronal (G) planes of free-running cardiac and respiratory motion-resolved 5D whole-heart images showing compressed trachea.

Abbreviations: LA = left atrium, lAA = left aortic arch, l-/rBCA = left/ right brachiocephalic artery, LC = left coronary cusp, lSA = left subclavian artery, NC = non-coronary cusp, RA = right atrium, rAA = right aortic arch, RC = right coronary cusp, rDesAo = right descending aorta, rSA = right subclavian artery, RVOT = right ventricular outflow tract

The heart team decided to surgically replace the dilated ascending aorta at a supra-coronary level with a 28mm Gelweave tube (panel G) as the patient fulfilled the indications according to the ESC guidelines due to concomitant arterial hypertension. Owing to the absence of symptoms, the age and the balanced two aortic arches, the DAA was left uncorrected. The bicuspid valve, only showing mild insufficiency, also remained untouched.

The post-operative course was uneventful. Particularly, the patient remained asymptomatic to the DAA although a free-running cardiac and respiratory motion-resolved 5D whole-heart still suggested symptomatic esophageal and tracheal compression (panel H-J, movie). 4D flow revealed a now completely balanced DAA (15 ml/heartbeat per aortic branch each), confirming that the decision was correct not to treat the DAA.

Conclusion: This case highlights the role of advanced CMR techniques in addition to clinical evaluation in choosing the right lesion requiring treatment. Sometimes, “less is more”.

Conflict of interest: No

O02

WHEN MOLECULES GUIDE CLINICAL PRACTICE: INTRAGENIC RISK STRATIFICATION FOR A FEMALE WITH LQTS2

Joaquin Espinoza*[1], Beatriz Rivera Rodriguez[2], Chaitra Mohan[3], Jorge Penalver[3]

[1]University of Miami, Miller School of Medicine, Internal Medicine, Miami, United States, [2]University ofMiami, Miller School of Medicine, Cardiovascular Medicine, Miami, United States, [3]Jackson Memorial Hospital, Cardiovascular Medicine, Miami, United States

Introduction: Congenital long QT syndrome (LQTS) is a genetic disorder affecting ventricular repolarization channels, predisposing individuals to life threatening arrhythmias and sudden cardiac death (SCD). For asymptomatic individuals with a familial SCD history, the decision to implant an ICD may be influenced by genetic risk assessment.

Material and methods: A 54-year-old Hispanic female was referred to the clinic post-discharge for a newly identified long QT interval on ECG. Initially admitted for possible cardiac chest pain, her cardiac biomarkers, bloodwork, and coronary CTA were unremarkable. However, ECG revealed sinus bradycardia and a prolonged QTc (511ms). As telemetry monitoring showed no arrhythmias, the patient was discharged on Nadolol with close follow up. Despite lacking a personal medical history, the patient had a strongfamily history of SCD including her daughter. Genetic testing resulted positive for LQTS type 2 given the heterozygous pathogenic variant KCNH2, autosomal dominant c.2587 C>T p.(R863*). Subsequent tests, including ECG stress test and Holter monitor showed no inducible arrhythmias or worsening QT prolongations. A repeated ECG reiterated sinus bradycardia and a QTc of 485ms. The patient reported no symptoms throughout the assessment.

Results: Guidelines place female patients with LQTS2 at high risk for SCD with indication for ICD. However, recent studies emphasize the importance of the mutation’s location within the channel. In general, pathogenic variants localizing to the pore region of the KCNH2 have a higher risk for cardiac events. Our patient, with a nonsense, non-pore mutation fell into an intermediate risk category. Considering her lack of symptoms, QT improvement on Nadolol, and genetic results, the decision was made to continue medical therapy while conducting genetic counseling and cascade testing.

Conclusion: Intragenic risk assessment of SCD should be considered when considering therapies and ICD placement in asymptomatic patients with LQTS.

Conflict of interest: No

O03

SUCCESSFUL USE OF THE IMPELLA 5.5 DEVICE DURING OFF-PUMP MINIMALLY INVASIVEMULTI-VESSEL CORONARY ARTERY BYPASS GRAFTING AND LAA-CLOSURE IN CASE OFSEVERELY DEPRESSED LEFT VENTRICULAR FUNCTION

Lilly Ilcheva*[1], Stak Dushaj[1 2], Héctor Rodríguez Cetina Biefer[1 2], Omer Dzemali[1 2], Achim Häussler[1 2]

[1]University Hospital Zurich, Cardiac Surgery, Zürich, Switzerland, [2]City Hospital Triemli , Cardiac Surgery, Zürich, Switzerland

Introduction: Off-pump minimally invasive coronary surgery (MICS) offers a solution for high-risk patients. Temporary ventricular assist devices have been utilized to enhance outcomes of complicated cardiac interventions, yielding promising results. Our team recently documented a successful case of Impella 5.5-assisted off-pump minimally invasive multi-vessel coronary artery bypass grafting (MICSCABG)and Left Atrial Appendage (LAA) closure in a patient with reduced left ventricular ejection fraction (LVEF) following acute myocardial infarction.

An urgent admission was made for a 78-year-old male patient who presented with dyspnea and was diagnosed with a non-ST segment elevation myocardial infarction (NSTEMI) complicated by cardiogenic shock, atrial flutter, and community-acquired pneumonia. The patient's coronary angiogram revealed three-vessel coronary artery disease and LVEF of 25%. The calculated Euroscore II was 41.68%. After interdisciplinary discussion by the HEART-TEAM, the patient underwent MICSCABG with lateral thoracotomy and support froman Impella 5.5 device to revascularize the left anterior descending artery and the posterior descending artery using the left internal mammary artery and the great saphenous vein as graft materials. Additionally, the patient underwent left atrial appendage closure using an AtriCure 40 mm device. The Impella 5.5 device was introduced through the right subclavian artery via a small incision subclavicularly. The revascularization procedure was performed successfully with moderate catecholamine support (Fig.1). The patient was intubated for 41 hours. On the third day after the surgery, the Impella 5.5 device was successfully removed without any complications related to cardiac issues. The postoperative LVEF at discharge was measured to be 32%. The patient was discharged with a Life Vest and completed acardiac rehabilitation program before returning home on the 36th day postoperatively. The combined use of the Impella 5.5 device and MICS is a safe strategy for selected high-risk patients with severely depressed LVEF who require surgical revascularization.

Conflict of interest: No

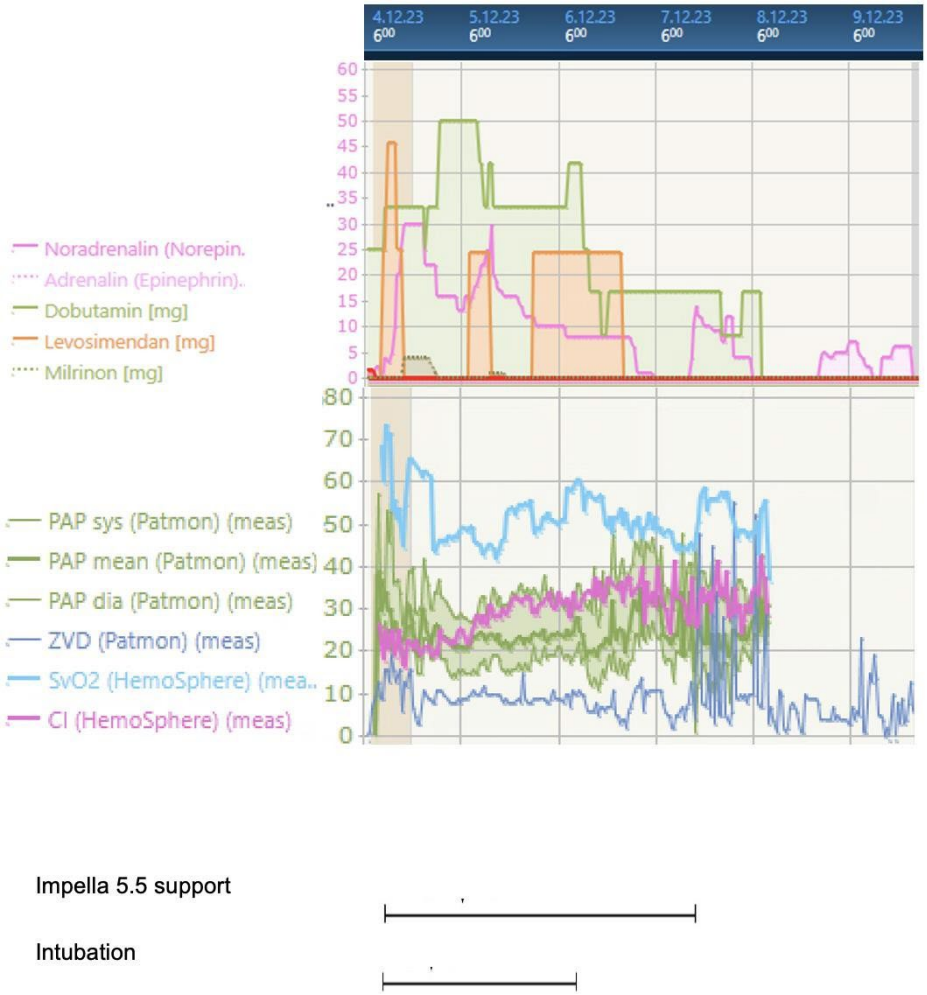


Figure 1. Intra- and postoperative hemodynamic profile during the stay in the Intensive Unity Care.
CI Cardiac Index; PAP Pulmonary Artery Pressure; SvO2 Mixed venous Oxygen Saturation; ZVD Zentrale Venendruck (DE) = CVP Central Venous Pressure (EN).

O04

INAPPROPRIATE S-ICD SHOCKS AND CARDIAC SARCOIDOSIS: WHEN GOING BACK IS THE ONLY WAY FORWARD

Giulia Domenichini*[1], Mathieu Le Bloa[1], Cheryl Teres Castillo[1], Patrizio Pascale[1], Etienne Pruvot[1]

[1]Cardiology Service, Lausanne University Hospital, Lausanne, Switzerland

Introduction: A 47 yr-old male patient presenting cardiac sarcoidosis was implanted with a dual chamber ICD because of inducible monomorphic VT. The ECG documented a first-degree AVB and an atypicalRBBB (Figure 1A).

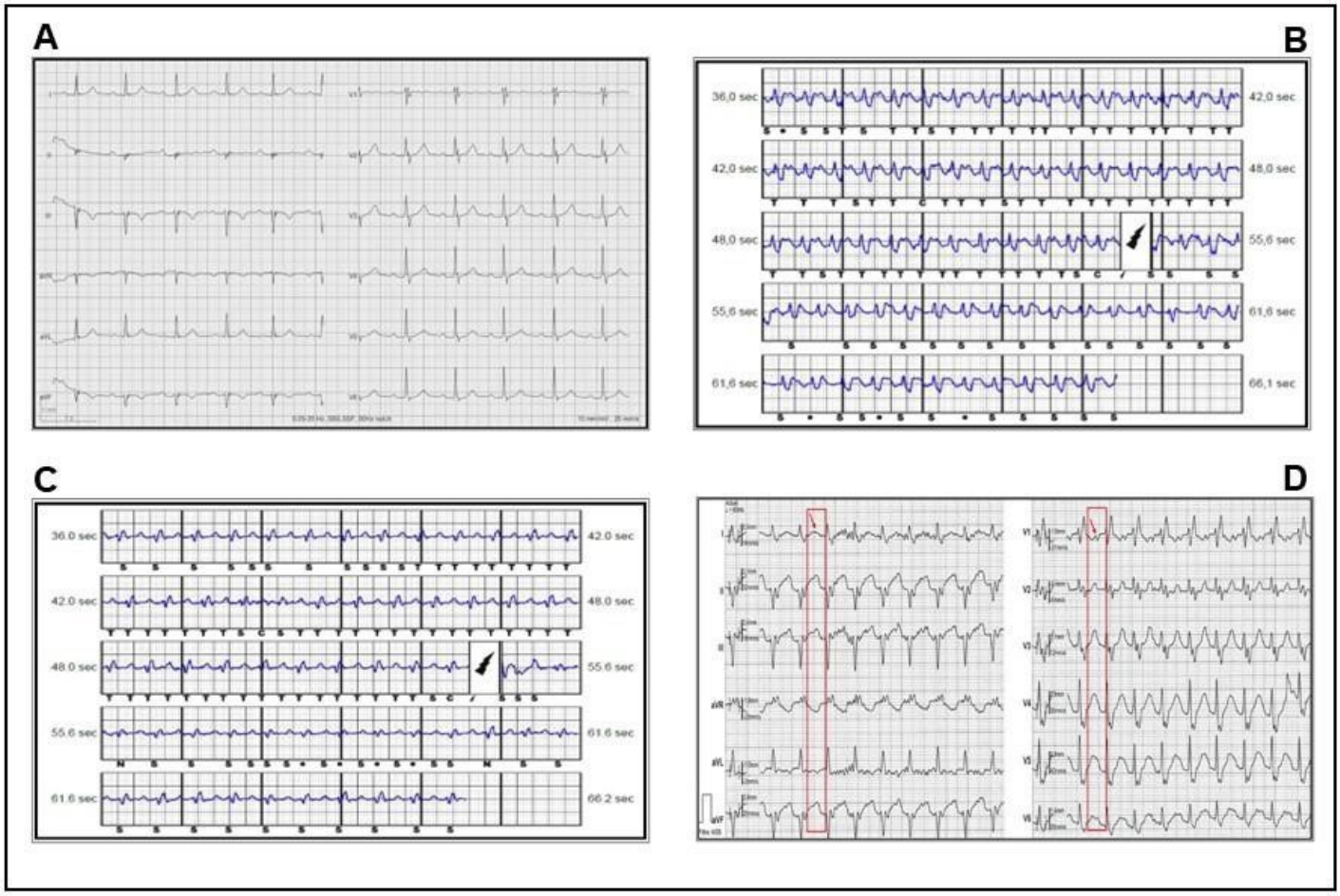
Five years post implantation, the transvenous ICD was extracted and an S-ICD implanted because of severe ventricular lead-related tricuspid regurgitation. The primary vector was selected according tothe Automatic Setup and tested during exercise test.

A few months later, a shock was delivered by the S-ICD during mountain biking and a double counting phenomenon, apparently related to T-waves oversensing, was observed at that moment (Figure 1B). The S-ICD was reprogrammed during exercise test and the alternate vector was manually selected, whereas the secondary vector was discarded because of intermittent double counting at maximal HR.

Six months after reprogramming, another shock from the device occurred, this time during skiing. The event strips showed again a double counting phenomenon (Figure 1C) without a clear distinctionof the P waves, apparently hidden into the T waves. An exercise test was performed using the secondary vector. Starting from a HR of 120 bpm, a prolongation of the PR interval appeared, leadingto a fusion of P and T waves (Figure 1D) and resulting in double counting. A progression in the atrioventricular conduction disease was evocated as the underlying mechanism of the rate- dependent PR prolongation. The S-ICD was therefore extracted and a conventional dual chamber ICDreimplanted.

S-ICD is a valid therapeutic option in selected patients requiring defibrillation therapy. However cardiac oversensing remains the main cause of inappropriate shocks despite implementation of dedicated algorithms. Therefore, complex and evolutive cardiac diseases such as cardiac sarcoidosis require tailoring the device choice on an individual basis regardless of the theoretical advantages of aspecific ICD technology to avoid inappropriate device behaviours.

Conflict of interest: No



O05

RECURRENCE OF AN UNDIFFERENTIATED PLEOMORPHIC CARDIAC SARCOMA 8 YEARS AFTER INITIAL PRESENTATION

Bourlond Baudoin[1 1], Niccolo Maurizi[1 2], Ioannis Skalidis[1], Panagiotis Antiochos[1 1], Auf Der SpringerKatharina[3], Royer Claire[2], Pierre Monney[1], Olivier Muller[1], Filip Dulguerov[4], Matthias Kirsch[4]

[1]CHUV, Cardiology, Lausanne, [2]CHUV, Anatomopathology, Lausanne, [3]CHUV, Nuclear Medecine,Lausanne, [4]CHUV, Cardiac Surgery, Lausanne

Introduction: We report the case of a 76 year-old female with recurrence of an undifferentiated pleomorphicintracardiac pulmonary artery sarcoma of the right ventricular outflow tract, 8 years after remission.

Material and methods: The patient presented initially in 2014 with progressive fatigue and NYHA II dyspnea and a grade 3/6 systolic murmur. TOE revealed a moderate pulmonary valve stenosis caused by a protruding mass into the right ventricular outflow tract. Cardiac CT and MRI confirmed a mass of 25x35x24mm attached to the RVOT and extending into the pulmonary trunk through the pulmonary valve. Whole-body ^{18}FDG PET/CT revealed a low metabolic activity of the tumor,without signs of metastasis. The cardiac mass was surgically removed. The anatomopathological analysis revealed an undifferentiated pleomorphic pulmonary artery sarcoma. In 2022, she reported a recurrence of progressive dyspnea NYHA II. Systolic pulmonary murmur radiating on the carotid arteries was detected. TOE and MRI showed a resurgence of pulmonary stenosis with a mobile mass of 10x12mm inthe RVOT. An endovascular biopsy was not successful. Multidisciplinary discussions leaded to a surgical resection. The anatomopathological analysis revealed again a recurrent undifferentiated pleomorphic pulmonary artery sarcoma.

Results: Since the first description in 1923, about 300-400 cases of pulmonary arterial sarcoma have been reported. Their diagnosis relies on multimodality imaging, including, although final diagnosis is made by anatomopathology. Median overall survival for cardiac sarcoma patients is about 6 months. Surgical resection is essential for long-term survival of cardiac sarcoma patients, despite the surgical challenges presented by these tumors.

Conclusion: To the best of our knowledge, our case signifies one of the lengthiest periods of recurrence- free survival documented for a cardiac sarcoma in current medical literature. Successful outcomes were achieved through surgical resection coupled with state-of-the-art radiotherapyand chemotherapy, essential for optimizing both survival and quality of life.

Conflict of interest: No

RAPID FIRE ABSTRACT SESSION – HEART FAILURE, PREVENTION, REHABILITATION &EPIDEMIOLOGY

O06

PRETRANSPLANT ERYTHROFERRONE LEVELS ARE PREDICTIVE OF POSTTRANSPLANT RISK OF ACUTE REJECTION OR 1-YEAR ALL-CAUSE MORTALITY

Barbara Pitta Gros[1], Angela Rocca[1], Natallia Laptseva[2], Andreas Flammer[2], Micheke Martinelli[3],Philippe Meyer[4], Nicolas Leuenberger[1], Martin Muller[3], Roger Hullin*[1]

[1]CHUV, [2]Zurich University Hospital, [3]Inselspital, [4]HUG

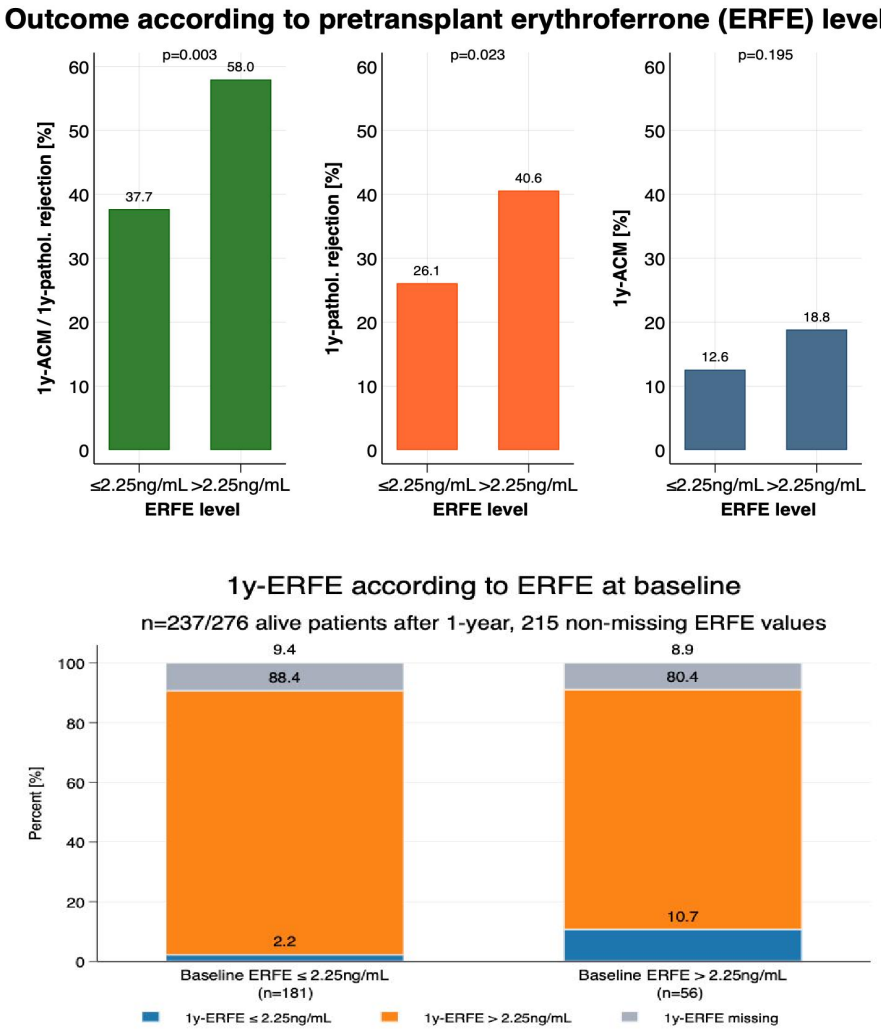
Introduction: Iron homeostasis is central for erythropoiesis, cardiac function, and the immune system and has animpact on heart failure outcomes. Its effect on heart transplantation (HTx) outcomes remains unclear, however, pretransplant but not posttransplant haemoglobin levels predict 1-year all-causemortality (1y-ACM) suggesting a role of pretransplant iron deficiency on posttransplant outcomes.

Material and methods: The incidence of 1y-ACM or acute cellular rejection (ACR) was assessed in 276 consecutive participants of a multicenter HTx cohort study. Serum levels of hepcidin, interleukin-6, ferritin,and the hepcidin expression regulator erythroferrone were measured pretransplant and 1- year posttransplant. ACR was defined according to the 2004 ISHLT classification.

Results: Pretransplant demographic or biological parameters, HLA or donor/recipient sex mismatch, or operation-related parameters were not different between participants with incident combined endpoint (n = 118) and controls. Likewise, ferritin, hepcidin, or interleukin-6 serum levels did not differ between groups. Patients with combined endpoint had higher erythroferrone (1.40 [IQR 0.84-1.84] vs. 1.19 ng/mL [IQR 0.91-2.92]; p = 0.013) and lower haemoglobin levels (125 [IQR 102-134] vs. 128 [IQR 114-141] g/L; p = 0.004). Among patients with incidence, pretransplant erythroferrone levels >3rd quartile (n = 69; >2.25 ng/mL) presented more combined endpoints (58 vs 37.7%, p = 0.003). Pretransplant erythroferrone- levels >2.25 ng/mL predicted the combined endpoint (OR 2.28; 95%CI: 1.31-3.97; p = 0.004 ng/ml), incident ACR (OR 1.93; 95%CI: 1.09-3.43; p = 0024) but not 1-y ACM. In 1y-HTx survivors(n = 237), erythroferrone levels were increased to >2.25 ng/ml in 67.5% of study participants; only 2.5% decreased pretransplant >2.25 ng/ml erythroferrone levels

Conclusion: Erythroferrone levels are of prognostic importance for acute rejection and all-cause mortality earlyposttransplant mortality.

Conflict of interest: No



O07

LONG-TERM OUTCOMES AFTER SEPTAL REDUCTION THERAPY FOR OBSTRUCTIVE HYPERTROPHIC CARDIOMYOPATHY: A NATIONWIDE COHORT STUDY

Andreas Schelldorfer*[1 2], Rahel Laager[2], Laurent Haegeli[1 3], Philipp Schuetz[2 4], Alexander Kutz[2 5],Yakup Yakupoglu[1 6]

[1]Cantonal Hospital Aarau, Department of Cardiology, Aarau, Switzerland, [2]Cantonal Hospital Aarau,Medical University Department, Aarau, Switzerland, [3]University Hospital Zurich, Arrhythmia and Electrophysiology, Department of Cardiology, University Heart Center, Zürich, Switzerland, [4]Medical Faculty, University of Basel, Basel, Switzerland, [5]Brigham and Women's Hospital, Division of Pharmacoepidemiology and Pharmacoeconomics, Department of Medicine, Brigham and Women's Hospital and Harvard Medical School, Boston, United States, [6]Royal Brompton and Harefield Hospitals, Guy's and St Thomas' NHS Trust, Cardiology Department, London, United Kingdom

Introduction: With cardiac myosin inhibitors emerging as a novel pharmacological option instead of septal reduction therapies (SRT) in obstructive hypertrophic cardiomyopathy (HCM), contemporary data on national long-term outcomes afterSRT is needed. This study aims to analyse long-term outcomes after SRT for obstructive HCM in comparison to outcomes following hospitalisation with non-obstructive HCM and outcomes of controls free from known cardiac disease.

Material and methods: In this nationwide cohort study from 2015 to 2021, patients with obstructive HCM undergoing first-time SRT (surgicalmyectomy or transcoronary ablation of septal hypertrophy) were 1:7 propensity score-matched with non-obstructiveHCM patients (first cohort) and surgical controls undergoing appendectomy without known cardiac disease (secondcohort). As assessed in time-to-event analyses, the primary outcome was a composite of all-cause mortality and rehospitalization for heart failure during follow-up.

Results: After matching, in the first cohort, 124 patients with obstructive HCM hospitalised for first-time SRT were compared with 692 patients hospitalised with non-obstructive HCM. Over a median follow-up of 30 months, the incidence rate of the primary outcome was 12.67/1'000 patient-years for the obstructive HCM group and 72.52/1'000 patient-years for the nonobstructive HCM group (hazard ratio, 0.18 (95% confidence interval, 0.07 to 0.44, p-value [log-rank] <0.0001)). In the second cohort, 126 patients with obstructive HCM undergoing first-time SRT were matched to 490 patients undergoing laparoscopic appendectomy. Over a median follow-up of 41 months, the incidence rate of the primary outcome was 12.61/1'000 patient-years for the obstructive HCM group and 9.15/1'000 patient-years for the surgical controls (hazard ratio, 1.35 (95% confidence interval, 0.49 to 3.69, p-value [log-rank] 0.56)).

Conclusion: Over up to several years of follow-up, a SRT was associated with a significantly lower incidence of the composite outcome (all-cause mortality and rehospitalization for heart failure) compared to patients with non-obstructive HCM.The incidence was comparable to surgical controls with no heart disease.

Conflict of interest: No

O08

ANALYSIS OF AMPLIFIED P-WAVE AND MAXIMUM EXERCISE CAPACITY FOR RISK STRATIFICATION IN HEART FAILURE: IDENTIFICATION OF PATIENTS AT RISK FOR ATRIALFIBRILLATION, STROKE AND MORTALITY

Taiyuan Huang*[1], Christoph Ahlgrim[1], Björn Müller-Edenborn[1], Martin Eichenlaub[1], Jie Chen[2], DietmarTrenk[1], Franz Neumann[1], Dirk Westermann[1], Thomas Arentz[1], Amir Jadidi[3]

[1]Universitäts-Herzzentrum Bad Krozingen – Klinik für Kardiologie und Angiologie, Bad Krozingen, Germany, [2]The people's Hospital of Rongchang District, China, [3]Lucerne Cantonal Hospital, Luzern,Switzerland

Introduction: There is a lack of evidence supporting the initiation of oral anticoagulation in certain groups of CHF patients featuringa high risk of thromboembolic events in sinus rhythm. Algorithms to detect patients with heart failure at risk for the occurrence of AF and thromboembolic events are thus highly relevant.

Material and methods: 598 Patients scheduled for right heart catheterization due to unexplained dyspnea were screened. All ECG recordedat admission were further analyzed to measure the duration of amplified p-wave (APWD at 175mm/sec, 80mm/mV)and to confirm the diagnosis of inter-atrial block. Spine bicycle ergometer was performed with a stepwise protocol (25 or 50W increments) until exhaustion to determine the maximum physical capacity (Watt-max). Follow-up (FU) data was collected at 12-, 36-, 60- and 120-months after discharge. The primary endpoint is MACCE (new onset of AF, ischemic stroke and peripheral embolism), the secondary endpoint is all-cause mortality. Three machine learning (ML) algorithms were used to select candidate variables and establish predictive models for endpoints. Model evaluation was performed regarding discriminatory power using C-statistics.

Results: Prediction models developed using ML algorithms identified Watt-max and/or APWD as core components for MACCE and mortality prediction . APWD and Watt-max were key components of ML models for prediction of thromboembolic risk and AF (MACCE) and reached accurate diagnostic performances (C-statistics up to 0.74), moreover, another model consisted of APWD and aIAB (advanced inter-atrial block) was established to serve as areference to ML models with moderate performance for MACCE (mean C-statistics <0.70). All ML models for prediction of all-cause mortality included Watt-max and achieved C-statistics >0.75..

Conclusion: In patients with clinical heart failure, the combination of APWD, aIAB and maximum exercise capacity allow to identify patients at risk for AF and stroke, whereas mortality is predominantly predicted by maximum exercise capacity but not APWD.

Conflict of interest: No

O09

SEX-DIFFERENCES IN PRESCRIPTION PATTERNS OF SECONDARY PREVENTION PHARMACOTHERAPY IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION: PERSPECTIVE OVER 20 YEARS

Lara Berther*[1], Dragana Radovanovic[2], Marco Roffi[3], Barbara Stähli[4], Hans Rickli[5]

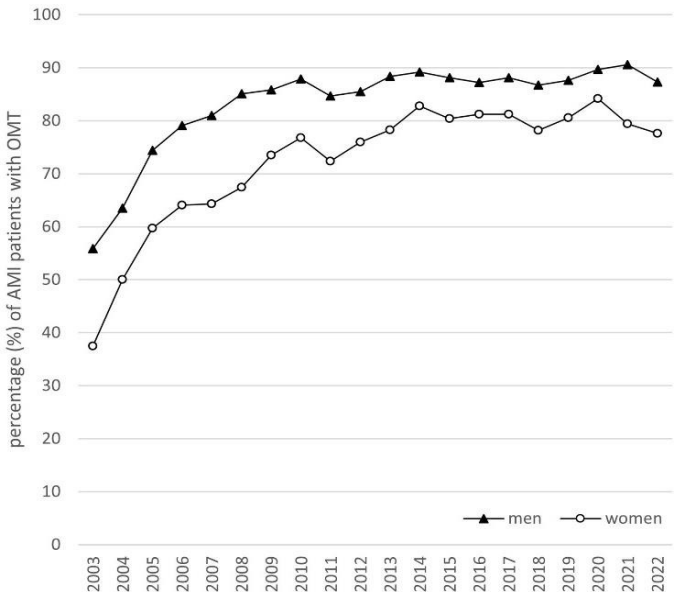
[1]University of St. Gallen, St. Gallen, Switzerland, [2]University of Zurich, AMIS Plus Data Center Epidemiology, Biostatistics and Prevention Institute, Zurich, Switzerland, [3]Hôpitaux universitaires de Genève, Department of Cardiology, Geneva, Switzerland, [4]University Hospital Zurich, Department ofCardiology, Zurich, Switzerland, [5]Kantonsspital St. Gallen, Department of Cardiology, St. Gallen, Switzerland

Introduction: Recent studies have shown inequalities in secondary prevention pharmacotherapy following acutemyocardial infarction (AMI) between women and men. The aim of this study was to analyse sex-related differences in prescription patterns of secondary prevention medication in Switzerland over time.

Material and methods: Analysing data of the Acute Myocardial Infarction in Switzerland (AMIS) Plus registry, optimal medical therapy (OMT) was defined as the combination of dual antiplatelet therapy (DAPT) with lipid- lowering drugs at discharge. Uni- and multivariable logistic regression analyses were performed.

Results: A total of 34'612 patients (male n = 25'913, 75%) hospitalised with AMI between 2003 and 2022 were included in the analysis. The mean population age was 66±13 years, with women being on average 7 years older than men. Despite an increased comorbid burden, women were less frequently prescribed OMT than men (74%vs. 85%) across all age groups (all p <0.001), with the greatest sex discrepancy occurring in patients <50 years of age. Within the 20-year study period, a marked increase in OMT (from 52% to 85%) prescription was detected, irrespective of age and sex. The sex-related gap in OMT use disfavoring women narrowed over time, from 18% to 10% at the beginning and end of the observation, respectively (Figure 1). In multivariable analysis, age (OR 0.97, 95% CI 0.95-0.97, p <0.001) and sex (OR 0.77, 95% CI 0.71-0.83, p <0.001) were independent predictors of deficient secondary prevention pharmacotherapy, while the fact of undergoing percutaneous coronary intervention (PCI) was identified as the strongest positive predictor (OR 13.4, 95% CI 12.4-14.4, p <0.001).

Figure 1: Temporal development of OMT use according to sex.



Conclusion: Although OMT use increased gradually over time among both women and men, there remained a significant sex-related gap, revealing the unmet need for targeted programs to reduce sex-related disparities in secondary prevention care.

Keywords: Acute myocardial infarction, secondary prevention pharmacotherapy, sexdifferences

Conflict of interest: No

O10

BIOMARKER-ENHANCED CARDIOVASCULAR RISK PREDICTION IN PATIENTS WITH CANCER: A MULTIMARKER APPROACH

Simon Kraler*[1], Luca Liberale[2], Alexander Akhmedov[1], Thomas Suter[3], Arnold von Eckardstein[4],Thomas F. Lüscher[4], Fabrizio Montecucco[2], Florian A. Wenzl[1], Florian Moik[5], Cihan Ay[5]
[1]University of Zurich, Center for Molecular Cardiology, Zürich, Switzerland, *[2]University of Genoa,*

Department of Internal Medicine, Genova, Italy, [3]University of Bern, Department of Cardiology, Bern University Hospital, Bern, Switzerland, [4]University Hospital of Zürich, Institute of Clinical Chemistry, Zürich, Switzerland, [5]University of Vienna, Department of Medicine I, Clinical Division of Haematology and Haemostaseology, Comprehensive Cancer Center Vienna, Wien, Austria

Introduction: The continuously improving cancer-specific survival puts a growing proportion of cancer patients at risk of acuteand chronic sequelae of atherosclerotic cardiovascular disease (ASCVD), but reliable tools for cardiovascular risk prediction remain unavailable. Herein, we aimed to employ a multimarker approach and to provide a novel risk score for the prediction of major adverse cardiovascular events (MACE).

Material and methods: 2'192 patients with newly diagnosed or recurrent cancer were followed prospectively for the occurrence of 2-year MACE and 5-year cardiovascular death. Uni- and multivariable competing risk models were fit to assess independent associations of cardiovascular biomarkers with MACE, and a risk score was developed.

Results: Beyond traditional risk factors, ICAM-1, P-/E-/L-selectins and NT-proBNP levels were independently linked to 2-year MACE risk, though shape of associations differed markedly between biomarkers. A clinical risk score was derived, assigning +1 point for male sex, smoking, and age ≥60 years, and +2 points for ASCVD history, yielding a bootstrapped C-statistic of 0.76 (95%CI:0.71-0.81). Implementation of cardiovascular biomarkers conferred improved performance (0.83, 95%CI:0.78-0.88). A simplified model, solely informed by clinical variables and readily available NT-proBNP (+1 point for NT-proBNP≥230pg/mL), achieved similar performance (0.80, 95%CI:0.74-0.86), with cumulative 2-year MACE incidence being 0% in low- and 11.0% in high-risk patients.

Conclusion: Cancer patients are at high MACE risk, with a predictive utility of traditional risk factors and improved risk prediction upon integration of cardiovascular biomarkers, including NT-proBNP. This *first-of-its-kind* point-based risk score efficiently predicts both 2-year MACE and 5-year cardiovascular death for routine practice use in cancer patients.

Conflict of interest: No

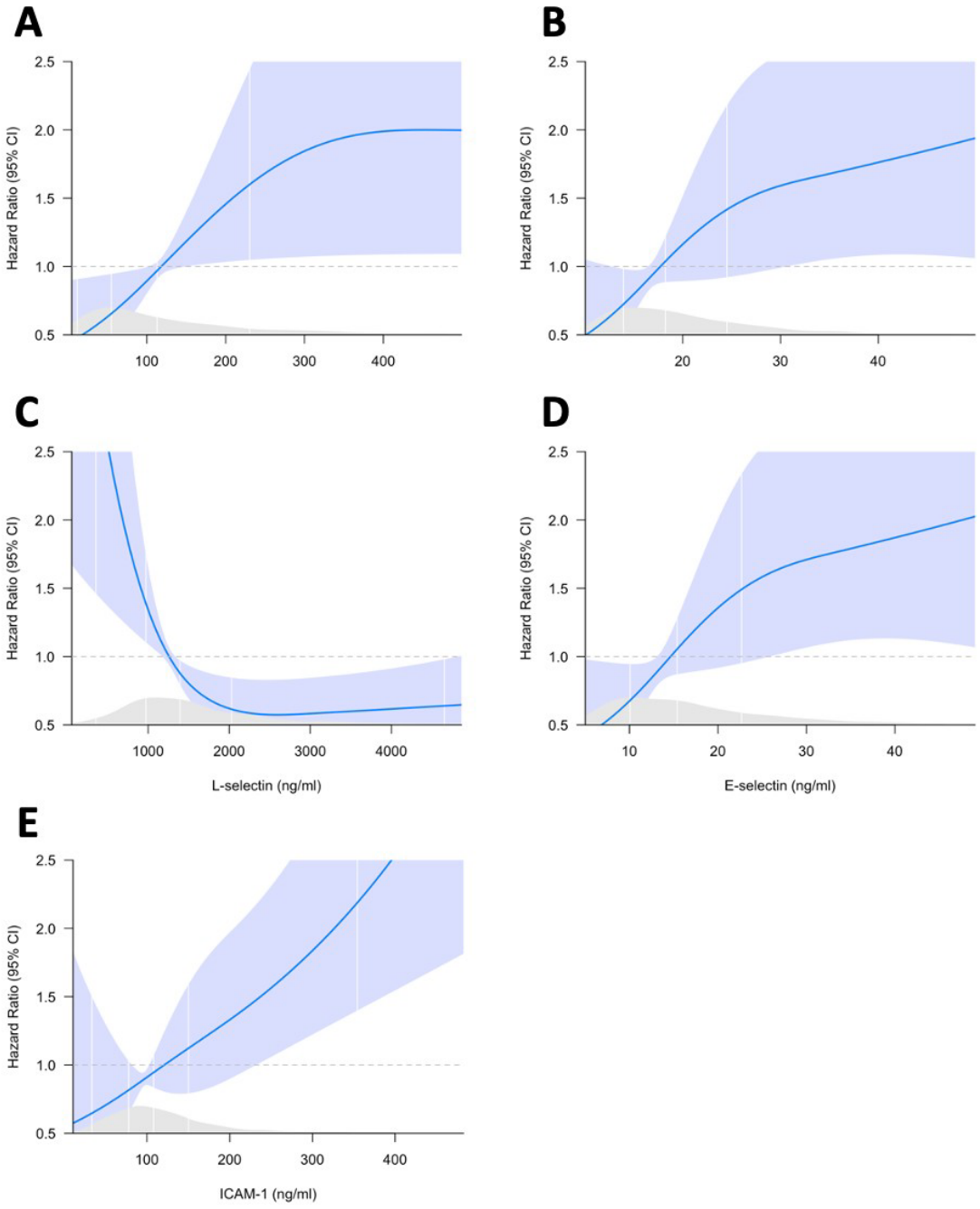


Figure 1. **Independent association of cardiovascular biomarkers and 2-year MACE.** Panel **A** shows a restricted-cubic-spline plot for the association between increasing serum NT-proBNP levels and 2-year MACE risk. The spline curve was truncated at 500 ng/l. Panels **B through D** show MACE risk according to serum P-, L- and E-selectin levels, with the curve being truncated at 50 (P-, and E-selectins) or 5000 ng/ml (L-selectin). Panel **E** shows the independent association of serum ICAM-1 levels and future MACE, with the spline curve being truncated at 500 ng/ml. All models were adjusted for age, sex, smoking history, established ASCVD, and cancer type. Colour bands signify 95% confidence intervals and the density of the population along the spline variable is highlighted in grey.

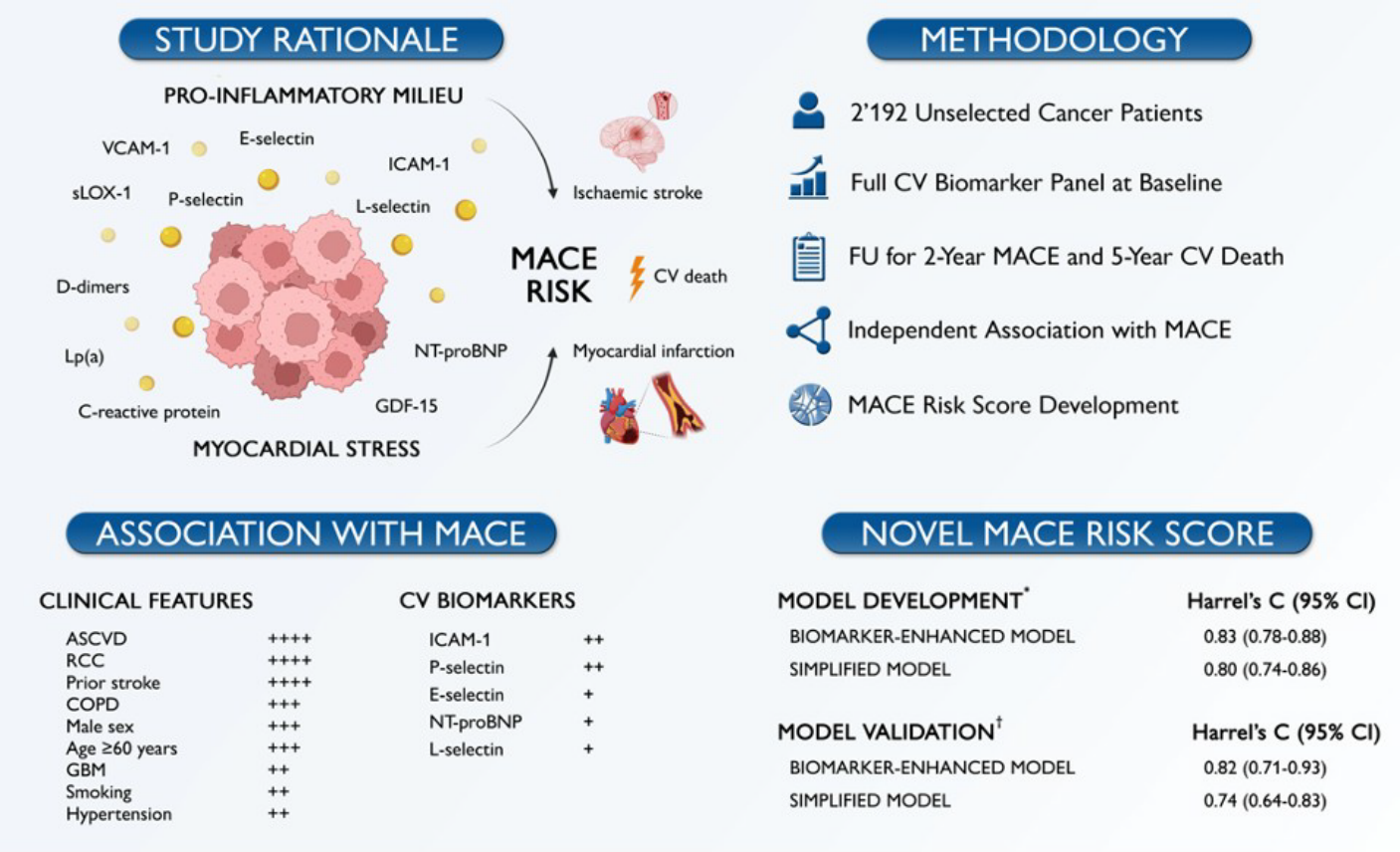


Figure 2. **Graphical Abstract.** Tumour growth and anticancer therapy impact both cardiac and vascular homeostasis alike, with ASCVD and cancer pathobiology sharing common risk factors and certain pro-inflammatory pathways. A panel of CV biomarkers was measured in 2'192 unselected cancer patients and the independent association of clinical features and CV biomarkers with 2-year MACE risk was modelled. Finally, a novel MACE risk score was derived. Positive ASCVD history was strongly linked to future MACE risk, while both endothelial (ICAM-1, P-, E-, and L-selectin) and cardiac (NT-proBNP) biomarkers showed an independent association with 2-year MACE risk. Integration of CV biomarker data in a clinical risk prediction model markedly improved its performance, whereas similar performance was achieved through integration of widely available NT-proBNP levels (referred to as the simplified model).

*Refers to 2-year MACE risk. †The final model was validated for the secondary endpoint (5-year CV death). ASCVD denotes atherosclerotic cardiovascular disease, COPD chronic obstructive pulmonary disease, CV cardiovascular, GBM glioblastoma, GDF-15 growth/differentiation factor-15, ICAM-1 intercellular adhesion molecule-1, LOX-1 lectin-like oxidized low-density lipoprotein receptor-1, MACE major adverse cardiovascular events, NT-proBNP N-terminal prohormone of brain natriuretic peptide, RCC renal cell carcinoma, and VCAM-1 vascular cell adhesion molecule-1.

O11

SMOKING CESSATION 1 YEAR AFTER ACUTE MYOCARDIAL INFARCTION IN SWITZERLAND:WHO QUIT AND WHO DID NOT?

Jan Loosli*[1], Marco Roffi[2], Florian A. Wenzl[3], Juan F. Iglesias[2], Fabienne Foster-Witassek[1], HansRickli[4], Dragana Radovanovic[1], on behalf of the AMIS Plus investigators

[1]AMIS Plus Data Center, Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich, Switzerland, [2]Geneva University Hospitals, Geneva, Switzerland, [3]University of Zurich, Center for Molecular Cardiology, Zurich, Switzerland, [4]Klinik für Kardiologie, Kantonsspital St.Gallen, St. Gallen, Switzerland

Introduction: This study aims to identify patient characteristics associated with smoking cessation within 1year after acute myocardial infarction (AMI).

Material and methods: ST-elevation myocardial infarction (STEMI) and non-STEMI patients enrolled in the AMIS Plus registry between 2012 and 2022 who were smokers at the time of the event were included. At 1-year follow-up, patients were classified into those who had quit (*stoppers*) or continued (*continuers*)smoking. Patient characteristics at the index event and follow-up were compared using descriptive statistics.

Results: From 4523 patients, 4242 (93.8%) provided information regarding smoking. The median follow-up was395 days (interquartile range: 370 to 469). Of 1691 (39.9%) active smokers, 861 (50.9%) reported quitting whereas 830 (49.1%) still smoked. Stoppers were younger (57 vs. 58 years; p <0.001), more likely to be male (82.8% vs. 77.7%; p = 0.008) and present with STEMI (77.0% vs. 71.0%; p = 0.005), butless likely to have had a previous AMI (6.6% vs. 13.3%; p <0.001). Smoking cessation was more common in patients with more severe AMI characterized by greater myocardial injury (in-hospital median peak creatine kinase level, 1291 IU/L vs. 1101 IU/L; p = 0.012), at least one in-hospital complication (13.9% vs. 9.9%; p = 0.01), and participation in a rehabilitation program (83.7% vs. 68.8%; p <0.001). Stoppers more frequently implemented other favourable lifestyle changes, such as dietary changes (56.2% vs. 45.2%; p <0.001) and increased physical activity (54.6% vs. 37.7%; p <0.001). Self-reported weight gain was more prevalent among stoppers (44.0% vs. 19.7%; p <0.001).

Conclusion: In Switzerland, one out of two patients who were active smokers at the time of AMI quit smoking after1 year. Smoking cessation was associated with participation in a rehabilitation program and occurred more often in patients with larger AMI, higher rates of in-hospital complications and implementation of other lifestyle changes after AMI. Weight gain could be a concern amongst AMI patients intending to quit smoking.

Conflict of interest: No

O12

CAROTID PLAQUE PROGRESSION AND REGRESSION IN CARDIOLOGICAL PATIENTS: ANOBSERVATIONAL LONG-TERM STUDY ON ATHEROSCLEROSIS MANAGEMENT

Michel Romanens*[1], Sudano Isabella[2], Adams Ansgar[3]

[1]Varifo, Stiftung vaskuläres Risiko, Vascular Risk Foundation, Olten, Switzerland, [2]University HeartCentre, Cardiology, University Hospital, Zurich, Cardiology, Zürich, Switzerland, [3]BAD Gesundheitsvorsorge und Sicherheitstechnik GmbH, Bonn, Germany, Bonn, Germany

Introduction: In this study we hypothesize, that patients with carotid plaque progression as compared to plaque stabilization or regression have a worse control of cardiovascular risk factors.

Material and methods: We assessed patients for major independent cardiovascular risk factors, namely, diabetes mellitus (DM), lipids, office blood pressure (BP), smoking, body-mass-index (BMI) in the Kardiolab cardiological practice in 2023. Patients with higher or equal amounts of carotid totalplaque area (cTPA) in previous visits were regressors and patients with the highest cTPA in 2023 were progressors. Statistics: Chi-squared or Mann-Whitney test for independent samples, Cox proportional-hazards regression for atherosclerotic events (ASCVD) or regression of cTPA categories (progression = 1, stable to regression 0 to -39 mm^2 = 2, -40 mm^2 or more = 3), or Kaplan-Meier analysis for ASCVD-events.

Results: In 226 patients (42% women) with 15% history of ASCVD and 13% with DM, median age was 58 years. In progressors and regressors, risk factors were well controlled regarding BP, lipids (p = NS) andsmokers could be reduced from 19% to 13% (p = 0.078). CTPA progressors were younger (p <0.001) at baseline and had a higher cTPA. Risk factors were not significantly different between groups both at baseline and at the final visit. ASCVD risk was low both in progressors and regressors. More ASCVD events occurred in progressors (4 versus 3, extrapolated 10-year risk was 6% in progressors, and was2% in regressors, CHI^2 p = 0.048, p = NS with Kaplan-Meier). The only identifier of plaque progression was DM in Cox regression with (p = 0.0008).

Conclusion: 10-year ASCVD event-rate is low in cardiological patients with good control of cardiovascular risk factors. About 25% of patients are carotid plaque progressors despite good risk factor control. CTPAoffers the possibility to detect such vulnerable patients. Atherosclerosis Imaging appears to have a major role for personalized atherosclerosis management both in men and women in cardiology.

Conflict of interest: No

		Baseline	**Baseline**			**Follow Up**		
VARIABLES		ALL	Progressors	Regressors	P	Progressors	Regressors	P
Number	Kardiolab 2023	226	53	163		53	163	
AGE YEARS	Median (95% CI)	58 (55-59)	54 (52-58)	59 (57-61)	0.001	65 (59-72)	66 (59-75)	0.416
BP SYSTOLIC	Median (95% CI)	129 (127-131)	124 (120-125)	127 (125-131)	0.070	132 (127-136)	132 (130-134)	0.693
BODY MASS INDEX (BMI)	Median (95% CI)	26.8 (26.1-27.4)	26.8 (25.7-27.8)	26.8 (25.7-27.5)	0.293	26.4 (25.7-27.8)	26.8 (26.2-27.7)	0.686
Cholesterol	Median (95% CI)	5.4 (5.2-5.6)	5.4 (4.6-6.0)	5.4 (5.2-5.7)	0.754	4.0 (3.7-4.6)	4.1 (3.8-4.3)	0.612
HDL	Median (95% CI)	1.4 (1.3-1.5)	1.4 (1.2-1.5)	1.4 (1.3-1.5)	0.636	1.4 (1.3-1.6)	1.4 (1.3-1.5)	0.603
LDL	Median (95% CI)	3.2 (3.1-3.4)	3.2 (2.9-3.7)	3.2 (3.1-3.4)	0.481	2.0 (1.7-2.5)	2.0 (1.9-2.2)	0.468
TOTAL PLAQUE AREA	Median (95% CI)	63 (53-75)	48 (35-65)	71 (55-81)	0.011	72 (50-114)	40 (32-50)	0.000
SEX FEMALE	N (%)	94 (42)	20 (38)	74 (45)	0.329	20 (38)	74 (45)	0.329
DIABETES MELLITUS	N (%)	30 (13)	10 (19)	20 (12)	0.229	10 (19)	20 (12)	0.229
CURRENT SMOKDER	N (%)	44 (19)	16 (30)	28 (17)	0.042	9 (17)	22 (13)	0.531
BMI>30	N (%)	61 (27)	16 (30)	45 (28)	0.718	15 (28)	44 (27)	0.853
ATHEROSCLEROTIC CARDIOVASCULAR DISEASE	N (%)	35 (15)	13 (25)	22 (13)	0.059	13 (25)	22 (13)	0.059
EVENT (ASCVD)	N (%)	7 (3)				4 (7.5)	3 (1.8)	0.042
EVENT 10 YEARS (ASCVD)	EXTRAPOLATION					3.1 (5.8)	3.3 (2.0)	
TIME TO EVENT (ASCVD)	YEARS (AVERAGE)					13	9	
KAPLAN-MEIER (ASCVD)	EVENT SURVIVAL							0.860

RAPID FIRE ABSTRACT SESSION – CAD & AORTA

O13

SEX DIFFERENCES IN CARDIOVASCULAR-RELATED HOSPITAL READMISSIONS, ADVERSEEVENTS AND INTERVENTIONS WITHIN 1 YEAR AFTER ST-ELEVATION MYOCARDIAL INFARCTION

Fabienne Foster-Witassek*[1], Marco Roffi[2], Juan F. Iglesias[2], Florian A. Wenzl[3], Jan Loosli[1], GiovanniPedrazzini[4], Hans Rickli[5], Dragana Radovanovic[1], on behalf of the AMIS Plus Investigators

[1]AMIS Plus Data Center, Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich, Switzerland, [2]Hôpitaux Universitaires de Genève, Department of Cardiology, Genève, Switzerland, [3]University of Zurich, Center for Molecular Cardiology, Zurich, Switzerland, [4]CardiocentroLugano, Department of Cardiology, Lugano, Switzerland, [5]Kantonsspital St.Gallen, Department of Cardiology, St. Gallen, Switzerland

Introduction: We aimed to study the rates of cardiovascular (CV)-related rehospitalisations, adverse events andinterventions after ST-elevation myocardial infarction (STEMI) in women and men.

Material and methods: We included STEMI patients from the AMIS Plus registry, who underwent percutaneous coronary intervention (PCI) between 2013 and 2022 and participated in a telephone-based follow-up (FU) 1-yearafter hospitalisation. Patients were asked if they were rehospitalised (planned/emergency/both) during FU for any CV reason, if they suffered a reinfarction or stroke and had a PCI, coronary artery bypass graft, pacemaker and/or defibrillator implantation.

Results: Of 4388 PCI-treated STEMI patients contacted for FU, 275 (6.3%) were unreachable, 118 (2.7%) died, and 223 (5.1%) had no data on readmissions; therefore 3772 patients (78.4% men, 21.6% women) were analysed. Women were older (mean (SD): 68.4 (12.0) vs. 62.5 (11.5) years) while the Charlson Comorbidity Index (CCI) was similar (CCI>1: 14.0% vs. 12.1%, n.s.). The mean rate of patients rehospitalised for CV reasons was 22.1%; 20.4% for women and 22.6% for men (p = 0.198). Overall, 8.8% had at least one emergency and 13.9% at least one planned rehospitalisation. The occurrence of a planned rehospitalisation was significantly lower in women (11.1% vs. 14.7%, p = 0.008) as were FU PCIs (13.2% vs. 16.6%, p = 0.026). Rehospitalised patients had higher rates of in-hospital complications (18% vs. 14%), heart failure (2.2% vs. 0.8%), diabetes (18% vs. 14%) and peripheral arterial disease (3.9% vs. 2.5%) during index hospitalisation. In a multivariable adjusted model, heartfailure (OR:2.5, CI 1.34-4.66, p = 0.004) and in-hospital complications (OR:1.4, CI 1.12-1.70, p = 0.003) remained independent predictors of readmission.

Conclusion: Over the last 10 years, on average 1 in 5 patients had at least one CV-related rehospitalisation within1 year after PCI-treated STEMI, while no overall sex-difference was found. Heart failure and in- hospital complications were independent predictors of readmission. Women had less often planned rehospitalisations and additional PCIs.

Conflict of interest: No

O14

CHARACTERIZING CANCER PATIENTS WITH ACUTE CORONARY SYNDROME

Florian A. Wenzl*[1], Peizhi Wang[1], Victor Schweiger[2], Antanas Gasys[3] on behalf of Davide Di Vece,Giovanni G. Camici, Arnold von Eckardstein, Christian Templin, Hans Rickli[4], Marco Roffi[5], ThomasSuter[3], Lorenz Räber[3], Dragana Radovanovic[6], Thomas F. Lüscher[1]

[1]Center for Molecular Cardiology, Schlieren, Switzerland, [2]University Hospital Zurich, Department of Cardiology, Zurich, Switzerland, [3]Cardiovascular Center, University Hospital Bern, Department of Cardiology, Bern, Switzerland, [4]Kantonsspital St. Gallen, Cardiology Division, St. Gallen, Switzerland, [5]Geneva University Hospital, Department of Cardiology, Geneva, Switzerland, [6]Epidemiology, Biostatistics and Prevention Institute, University of Zurich, AMIS Plus Data Center, Zurich, Switzerland

Introduction: Population ageing coupled with improvements in oncological care has led to an increasing number of cancer patients presenting with acute coronary syndrome (ACS). Both cancer and cancer therapies can impact the residual cardiovascular risk after an ACS. We aimed to study the prevalence, characteristics, risk factor profile,and outcomes of cancer patients with ACS.

Material and methods: Deeply characterized patients with active or previous cancer (n = 345) in high-volume university centers and their cancer-free counterparts (n = 59'604) from two prospective multicentre ACS cohorts in Switzerland (SPUM-ACS and AMIS Plus) were included. In-hospital mortality, 1-year mortality, and 1-year major adverse cardiovascular events (MACE; *ie,* cardiovascular death, re-infarction, and ischemic stroke) were studied using logistic regression,Cox regression, and Fine-Gray subdistribution hazards regression, respectively.

Results: The most common cancers were prostate (21.2%), lung (9.0%), colorectal (8.7%), bladder (8.7%), and breast (6.1%). Cancer patients were older (mean age 70.6 *vs.* 65.7 years, P<0.001), showed increased systemic inflammation (median C-reactive protein 3.0 *vs.* 2.7, P = 0.030), and were more likely have heart failure (P = 0.034).Beyond higher all-cause mortality (hazard ratio [HR] 5.04, 95%CI 3.76–6.78, P<0.001) patients with cancer had substantially increased risk of ischemic events (MACE: subdistribution HR 3.97, 95%CI 3.11–5.07, P<0.001) at 1year. Importantly, cancer modified the predictive value of cardiovascular risk factors informing the GRACE 2.0 score leading to lower predictive utility of age, systolic blood pressure, ST-segment deviation, cardiac arrest, and Killip class and to higher predictive utility of heart rate ($P_{interaction}$<0.001, respectively). Accordingly, GRACE 2.0 showed poor performance in cancer patients (cancer AUC 0.41, 95%CI 0.27–0.54, noncancer AUC 0.84, 95%CI 0.81–0.88, P<0.001).

Conclusion: Cancer patients with ACS differ in baseline characteristics, show a different risk factor profile, and have increasedrisk of fatal and atherothrombotic events highlighting the importance of risk-benefit-adjusted management of this clinical phenotype of ACS.

Conflict of interest: Yes – F.A.W. has no conflicts of interest related to this work but has received support from the TIHES Foundation, the ZHH, the Lindenhof Foundation, the ESC,the SHF, the University of Zurich, the Medical University of Graz outside the current work.

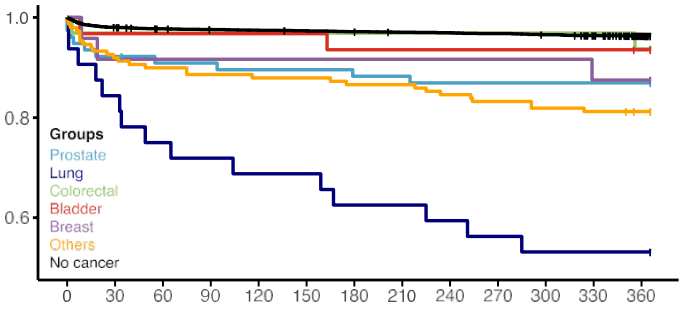


Figure: Death of any cause following ACS stratified by cancer

O15

SIMPLIFIED, NON-INVASIVE CCTA-BASED IDENTIFICATION OF HIGH-RISK CORONARYARTERY DISEASE – LONG-TERM PROGNOSTIC IMPLICATIONS

Andreas Giannopoulos*[1], Alexia Rossi[1], Stjepan Jurisic[1], Pascal Simon Heiniger[1], Marko Gajic[1], TobiaAlbertini[1], Dominik C. Benz[1], Ronny Büchel[1], Philipp Kaufmann[1], Aju Pazhenkottil[1]

[1]University Hospital of Zürich, Department of Nuclear Medicine, Cardiac Imaging, Zürich, Switzerland

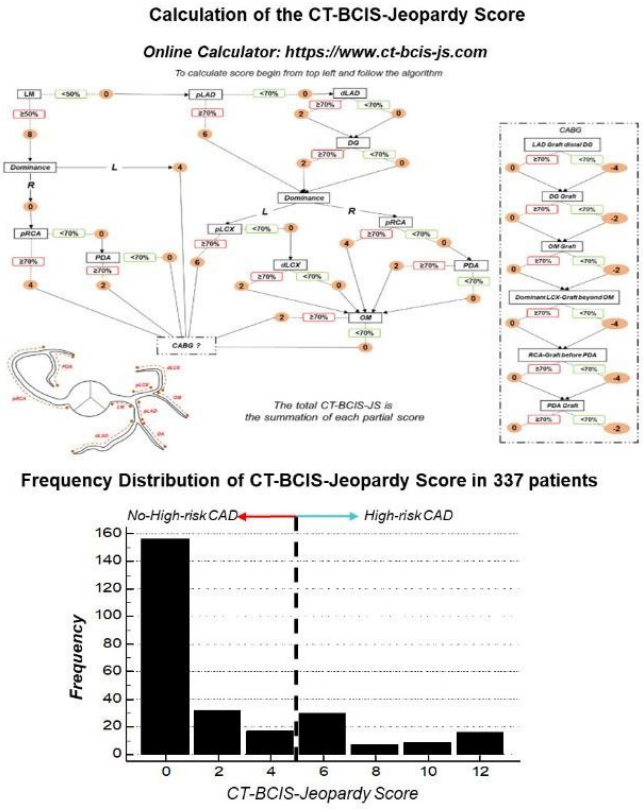
Introduction: The CT-BCIS-Jeopardy score is a simple angiographic scoring system, enabling quantification of the extent of jeopardized myocardium related to clinically significant coronary artery disease (CAD), using coronary CT angiography (CCTA). Grading only lesions with ≥70% diameter stenosis and ranging from zero (non-significant CAD) to twelve (very extensive CAD), it allows accurate and fast identification of high-risk CAD. We aimed to assessthe long-term prognostic value of the CT-BCIS-Jeopardy score.

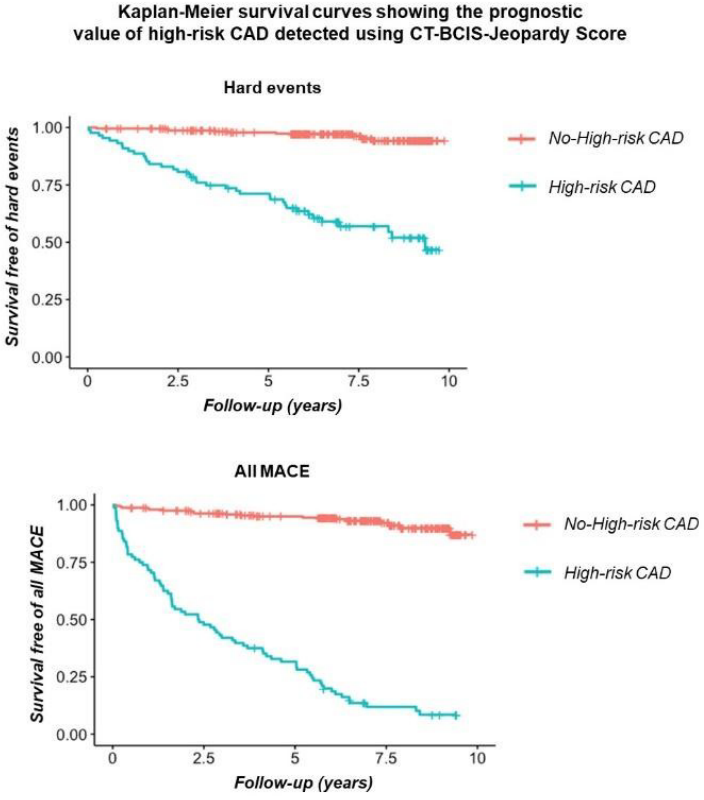
Material and methods: Retrospectively, 337 patients with known or suspected CAD referred for CCTA between 2005 and December 2008were included. The CT-BCIS-Jeopardy score was estimated for all patients using a purpose-developed online calculator, with a score of ≥6 indicating high-risk CAD. Endpoints were all-cause death or myocardial infarction ("hard events") and a composite of major adverse cardiovascular events (MACE). The Kaplan-Meier method was used to identify survival free of MACE, and Cox proportional hazard regression analysis was used to determine independent predictors for MACE.

Results: Mean patients' age was 61.7±11 years and 216 (64%) were male. High-risk CAD was detected in 88 (26.1%) patients. During a median follow-up of 6.8 (IQR: 5.7-8.5) years, 47 (14%) patients had a hard event and 97 (29%) patients experienced any MACE. Compared to non-high-risk CAD, patients with high-risk CAD had 9.6-fold higherevent rate for hard events [9 (19%) vs. 38 (81%); p <0.001] and 22-fold higher annual event rate for any MACE [19(5.6%) vs. 78 (23%); p <0.001]. When adjusted for age, sex, BMI, and traditional CAD risk factors, a CT-BCIS-Jeopardy score of ≥6 was an independent strong predictor of both, all MACE and hard events.

Conclusion: The CT-BCIS-Jeopardy score is an excellent non-invasive long-term predictor of adverse cardiac events. High-riskCAD identified using the score is associated with significantly higher annual cardiac event rate.

Conflict of interest: No





O16

REVASCULARIZATION OF THE LEFT ANTERIOR DESCENDING ARTERY WITH THE RIGHT INTERNAL THORACIC ARTERY: IN-HOSPITAL POSTOPERATIVE GRAFT PATENCY AND CLINICAL OUTCOMES

Dragan Odavic[1 2], Vasileios Ntinopoulos*[1 2], Achim Häussler[1 2], Nestoras Papadopoulos[1 2], Héctor Rodríguez Cetina Biefer[1 2] on behalf of Center for Translational and Experimental Cardiology (CTEC),Omer Dzemali[1 2] on behalf of Center for Translational and Experimental Cardiology (CTEC)

[1]Municipal Hospital of Zurich – Triemli, Department of Cardiac Surgery, Zurich, Switzerland, [2]University Hospital of Zurich, Department of Cardiac Surgery, Zurich, Switzerland

Introduction: The left internal thoracic artery (LITA) is the graft of choice for revascularizing the left anterior descending (LAD) artery. However, more data is needed about the revascularization of the LAD with the right internal thoracic artery (RITA). This study assesses in-hospital postoperative graft patency and patient outcomes after surgical revascularization of the LAD with the RITA.

Material and methods: We performed a retrospective analysis of the in-hospital postoperative data of consecutive patients undergoing coronary artery bypass grafting of the LAD with the RITA. All procedures were performed between 2017 and 2023. Graft patency was evaluated postoperatively with cardiac computed tomography (CCT) angiography before hospital discharge. Patients without postoperative graft patency evaluation were excluded from the analysis.

Results: 233 patients underwent revascularization of the LAD with the RITA. 208 underwent postoperative graft patency evaluation and were considered for this analysis. All procedures were performed with full sternotomy, and 167 (80.3%) were performed off-pump. The median (interquartile range) patient age was 67 (59-73) years, and the median EuroSCORE 2 value was 1.3 (0.8-2.1) percent. Intraoperative transit-time flow measurement showed a median flow of 35 (22-53) ml/min and a median pulsatility index of 1.6 (1.2-2). Postoperative CCT-angiography revealed a graft patency rate of 98.6% (205 patent RITAs) without reoperation. The median postoperative stay was 8 (7-9) days. There were no postoperative deaths.

Conclusion: Revascularization of the LAD with the RITA has shown high in-hospital postoperative graft patency rates comparable to that of the LITA, suggesting that the RITA may be a good alternative to the LITA for revascularizationof the LAD. However, further angiographic and clinical follow-up is warranted to assess long-term patency and outcomes.

Conflict of interest: No

O17

POLYTETRAFLUOROETHYLENE-FELT NEOMEDIA IN CONJUNCTION WITH TISSUE GLUE DOES NOT PREVENT REOPERATION IN STANFORD TYPE A AORTIC DISSECTION

Jules Miazza*[1], Luca Koechlin[1], Brigitta Gahl[1 2], Denis Berdajs[1], Voehringer Luise[1], FriedrichEckstein[1], Oliver Reuthebuch[1]

[1]University Hospital Basel, Department of Cardiac Surgery, Basel, Switzerland, [2]University HospitalBasel, Surgical Outcome Research Centre Basel, Basel, Switzerland

Introduction: Sinus Valsalva repair in acute type A aortic dissection using a Polytetrafluorethylene (PTFE) felt inlay for reinforcement of the dissected aortic root has been proposed as a treatment option.

Material and methods: 139 patients were operated for acute type A aortic dissection between January 2011 and December 2015 at our institution. Thirty patients were excluded due to treatment with composite graft (n = 29) or missing data (n = 1). Our primary endpoint was the need for reoperative surgery on the aorta during follow-up. The secondary outcome was all-cause mortality during follow-up.

Results: Out of the included 109 patients, 84 (77%) were operated on using the conventional gluing techniques – the *control group (CG)*. Twenty-five patients (23%) were operated on using the proximal PTFE felt inlay and glue – the *intervention group (IG)*. Computed tomography follow-up, commonly performed at our institution, showed unexpectedly frequent re-dissections or formation of pseudoaneurysms in the intervention group. Consequently, 40% (n = 10) of the patient in the intervention group had to be reoperated. In contrast, in the control group, 12% (n = 10) had to be re-operated. Thus, the felt inlay increased the hazard of re-operation by 6.36 (p = 0.003) with death modelled as competing risk.

Conclusion: The risk of aorta-related reoperation was 6 times higher in patients who had received felt inlay and glue. This might be due to adverse interaction of the felt, glue and aortic tissue not describedso far to the best of our knowledge.

Conflict of interest: No

Table 1: Baseline Characteristics

	Control group (N = 84)	Intervention group (N = 25)	P-value
Age, y	65 [56 to 74]	64 [58 to 70]	0.53
BMI, kg/m^2	25 [23 to 30]	27 [25 to 31]	0.23
Diabetes Mellitus, n(%)	11 (13%)	1 (4.0%)	0.29
Dyslipidemia, n(%)	22 (26%)	3 (12%)	0.18
Arterial hypertension, n(%)	54 (64%)	14 (56%)	0.49
Smokers, n(%)	25 (30%)	10 (40%)	0.34
Pulmonary disease, n(%)	13 (15%)	2 (8.0%)	0.51
Renal disease, n(%)	8 (10%)	0 (0.00%)	0.19
Previous cerebrovascular event, n(%)	28 (33%)	9 (36%)	0.81
Angina CCS III / IV, n(%)	16 (19%)	2 (8.0%)	0.24
NYHA III / IV, n(%)	19 (23%)	7 (28%)	0.60
Ejection Fraction, %	60 [55 to 60]	60 [60 to 60]	0.73
Euroscore2, %	13 [6.9 to 24]	11 [7.2 to 22]	0.74

BMI Body Mass Index; CCS Canadian Cardiovascular Society; NYHA New York Heart Association
Values are presented as number and percentage and median and interquartile range

Table 2: Follow-up data

	Control group (N = 84)	Intervention group (N = 25)	p
Red blood cell transfusion needed (%)	57 (66%)	15 (60%)	0.636
Length of hospital stay (days)	11 (8 to 19)	14 (8 to 22)	0.35
In-hospital mortality (%)	12 (14%)	0 (0%)	0.06
Duration of follow-up (years)	2.5 (0.55 to 4.2)	3.3 (1.8; 4.0)	0.22
Reoperation during follow-up (%)	10 (12%)	10 (40%)	0.003
Mortality during follow-up (%)	15 (18%)	2 (8%)	0.35
Overall Mortality (%)	25 (30%)	5 (20%)	0.45

Values are presented as number and percentage and median and interquartile range

O18

CLINICAL BENEFIT OF PET-CT GUIDED PCI IN PATIENTS WITH CHRONIC CORONARY SYNDROME

Dominik Paugsch*[1 2], Matthias Bossard[1], Tanja Koch[1], Adrian Attinger-Toller[1], Luca Federico Vercelli[1],Florim Cuculi[1], Giacomo Maria Cioffi[1], Mehdi Madanchi[1], Irena Majcen[1], Klaus Strobel[3]

[1]Luzerner Kantonsspital , Cardiology, Lucerne, Switzerland, [2]University of Lucerne, Luzern,Switzerland, [3]Luzerner Kantonsspital, Radiology, Luzern, Switzerland

Introduction: Percutaneous coronary intervention (PCI) reduces ischemia-related symptoms among patients with chronic coronary syndromes (CCS). Still, it remains challenging to predict the clinical benefitof PCI in CCS patients, especially among those with complex anatomy. Positron emission tomography-computed tomography (PET-CT) represents the gold standard for assessing myocardial perfusion and ischemia. Yet, there exists only limited data on symptom-relief and outcomes of CCS patients undergoing PET-CT-guided PCI. We investigated the symptomatic benefit following PET-CT-guided PCI in complex CCS patients.

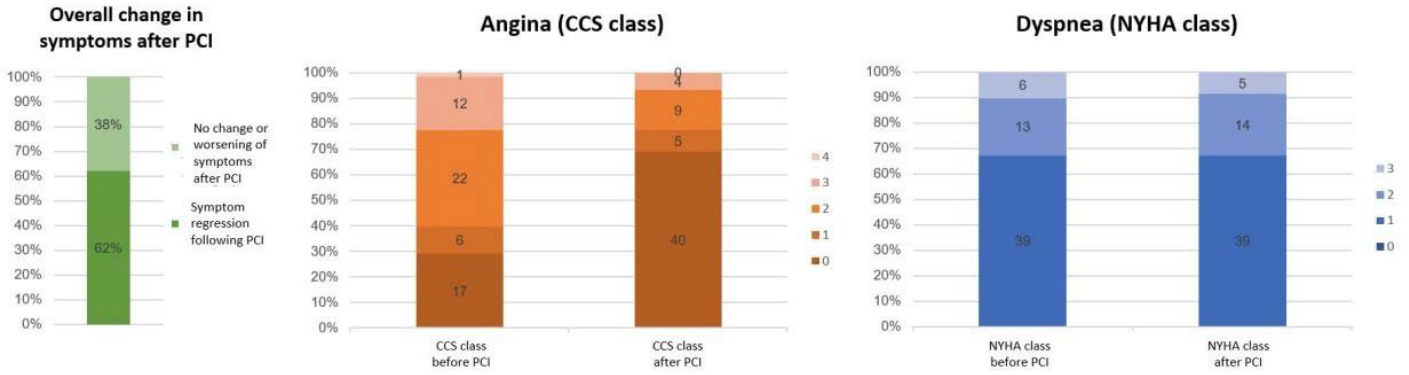
Material and methods: From the prospective COMPLEX registry (NCT06075602), we included CCS patients, who underwent 82rubidium-PET-CT scans prior to PCI. We evaluated change in symptoms and clinicaloutcomes following PET-CT-guided PCI. All outcomes were independently adjudicated.

Results: We included 58 CCS patients (mean age 70years, 82% males and 38% diabetics). The mean NYHAand angina class were 1.4 and 1.6, respectively. The mean ischemia burden and global coronary flow rate were 10.2% and 2.1ml/g/min, respectively. The most treated vessel represented the LAD(34%) and 16% of patients underwent multivessel PCI. Median follow-up time was 9.4months. Thechange in symptoms is highlighted in the *Figure*. We encountered no major periprocedural complications. Following PCI, 7 (12.1%) patients had complete symptom resolution, 62% of patients reported significant symptom regression, whereas 38% of patients showed no change or worsening of symptoms. Patients with residual symptoms more frequently suffered from chronic kidney disease and prior strokes. During follow-up, 1 patient died secondary to end-stage heart failure.

Conclusion: In a real-world complex CAD cohort undergoing PET-CT guided PCI, we found that almost 40% of patients showed no change or even worsening symptoms following the intervention. Physicians should take this into account when counseling and evaluating CCS patients for PCI. Further research is warranted to enhance identification of CCS patients, who will symptomatically benefit from PCI.

Conflict of interest: No

Figure Change of symptoms in chronic coronary syndrome patients following PET-CT guided PCI



Abbreviations: CCS = Canadian Cardiovascular Society grading of angina pectoris; NYHA = New York Heart Association Functional Classification; PET-CT = Positron emission tomography–computed tomography; PCI = Percutaneous coronary intervention.

O19

THE NEW ERA OF OPCAB SURGERY: THE USE OF IMPELLA FOR HIGH-RISK PATIENTS

Gojart Hoti*[1], Achim Häussler[2], Igor Tudorache[2], Hector Rodriguez Cetina Biefer[2], Omer Dzemali[2]

[1]Triemli Hospital, Zürich, Switzerland, [2]University Hospital of Zürich, Zürich, Switzerland

Introduction: Ventricular support systems are used to treat heart failure and cardiogenic shock. One type of support system is the intracardiac micro-axial pumping system (Impella). Enhancing outcomes for this patient population requires reducing cardiac afterload and intracardiac pressure and providing adequate flow support. This project aims to present a new experience using the Impella system foroff-pump coronary artery bypass surgery (OPCAB) in high-risk patients with severely impaired left ventricular function (LVEF).

Material and methods: A retrospective analysis was conducted on the preoperative, intraoperative, and in-hospital postoperative data of patients with severely restricted left ventricular ejection fraction who underwent OPCAB at a single center from 2020 to 2023 with Impella. The primary outcome assessedwas the 30-day mortality rate, while the pre- and postoperative LVEF were considered secondary outcomes.

Results: We identified 13 patients who matched the criteria. The median age of the patients was 63 (54-74) years, with 15.4% (n = 2) being female. The median EuroSCORE II was 10.8% (3.6-19.3). The aortic valve function remained normal throughout the pre-and postoperative period, without any new incidence of aortic valve regurgitation following Impella explantation. The incidence of early bypass graft failure in cardiac computer tomography-angiography was observed in 9.1% of cases (n = 1), and no patients required reoperation for bleeding. The median length of stay in the intensive care unit and hospital was 11 (4-16) and 11 (9-20) days, respectively. Despite the increased Euroscore of 10.8% (3.6 – 19.3%), there was only one perioperative death within 30 days. The preoperative LVEF was 20% (17-27%) and significantly improved to 38% (31-42%)postoperatively.

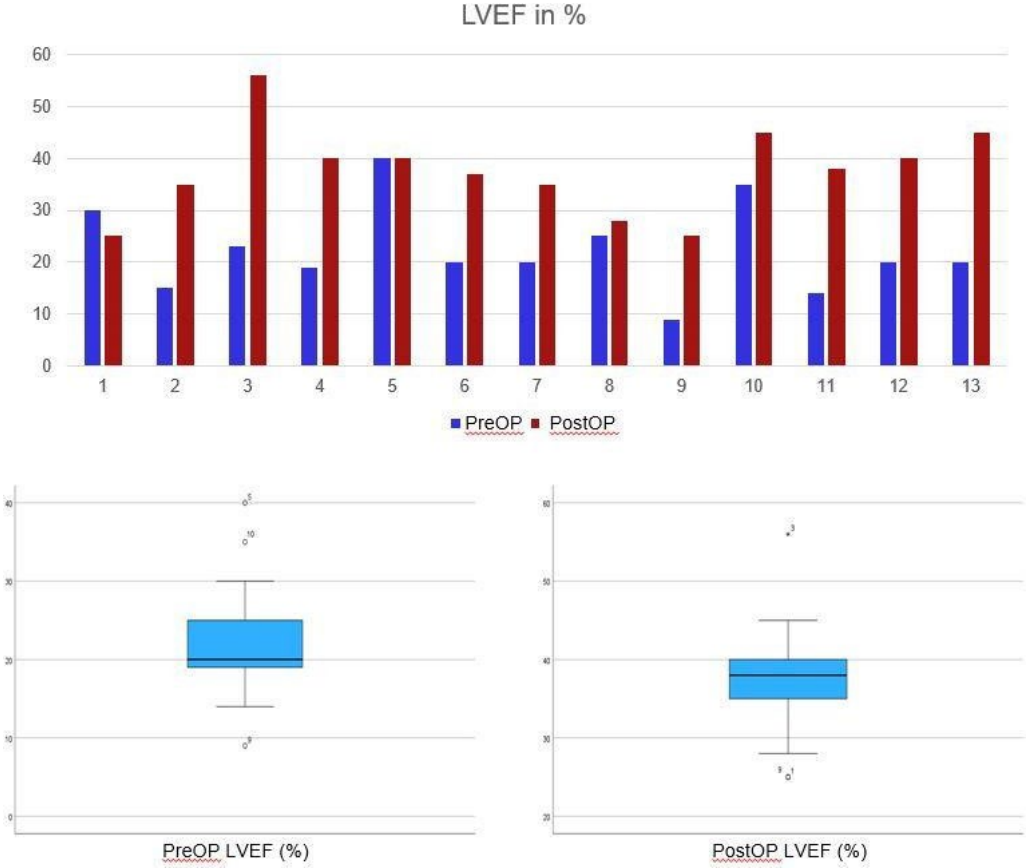
Conclusion: The utilization of intracardiac microaxial pumping systems in patients with severely impaired LVEF undergoing OPCAB presents a feasible, safe, and reproducible approach. This approach demonstrateslow mortality rates, minimal complications, and improved LVEF despite the high-risk nature of the patients.

Conflict of interest: No

Preoperative and postoperative characteristics of the study population (n=13)

Age	63 (54 - 74)
Female sex	2 (15.4)
Diabetes mellitus	4 (30.8)
Creatinine preop, mcmol/L	94 (73 - 121)
Status after PCI/DES	5 (38.5)
EuroScore II	10.8 (3.6 – 19.3)
ICU stay, days	11 (4 – 16)
Postoperative stay, days	11 (9 – 20)
In-hospital death/30d mortality	1 (7.7)

Continuous variables are presented as median (first - third quartile);
Categorical variables are presented as counts (valid percentages);
PCI: Percutaneous intervention; DES: Drug-Eluting-Stent; ICU: Intensive care unit



RAPID FIRE ABSTRACT SESSION – BASIC SCIENCE

O20

CIRCULATING LARGE EXTRACELLULAR VESICLES FROM STEMI PATIENTS CONTRIBUTE TO CARDIOVASCULAR DAMAGE

Carolina Balbi*[1], Giorgia Senesi[2], Stefano Ministrini[1], Marco Brucale[3], Francesco Valle[3], RobertoFrigerio[4], Alexander Akhmedov[1], Hans Jürg Beer[1], Giovanni Camici[1], Giuseppe Vassalli[2]

[1]Center for Molecular Cardiology, [2]Istituto Cardiocentro Ticino – EOC, [3]CNR Bologna, [4]Istituto di Scienze eTecnologie Chimiche "Giulio Natta", CNR, Milano

Introduction: While primary percutaneous coronary intervention (PCI) is the treatment of choice in patients withST-segment elevation myocardial infarction (STEMI), this treatment does not fully prevent late adverse cardiac remodeling. Infarcted myocardial tissue releases damage-associated extracellular vesicles (EV) that mediate tissue inflammation and may regulate myocardial remodeling. Here, we investigated the role of circulating EV in STEMI patients, with a focus on heart remodeling.

Material and methods: Peripheral blood samples were obtained from STEMI patients (n = 30) within 4 hrs of onset of pain before PCI and from age- and gender-matched healthy control (CTRL; n = 30) with documented absence of coronary artery disease. Raw serum was characterized by atomic force microscopy (AFM) single-particle morphometry. Large EV (EV-L) were isolated by differential centrifugation and usedfor in vitro experiments on human aortic endothelial cells (hAEC), and human cardiac fibroblast (hCF).

Results: AFM analysis showed a 7.5-fold increase in EV-L in STEMI vs. CTRL serum. In vitro treatment of hAECwith EV-L from STEMI patients, but not CTRL-EV-L, induced an increase in reactive oxygen species (ROS) within a short exposure (3 hours), while long treatment (7 days) stimulates endothelial to mesenchymal transition (EndMT) with increase of alpha smooth muscle actin (αSMA) expression byendothelial cells and extracellular matrix protein (ECM) production. Moreover, STEMI-EV-L, but notCTRL-EV-L, stimulated in vitro proliferation of hCF and their activation in myofibroblasts, as assessed by αSMA expression, resulting in increased ECM secretion. Lastly, STEMI-EV-L induced remodelling was confirmed using a human microtissue (hMT) 3D model, composed by iPS-derived cardiomyocytes (hCM), hCF and hEC

Conclusion: Our preliminary data showed a pathological role of circulating EV-L derived from STEMI patients. In particular, results from in vitro experiments evidence their function in inducing endothelial damage and activation of cardiac fibroblast into myofibroblast; two important features in the progression of pathological myocardial remodeling.

Conflict of interest: No

O21

LEVERAGING MI-MRNA NETWORKS OF THE INTERNAL MAMMARY ARTERY FOR THE DISCOVERY OF ATHEROPROTECTIVE TARGETS: A SYSTEMS APPROACH

Simon Kraler[1], Yifan Wang*[1], Arda Halu[2], Mark Blaser[3], Luca Liberale[4], Fabrizio Montecucco[4], PeterLibby[3], Alexander Akhmedov[1], Giovanni G. Camici[1], Thomas F. Lüscher[1]

[1]University of Zurich, Center for Molecular Cardiology, Zürich, Switzerland, [2]Harvard Medical School,Channing Division of Network Medicine, Boston, United States, [3]Harvard Medical School, Boston, United States, [4]University of Genoa, Department of Internal Medicine, Genova, Italy

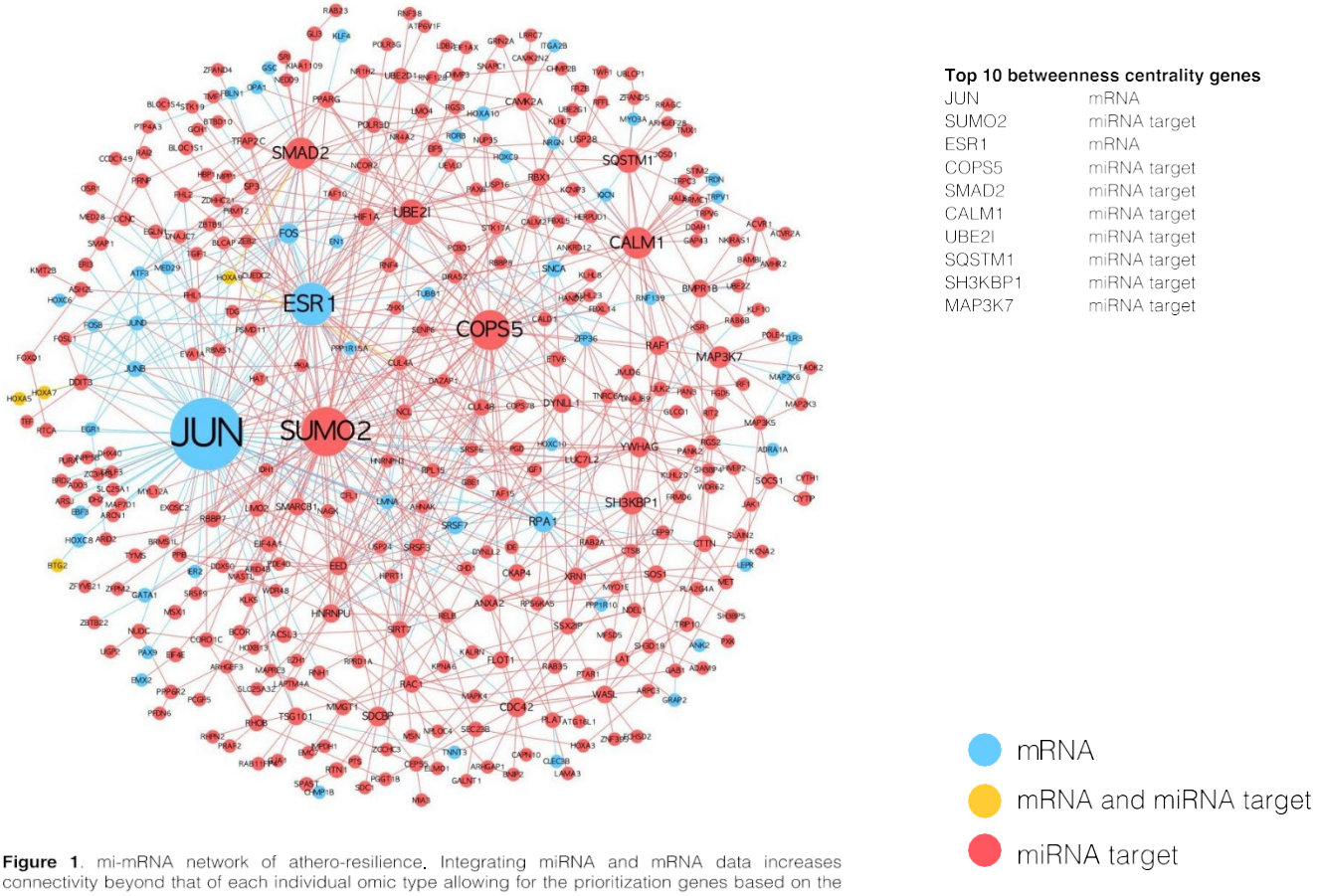
Introduction: Atherosclerosis and its acute and chronic sequelae account for most deaths around the globe and revised research concepts focusing on resilience rather than risk are warranted. The internal mammary artery (IMA) possesses biological features conferring protection against intimal growth and atherosclerotic plaque formation, but mechanisms underlying its 'athero-resilience' remain poorly understood. Multi-omics and system biology approaches offer unique avenues for the identification of novel, previously underappreciated, atheroprotective targets.

Material and methods: Among patients undergoing coronary bypass grafting, IMA, aorta, and left-anterior descending coronary artery (LAD) tissues were obtained and both micro (miRNA) and messenger RNAs (mRNA) were freshly isolated, purified, and sequenced using next-generation mi-/mRNA-sequencing. By leveraging systems approaches, integrated miRNA-mRNA subnetworks were generated, and a molecular signature of athero-resilience was identified. Quantitative RT-PCR and semiquantitative immunohistochemistry were performed to confirm candidate gene expression.

Results: Relative to athero-susceptible arteries (aorta and LAD, respectively), mRNA-seq unveiled 134 IMA-enriched genes,reflecting into 87 upregulated biological pathways mostly exclusive to the human IMA. By harnessing miRNA-seq, 34 IMA-enriched miRNAs were identified, with miRNA-target gene analysis revealing 691 candidate genes confinedto athero-resilient tissues. Mapping of shared mi-mRNA targets into the human interactome and betweenness centrality-based target prioritization revealed *c-JUN*, *SUMO2*, and *ESR1* as the three top hits of athero-resilience. Quantitative expression analysis using RT-PCR and immunohistochemistry confirmed that c-JUN is highly expressed in the atheroprotected human IMA thereby opening exciting experimental avenues to probe the causal role of this transcription factor in athero-resilience.

Conclusion: By querying the coding and non-coding RNAome of the human IMA, aorta, and LAD, potential drivers of athero-resilience are explored. Systems approaches identified several candidate genes involved in atheroprotection, with IMA-enriched c-JUN ranking among the top three hits. Further experimental data are warranted to gauge the mechanistic role of this transcription factor in athero-resilience.

Conflict of interest: No



Top 10 betweenness centrality genes

JUN	mRNA
SUMO2	miRNA target
ESR1	mRNA
COPS5	miRNA target
SMAD2	miRNA target
CALM1	miRNA target
UBE2I	miRNA target
SQSTM1	miRNA target
SH3KBP1	miRNA target
MAP3K7	miRNA target

Figure 1. mi-mRNA network of athero-resilience. Integrating miRNA and mRNA data increases connectivity beyond that of each individual omic type allowing for the prioritization genes based on the information of both gene expression and regulation. mRNAs and miRNA targets that were differentially expressed between athero-resilient (IMA) and athero-susceptible (LAD, aorta) tissues were mapped to a recently published, large-scale, literature curated human interactome. The largest connected component of each subgraph was extracted. Node size corresponds to betweenness centrality.

O22

ΔPPFOR, CLOSTRIDIUM_ASF356 MUTANTS PREVENT PERIVASCULAR ADIPOSE TISSUE AND ENDOTHELIAL SENESCENCE

Benoit Pugin[1], Florentin Constancias[1], Aurélien Thomas[2], Sylvain Le Gludic[2], Cristina Menni[3], Jürg Beer[4 5], Francesco Paneni[6 7], Frank Ruschitzka[6 7], Soheil Saeedi*[6 7]

[1]Laboratory of Food Biotechnology, Institute of Food, Nutrition and Health, ETH Zurich, Department of Health Sciences and Technology, Zurich, Switzerland, [2]Faculty Unit of Toxicology, University Center of Legal Medicine, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland, [3]King's College , Department of Twin Research & Genetic Epidemiology, London, United Kingdom, [4]Center for Molecular Cardiology, University of Zurich, Schlieren, Switzerland, [5]Cantonal Hospital Baden, Department of Internal Medicine, Baden, Switzerland, [6]Center for Translational and Experimental Cardiology (CTEC), University Hospital Zurich, University of Zurich, Department of Cardiology, Schlieren, Switzerland, [7]University Heart Center, University Hospital Zurich, Department ofCardiology, Zurich, Switzerland

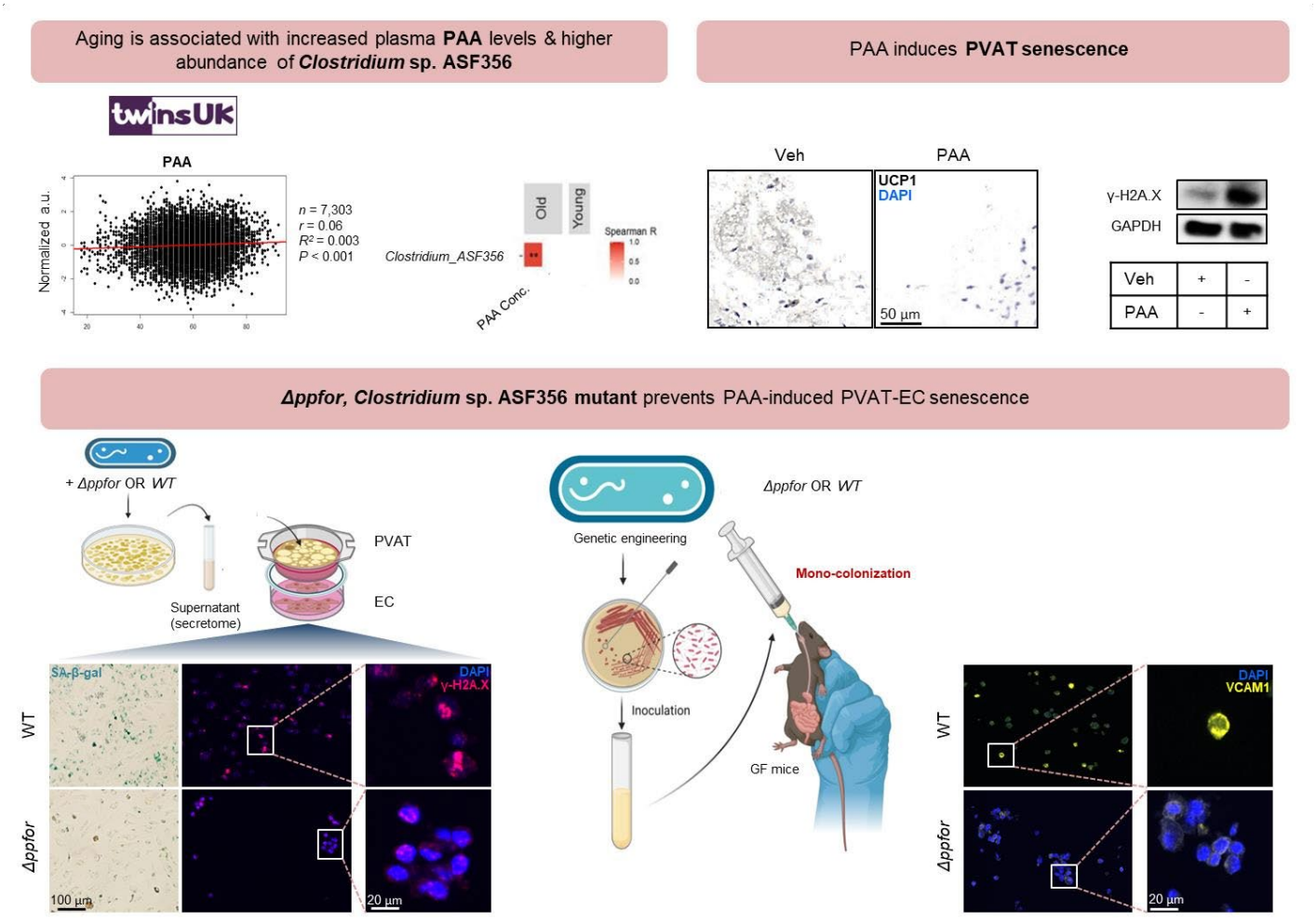
Introduction: (Peri)vascular senescence and gut microbiome alterations have emerged as primary processes drivingaging-associated diseases. However, their interplay in aging-related cardiovascular diseases is largelyunknown. Our recent studies revealed an increase in gut-derived phenylacetic acid (PAA) in the aging population (*TwinsUK Aging Cohort*, n = 7,303). Our shotgun metagenomics also showed that *ppfor*- harboring *Clostridium* sp. ASF356 age-dependently generates PAA, which induces endothelial cell (EC)senescence. Yet, it remains unclear whether and how it contributes to cellular senescence in aortic PVAT-EC. Therefore, the current study is aimed at (1) elucidating mechanisms underlying PAA-induced PVAT-EC senescence, and (2) *Clostridium* genetic engineering (*ppfor* gene depletion) for prevention ofPVAT-EC senescence.

Material and methods: To circumvent our limited knowledge of PAA-(peri)vasculature pathway in aging, we performed multi- omics (fecal shotgun metagenomics and targeted metabolomics), and cell-cell interaction andsenescence analyses. For *Clostridium* engineering, we deplete *ppfor* gene by ClosTron method andmono-colonize germ-free (GF) mice for reducing plasma PAA and preventing PVAT-EC senescence.

Results: Our studies exhibited that *Clostridium* sp. ASF356-derived PAA induces PVAT-EC senescenceby DNA damage (↑ γ-H2A.X phosphorylation), SASP (↑ IL6 and VCAM1), and proliferative arrest (↑ $p16^{INK4a}$ and $p21^{WAF1/Cip1}$). PAA increases intracellular H_2O_2-mediated *Notch1* in PVAT, leading to reduced energy supply (↓ UCP1) and increased senescence-messaging secretome (↑ IL6) towards ECs. We also showed that mono-colonization of GF mice with *Δppfor Clostridium* ASF356 mutants, in opposite to its wild-type bacteria, reduces plasma PAA and prevents PVAT-EC senescence and dysfunction. Accordingly, *Δppfor*-colonized GF mice showed significantly lower SA-β-galactosiade+ cells, γ-H2A.X phosphorylation, $p16I^{NK4a}$ and $p21^{WAF1/Cip1}$, and IL6 than seen in WT-colonized mice.

Conclusion: The current study offers an integrative understanding of the interplay of the gut microbiota and PVAT- EC senescence. Our bacterial genetic engineering approach may represent an innovative personalized microbiome-based senotherapy.

Conflict of interest: No



O23

THE ROLE OF CD38 IN AGE-ASSOCIATED VASCULAR DYSFUNCTION

Yustina Puspitasari[1], Kangmin Yang*[1], Susan Bengs[1], Stefano Ministrini[1 2], Thomas F. Lüscher[1 3],Giovanni G. Camici[1 4]

[1]University of Zurich, Center for Molecular Cardiology, Zürich, Switzerland, [2]University of Perugia, Dept. Medicine and Surgery, Perugia, Italy, [3]Royal Brompton National Heart and Lung Hospital, Cardiology, London, United Kingdom, [4]University Hospital of Zürich, Dept. Research and Education,Zürich, Switzerland

Introduction: Aging is a major risk factor for cardiovascular and cerebrovascular diseases and it is characterized by age-related vascular dysfunction, mainly caused by endothelial dysfunction and arterial stiffness. Age-associated depletion of nicotinamide adenine dinucleotide (NAD) ispostulated to be involved in the progression of age-related vascular dysfunction. Recent studiesreported the involvement of CD38 in NAD regulation, and its inhibition significantly improves the lifespan of progeroid and aged mice. However, whether CD38 is involved in the progressionof age-related vascular dysfunction remains to be investigated.

Material and methods: CD38 expression was investigated in aortic homogenates of young (12-16 weeks) and aged (18-24 months) C57BL/6 wild-type mice, as well as *in vitro* in young (passage 5-7) and senescent (passage 14-15) primary human aortic endothelial cells. *Ex vivo* tension myograph experiments were performed on thoracic aortas isolated from aged C57BL/6 mice (22-24 months old) pre- incubated for 1 hour with CD38-specific inhibitor, 78c, or DMSO as control.

Results: A significant upregulation of CD38 expression was detected in the aortas of aged mice compared to the young group. The augmentation of CD38 expression was also observed in senescent HAECs compared to young cells. The *ex vivo* tension myograph experiments showeda significant increase in vascular relaxation response to acetylcholine upon CD38 inhibition, suggesting improved aortic function. The observed effect was rescued by the addition of endothelial nitric oxide synthase (eNOS) inhibitor (LNAME) but not by COXs inhibitor (Indomethacin), indicating that the effects of CD38 inhibition on aortic function are eNOS pathway dependent.

Conclusion: The herein-reported data suggests the possible involvement of CD38 in the development of age-related vascular dysfunction. Further studies are ongoing to investigate the underlying molecular mechanisms as well as the effect of long-term CD38 inhibitor supplementation on the progression of age-related vascular dysfunction.

Conflict of interest: No

O24

SPATIAL AND MOLECULAR RESOLUTION OF CELLULAR INTERACTIONS DURING MYOCARDITIS AND INFLAMMATORY CARDIOMYOPATHY

Iliana Papadopoulou*[1], Hung-Wei Cheng[1], Nadine Cadosch[1], Christian Perez-Shibayama[1], Mechthild Lütge[1], Anna Joachimbauer[1], Frank Ruschitzka[2], Dörthe Schmidt[2], Cristina Gil-Cruz[1 2], Burkhard Ludewig[1 2]

[1]Institute of Immunobiology, Kantonsspital St. Gallen, St.Gallen, Switzerland, [2]Department ofCardiology, University Hospital Zurich, Zurich, Switzerland

Introduction: Myocarditis constitutes the inflammation of the heart muscle that is accompanied by immune cell infiltration and cardiomyocyte death. Acute myocarditis frequently precipitates chronic inflammatory cardiomyopathy. The complexinterplay of cardiomyocytes with endothelial cells, cardiac fibroblasts and immune cells determines the balance between tissue homeostasis, inflammation, and fibrotic remodeling. In response to inflammatory stress, damaged cardiomyocytes undergo apoptosis and secrete cytokines, alarmins and damage-associated molecular patterns tofurther exacerbate immune cell infiltration and activation of cardiac resident cells, leading to fibrosis, adverse remodeling, and eventually heart failure.

Material and methods: To dissect the inflammatory cardiac cell landscape, we utilized myosin heavy chain 6-specific T cell receptor transgenic mice (TCRM), which spontaneously develop CD4+ T cell-driven autoimmune myocarditis. Single cell and spatial transcriptomics data of cardiac cells from 8-week-old TCRM and healthy control mice were analyzed to infer the molecular expression, location, strength, and patterns of intercellular communication.

Results: We found that inflammatory lesions are underpinned by COL1-expressing cardiac fibroblasts closely interacting with CD4+ T cells and CD11b+ myeloid cells. Since the exact location of the diverse cardiac cell populations remainslargely unknown, we spatially resolved the immunopathological changes in the myocardium in the states and signatures of cells during myocarditis and inflammatory cardiomyopathy. Moreover, we deciphered the crosstalk among cardiac cells and defined the transcriptional phenotype of damaged and functionally impaired cardiomyocytes. Our analysis revealed the concomitant presence of distinct cellular neighborhoods in murine heartsections affected by acute autoimmune myocarditis: (i) non-impaired regions dominated by homeostatic cardiomyocytes (ii) fibroblast-enriched regions harboring activated T cells and macrophages, (iii) areas populated by damaged cardiomyocytes, (iv) and fibrotic cardiomyocyte-depleted regions.

Conclusion: The identification of distinct cellular neighborhoods with characteristic gene expression patterns paves the way fora comprehensive characterization of the alterations in the cellular, molecular, and spatial microenvironments during acute and chronic myocardial inflammatory disease.

Conflict of interest: No

O25

PERICARDIAL FAT-ASSOCIATED LYMPHOID CLUSTERS CONTROL T CELL ACTIVATION AND DIFFERENTIATION DURING AUTOIMMUNE MYOCARDITIS

Nadine Cadosch*[1], Christian Perez Shibayama[1], Cristina Gil Cruz[1], Hung-Wei Cheng[1], AnnaJoachimbauer[1 2], Frank Ruschitzka[2], Dörthe Schmidt[2], Burkhard Ludewig[1 2]

[1]Kantonsspital St.Gallen, St. Gallen, Switzerland, [2]University Hospital of Zürich, Zürich, Switzerland

Introduction: The pericardium is a double-layered fibrous sac consisting of a visceral and a parietal sheath. While the visceral layer is directly attached, the parietal layer is separated from the heart through a fluid-filled space known as pericardial cavity. The pericardial fluid, containing cardiac transudate is reabsorbed by the lymphatic bed of the parietal pericardium. The fluid is funneled through permanent immune structures, called fat-associated lymphoid clusters (FALCs) and scanned for immunologically active substances. FALCs thus serve as proximal immune-surveillance hub of the cardiac cavity. Nevertheless, surprisingly little is known about the involvement of these non-classical secondary lymphoid organs incardiac inflammation. Here, we have assessed whether and to what extent the activation and differentiation of heart-specific $CD4^+$ T cells is controlled in pericardial FALCs.

Material and methods: We employed high-dimensional flow cytometry to study immune cell kinetics and effector phenotypes in pericardium and corresponding hearts in a murine model of autoimmune- driven myocarditis. Single-cell transcriptome analysis of immune and stromal cells allowed forin depth

analysis of altered gene expression profiles and pathways in presence of ongoing cardiac inflammation

Results: We found that the occurrence of cardiac inflammation is closely accompanied by and correlated to inflammation of the pericardium. We further demonstrate that cardiotoxic MHY6-specific T cells home to pericardial FALCs and receive distinct activation and differentiation signals through close interaction with activated CCL19^{+} fibroblastic reticular cells (FRCs). Transcriptomic and molecular interaction analyses are ongoing to determine the key pathways that control T cell activation and differentiation in pericardial FALCs.

Conclusion: Activation of pericardial FALCs and subsequent immune cell expansion occurs early in the acute phase of myocardial inflammation. MYH6-specific CD4^{+} T cells home to pericardial FALCs and proliferate locally in response to cardiac antigen encounter. The interaction with CCL19-expressing FALC FRCs determines the cardiopathogenic activity of CD4^{+} T cells.

Conflict of interest: No

RAPID FIRE ABSTRACT SESSION – VALVULAR HEART DISEASE

O26

LOX-1 AS NOVEL KEY REGULATOR OF MOLECULAR PATHWAYS GOVERNING CALCIFIC AORTIC VALVE DISEASE

Alexander Akhmedov*[1], Tetiana Lapikova-Bryhinska[1], Simon Kraler[1], Martin O. Schmiady[2], ReinehrMichael[3], Giovanni G. Camici[1 2], Thomas F. Lüscher[1 4]

[1]University of Zurich, Center for Molecular Cardiology, Schlieren, Switzerland, [2]University Hospital, University Heart Center, Department of Cardiology, Zurich, Switzerland, [3]Institute of Pathology and Molecular Pathology,, University Hospital Zurich, Zurich, Switzerland, [4]Royal Brompton and HarefieldHospitals and Imperial College, London, United Kingdom

Introduction: Calcific aortic valve disease (CAVD) is the most common valvular heart disease with a prevalence of around 0.4% in the general population, but in up to 2% in people aged >65 years. Certain lipoprotein variants such as Lp(a) and oxLDL are thought to trigger CAVD. Importantly, Lp(a) and oxLDL can bind to the endothelial lectin-like oxidized LDL receptor (LOX-1), one of the main scavenger receptors overexpressed in endothelial cells covering diseased aortic valves (AV) and involved in endothelial lipid homing and other processes governing atheroma progression and destabilization.

Material and methods: Leaflets of calcific AVs were obtained from patients undergoing surgical AV replacement (n = 10). Likewise, non-diseased leaflets were sampled from sex- and age-matched organ donors (n = 11). Both leaflet groups were either fixed in formalin (n = 5-6) or immediately snap-frozen (n = 5). Upon formalin-fixed paraffin- embedded section preparation, leaflets were further processed using GeoMxTM Digital Spatial Profiler (DSP) transcriptomics. Similarly, snap-frozen leaflets were processed for QIAzol®-based RNA isolation followed by reverse transcription and qPCR. Finally, in-vitro and in-vivo models were used to evaluate role of LOX-1 in CAVD.

Results: Using GeoMxTM DSP together with qPCR on valve leaflets, we unravelled LOX-1 as a key driver of CAVD, linking Lp(a) and oxLDL to the chronic inflammation leading to fibrosis, micro- and macrocalcifications – hallmarks of CAVD. Furthermore, LOX-1 levels were upregulated in interstitial cells exposed to calcifying conditions. Finally, using LOX-1 overexpressing mice we showed signs of calcification in AVs.

Conclusion: Based on own validated transcriptomic results, the expression of LOX-1, a main scavenger receptor for lipid binding, is increased in diseased AVs. Therefore, LOX-1 might represent an interesting target for future research. Unveiling the key mechanisms that orchestrate the progressive narrowing and calcification of the aortic orifice might pave the way for novel therapeutic approaches that go beyond surgical or minimal- invasive valve replacement in humans.

Conflict of interest: No

O27

CLINICAL VALIDATION OF THE 2021 EUROPEAN SOCIETY OF CARDIOLOGY GUIDELINES ON PRE-EXISTING RIGHT BUNDLE BRANCH BLOCK PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE REPLACEMENT

Marc Salis*[1 2], Patrick Badertscher[1 2], Sven Knecht[1 2], Thomas Nestelberger[1 2], Christoph Kaiser[1 2], Gregor Leibundgut[1 2], Beat Schaer[1 2], Philipp Krisai[1 2], Michael Kühne[1 2], Christian Sticherling[1 2]

[1]Universitätsspital Basel, Basel, Switzerland, [2]CRIB, Basel, Switzerland

Introduction: The management of patients with right bundle branch block (RBBB) undergoing transcatheteraortic valve replacement (TAVR) remains challenging. In these patients, the 2021 ESC guidelines recommend early pacemaker (PM) implantation in case of PR prolongation, QRS axis change or transient high-degree atrioventricular block (HAVB). However, evidence for the proposed criteria is scarce. Our aim was to evaluate the ESC recommendation for risk stratification of RBBB patients undergoing TAVR.

Material and methods: We retrospectively analyzed patients with pre-existing RBBB undergoing TAVR at our institution between 2011-2023. A surface 12-lead electrocardiogram (ECG) was available before and after procedure in all patients. The following, proposed ESC criteria were validated: ΔPR interval ≥ 20ms, QRS axis change or transient HAVB <24 hours after TAVR.

Results: Of a total 1412 patients undergoing TAVR, 109 had pre-existing RBBB and were eligible for final analysis (mean age 83±5 years, 39% female). Of 109 RBBB patients, 41 (38%) developed persistent HAVB and received a permanent PM. Among the other 68 (62%), 16 patients (24%) suffered delayedHAVB during 30-days FU.

When applying the ESC Guidelines, PM placement would have been indicated in 50% (34/68) of patients with RBBB after TAVR: due to transient HAVB in 15 (22%), due to PR prolongation ≥ 20msin 16 (24%) and due to QRS axis change in 19 patients (28%). The proposed ESC criteria identified 69% of patients (11/16) with delayed HAVB during 30-day FU, while missing 5 patients (Figure). This resulted in a sensitivity of 69% and a negative predictive value of 85%.

Conclusion: In this large cohort of RBBB patients undergoing TAVR with contemporary valves and techniques, the proposed ESC criteria of PR prolongation, QRS axis change or transient HAVB missed almost onethird of patients with delayed HAVB during 30-day FU. Prospective studies are warranted to confirm these findings.

Conflict of interest: No

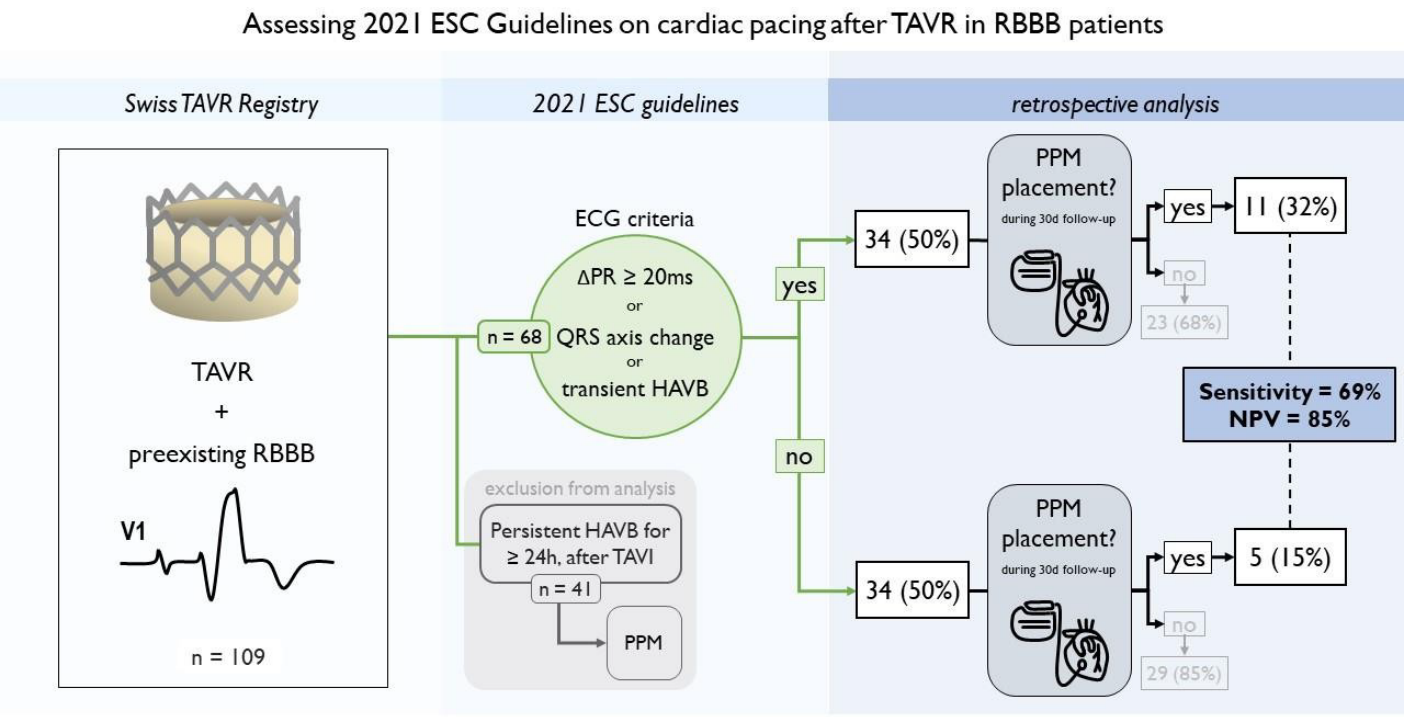


Figure
TAVR, Transcatheter aortic valve replacement; RBBB, right bundle branch block; ΔPR, $PR_{postTAVI} - PR_{preTAVI}$; HAVB, high-grade AV-block; PPM, permanent pacemaker; NPV, negative predictive value

O28

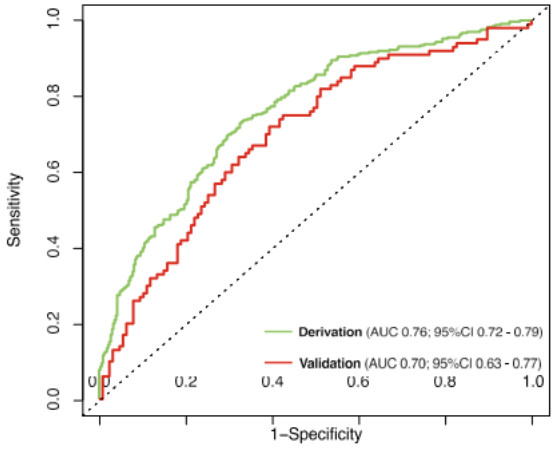
LONG-TERM OUTCOMES AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION: DERIVATION AND VALIDATION OF THE LONG-TAVI PREDICTION MODEL

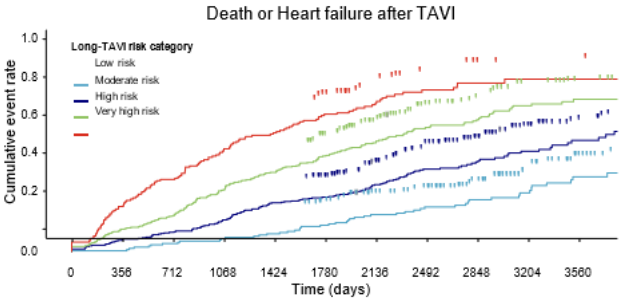
Florian A. Wenzl*[1], Panagiotis Savvoulidis[2], Peizhi Wang[1], Tamara Al-Och[2], Yakup Yakupoglu[2] on behalf of Dr. med. Flavia Baumann, Shivasankar Sukumar[3], Simon Davies[2] on behalf of Dr. med. Tito Kabir, Dr. med. Vasileios Panoulasj and Dr. med. Andreas Kalogeropoulos, Miles Dalby[2], Saeed Mirsadraed[2], Thomas F. Lüscher[1]

[1]Center for Molecular Cardiology, Schlieren, Switzerland, [2]Royal Brompton and Harefield Hospitals,Heart Division, London, United Kingdom, [3]University of Glasgow, School of Cardiovascular and Metabolic Health, Glasgow, United Kingdom

Introduction: Identification of high-risk individuals after transcatheter aortic valve implantation (TAVI) is key to personalized care.Established risk models require a plethora of variables, fail to account for biomarker dynamics and imaging parameters, mostly focus on the short term, and offer limited predictive performance. We aimed to develop an easilyapplicable prediction model for long-term mortality or heart failure (HF) following TAVI.

Material and methods: Patients undergoing TAVI at a high-volume university centre in the United Kingdom were recruited into a prospectivecohort study and followed for up to 15.1 (median 5.3, interquartile range [IQR] 2.8–7.4) years. Enrolled patients were divided into a development cohort (*n* = 670, 07/2007–12/2016) and a validation cohort (*n* = 253, 01/2017– 11/2018). Patient characteristics along with pre- and post-procedural imaging results and brain natriuretic peptide (BNP) levels within the first 3 months were recorded. A clinical risk score for long-term mortality and HF admission(i.e., Long-TAVI score) was derived using Cox regression and evaluated using time-dependent area under the receiver operating characteristics curve (AUC).





Results: Age at presentation was 82.0 (IQR 75.0–86.0) years, 899 (99.2%) patients had signs of heart failure, left ventricular ejection fraction was 57 (IQR 47–64)%, and pre-TAVI BNP levels were 291 (IQR 158–555) pg/mL. The simple 8- item Long-TAVI score accounts for periprocedural BNP dynamics and shows good

discrimination (AUC 0.76, 95%CI 0.72–0.79) and calibration in the development cohort performing similarly well in the external validation cohort (AUC0.70, 95%CI 0.63–0.77). Long-TAVI outperformed the logistic EURO score (AUC 0.56, 95%CI 0.52–0.59, *P*<0.001).

Conclusion: Accounting for clinical characteristics, imaging parameters, and circulating BNP levels, the newly developed Long-TAVI risk score achieves high performance and provides the first prediction model for long-term mortalityand HF. Long-TAVI represents a novel tool for personalized risk assessment in patients undergoing TAVI.

Conflict of interest: Yes – F.A.W. has no conflicts of interest related to this work but has received support from the TIHES Foundation, the ZHH, the Lindenhof Foundation, the ESC,the SHF, the University of Zurich, the Medical University of Graz outside the current work.

O29

EARLY AND LONG-TERM OUTCOMES OF MITRAL VALVE SURGERY AFTER TRANSCATHETER EDGE-TO-EDGE REPAIR: TWO CENTER EXPERIENCE OVER 5 YEARS

Lilly Ilcheva*[1], Vasileos Ntinopolous[1 2], Achim Häussler[1 2], Igor Tudorache[1 2], Petar Risteski[1 2], HéctorRodríguez Cetina Biefer[1 2], Omer Dzemali[1 2]

[1]University Hospital Zurich, Cardiac Surgery, Zürich, Switzerland, [2]City Hospital Triemli , CardiacSurgery, Zürich, Switzerland

Introduction: The percutaneous edge-to-edge mitral valve (MV) repair with MitraClip, is increasingly favored for high-risk or “inoperable” patients, a term presently defined ambiguously, with unverified long-termefficacy. This study aims to evaluate the early and mid-term outcomes of MV surgery after percutaneous edge-to-edge MV repair in patients deemed “inoperable”.

Material and methods: Retrospective two-center study analyzing patients who had received MV repair or replacement after failed transcatheter edge-to-edge repair between 2018 and 2023. Primary endpoints were all-cause mortality at 30 days, 90 days, one year, and postoperative morbidity during index hospitalization. Secondary endpoints were freedom from severe mitral regurgitation (MR), improved clinical (New York Heart Association (NYHA) stage), and left ventricular ejection fraction (LVEF) at 30 days, 90 days,and one year postoperatively.

Results: 32 patients were analyzed. The mean age was 77±6 years, and the median Euroscore II was 8.4 (3.8- 17.1). The all-cause mortality rates revealed survival rates of 90% at 30 days, 87% at 90 days, and 87% at one year. Postoperatively, there was a significant reduction in median LVEF from 53% preoperatively to 48% (p <0.05), yet the median LVEF remained stable when comparing the 30-day, 90-day, and one-year postoperative marks (53% (49%-61%) vs 48%(41%-57%) vs 48%(40-55%), p>0.05). MV function remained stable, with a complete absence of severe mitral regurgitation observed after both 90 days and one year (Fig. 1). Additionally, there was significant improvement inthe NYHA functional class (p <0.05) and freedom from the NYHA IV during postoperative follow-up (Fig. 2).

Conclusion: Patients defined as inoperable by the time they underwent transcatheter edge-to-edge repairshow a survival rate of 90% in the first 30 days and 87% in one year after high-risk MV surgery. Therefore, it is essential to critically reassess and engage in interdisciplinary discussionsregarding the definition of "inoperable" to facilitate optimal treatment selection.

Conflict of interest: No

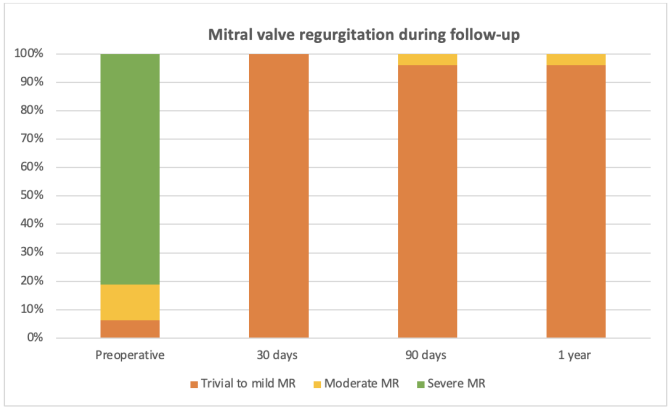


Figure 1 Grad of mitral regurgitation (MR) during follow-up
Stable mitral valve function and 100% freedom of severe mitral regurgitation after 90 days and 1 year

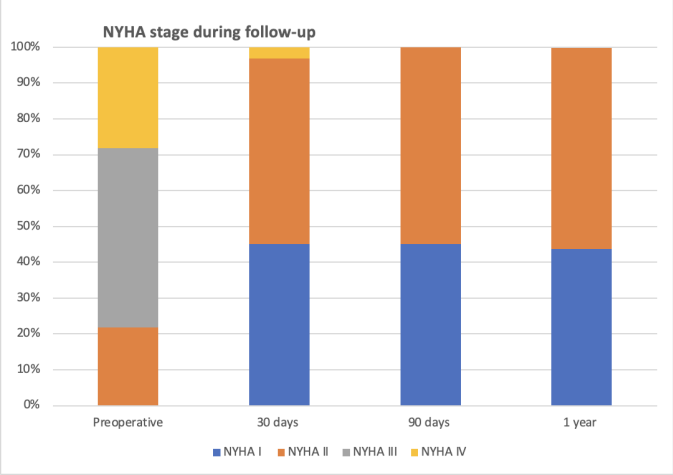


Figure 2 New York Heart Association (NYHA) Stage during follow-up
There was a significant NYHA class improvement 30 days, 90 days, and 1 year postoperatively (p<0.05). At the end of the 1-year follow-up, 44% of patients were in NYHA class I and 56% in NYHA class II with a substantial reduction of patients in NYHA class III (50%) and NYHA class IV (28%) preoperatively. There was a freedom from NYHA functional class IV postoperative and during follow-up.

O30

AORTIC ROOT ROTATIONMORPHOLOGICAL ANALYSIS OF THE AORTIC ROOT WITH 3 DIMENSIONAL COMPUTED TOMOGRAPHY

Jules Miazza*[1], David Winkel[2], Florian Thieringer[3 4], Oliver Reuthebuch[1], Friedrich Eckstein[1], BrigittaGahl[1], Denis Berdajs[1]

[1]University Hospital Basel, Department of Cardiac Surgery, Basel, Switzerland, [2]University HospitalBasel, Department of Radiology , Basel, Switzerland, [3]University of Basel, 3Medical Additive Manufacturing Research Group (Swiss MAM), Department of Biomedical Engineering, Allschwill, Switzerland, [4]University Hospital Basel, Clinic of Oral and Craniomaxillofacial Surgery, Basel,Switzerland

Introduction: The aortic root rotation and its spatial morphology at the base of the heart was postulated but not described in every detail. Aortic root rotation modalities may play an important role in decision-makingduring aortic root surgery and its outcome. The aim was to provide a detailed spatial anatomy of the aortic root rotation and its relation to the vital surrounding structure.

Material and methods: The aortic root rotation and its relation to the surrounding structure was assessed in 104 patients with tricuspid aortic valve. The interatrial septum was chosen as a reference to describe aortic root rotationwhich marked the midline of the heart base as a landmark for the aortic root rotation direction. Intermediate, clockwise, and counterclockwise aortic root rotations were defined based on the mentioned reference structures.

Results: The aortic root rotation was successfully assessed in 104 patients undergoing ascending aorta and or aortic root intervention by multidetector row computed tomography. Aortic root was positioned normally in 53.8% of cases (n = 56) and rotated counterclockwise in 5.8% (n = 6) and clockwise in 40.4% (n = 42) of cases. In clockwise aortic root rotation, the right coronary sinus was positioned in proximityto the right atrium and of the tricuspid valve, whereas in a counterclockwise rotation, the noncoronarysinus was placed over the tricuspid valve just over the membranous septum.

Conclusion: The aortic root's rotation can be diagnosed using multidetector row computed tomography. Understanding the anatomy of the aortic valve related to rotational position helps guide surgical decision-making in performing aortic root reconstruction.

Conflict of interest: No

RAPID FIRE ABSTRACT SESSION – ATRIAL FIBRILLATION

O31

POSTERIOR WALL ISOLATION WITH PULSED FIELD ABLATION OR RADIOFREQUENCY ABLATION WITH VEIN OF MARSHALL ETHANOL ABLATION FOR THE TREATMENT OF ATRIAL FIBRILLATION

Diego Mannhart*[1 2] on behalf of University Hospital Basel, Philipp Krisai[1 2] on behalf of University Hospital Basel, Sven Knecht[1 2] on behalf of University Hospital Basel, Corinne Isenegger[1 2] on behalf of University Hospital Basel, Rebecca Arnet[1 2] on behalf of University Hospital Basel, Josip Katic[1 2] on behalf of University Hospital Basel, Stefan Osswald[1 2] on behalf of University Hospital Basel, ChristianSticherling[1 2] on behalf of University Hospital Basel, Michael Kühne[1 2] on behalf of University HospitalBasel, Patrick Badertscher[1 2] on behalf of University Hospital Basel

[1]CRIB, Basel, Switzerland, [2]Universitätsspital Basel, Basel, Switzerland

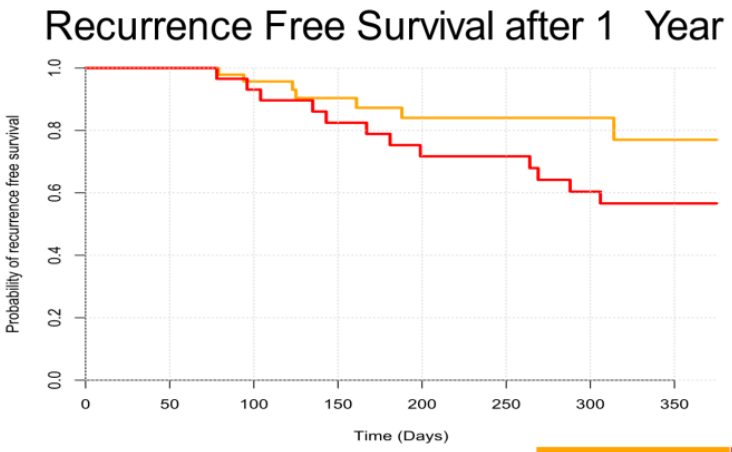
Introduction: In patients undergoing repeat catheter ablation for atrial fibrillation (AF) two ablation strategies beyond pulmonary vein isolation (PVI) have recently gained increased interest: posterior wall isolation (PWI) using pulsed field ablation(PFA) and Vein of Marshall (VoM) ethanol ablation combined with radiofrequency energy ablation (RFA). However,direct comparison is lacking. To compare prospectively enrolled patients undergoing repeat catheter ablation for persistent AF using PVI and PWI with PFA (PFA group) vs. PVI and VoM ethanol ablation using RFA (VoM group)regarding procedural characteristics, safety, myocardial injury and outcomes.

Material and methods: Patients undergoing redo PFA-PVI with PWI and VoM ethanol ablation with RFA were included. Isolation and bidirectional block were checked using a multipolar mapping catheter. High-sensitivity cardiac troponin T (hs-cTnT) was measured after 24h of ablation.

Results: 84 patients were included (age 69 [IQR 63-75] years; ejection fraction 56% [IQR 48-60%]; left atrial size 42 [IQR 37-47] mm), baseline characteristics did not differ significantly between groups. 54 patients (64%) were in the PFAgroup and 30 (36%) in the VoM group. Procedure duration (65 [IQR 56-73] minutes vs 116 [IQR 103-142] minutes; p <.001) and fluoroscopic times (11 [IQR 8–14] minutes vs 14 [IQR 12-19] minutes; p <.001) were significantly shorter for the PFA group than for the VoM group. No major complications were observed. High-sensitivity cardiactroponin levels post ablation were similar between the PFA group and the VoM group with 886 [IQR 627–1260] ng/L and 793 [IQR 543-1199] ng/L, p = 0.28, respectively. During follow-up (median duration 230 [IQR 117-370] days), AF recurrence was observed in 15% in the PFA group and in 40% in the VOM group (p≤0.01).

Conclusion: Patients undergoing repeat catheter ablation for AF, PVI and PWI using PFA is associated with shorter procedure and fluoroscopic time, similar hs-cTNT levels and a reduced recurrence.

Conflict of interest: No



84 patients with persistent AF

69 [63-75] years

FU 210 [104-370] days

	PFA + PWI	RF + VoM	p-value
Patients included	54	30	
Total procedure time (min)	65 [61-108]	116 [103-142]	p<0.001
Fluoroscopy time (min)	9 [7-12]	14 [12-19]	p<0.001
hs-c TnT postoperative (ng/L)	886 [627-1260]	793 [543-1199]	p=0.28
AF recurrence	8 (15%)	12 (40%)	p=0.01
Complications	1 (1.9%)	1 (3.3%)	p>0.99

O32

OMEGA-3 FATTY ACIDS AND LONGITUDINAL COGNITIVE PERFORMANCE IN PATIENTS WITH ATRIAL FIBRILLATION: AN OBSERVATION OVER 7 YEARS

Pratintip Lee*[1 2], Stefanie Aeschbacher[3 4], Meret Allemann[1 2], Martin Reiner[5], Marco Luciani[5], CarolinaBalbi[1 2], David Conen[6], Stefan Osswald[3 4], Michael Kühne[3 4], Jürg Beer[1 2]

[1]Center for Molecular Cardiology, Schlieren, Switzerland, [2]Cantonal Hospital Baden, Department of Internal Medicine, Baden, Switzerland, [3]University Hospital Basel, Department of Cardiology, Basel, Switzerland, [4]University Hospital Basel, Cardiovascular Research Institute Basel, Basel, Switzerland, [5]University Hospital Zurich, Department of Cardiology, Zurich, Switzerland, [6]McMaster University, Ontario, Canada , Population Health Research Institute, Ontario, Canada

Introduction: Atrial fibrillation (AF) is associated with cognitive impairment and dementia. Since the neuroprotective effects of n-3 FAs remains controversial. We aimed to determine the association of n-3 FAs with longitudinal cognitive performance in a cohort of AF patients.

Material and methods: This prospective multicenter Swiss-AF study included 2,359 patients with documented AF and baseline red-cell omega-3 FAs levels, measured by GC-MS. The primary outcome was the longitudinal measures of cognition (MoCA score) over a median of 3.6 years (range 2-7.5 years). Thesecondary outcome was the conversion to cognitive impairment (defined as MoCA score <26). Mixed-effect linear regression model and cox proportional-hazards regression model were used andtwo adjustment models were applied; model 1 and model 2 (fig. legend).

Results: A total of 2359 patients with AF (mean [SD] age, 73 [8.4]) with 9569 evaluations (mean [SD] follow- up, 3.6 [2.3] years) were assessed. We observed statistically significant associations of total n-3 FAs levels and individual n-3 FAs (EPA, DHA, ALA) with better cognitive performances over time as shown in table 1. In terms of probability of cognitive impairment, we found that patients in the highestquartile of n-3 FAs (total n-3 FAs, EPA, ALA, DPA) are associated with decreased risk of cognitive impairment (fig.1). In particular, EPA strongly associated with reduced risk of cognitive impairment with a Hazard Ratio of 0.65 (95%CI 0.59-0.72, p <0.001) in model 1 and 0.7 (95% CI 0.63-0.78, p <0.001) in model 2. The Kaplan-Meier survival curve (fig.2) demonstrated an increased probability of impaired-cognition-free patients in the 3rd and 4th quartiles of EPA over 7 years follow-up.

Conclusion: Red cell n-3 FAs levels associate with significant and biological relevant better cognitive performancein AF patients over 7 years of follow up. Higher baseline levels, particularly of EPA and ALA,

associate with a reduced risk of cognitive impairment over time.

Conflict of interest: No

Table 1: Association between longitudinal MoCA score and red-cell omega-3 FAs levels

MoCA score by red cell n-3 FAs level	Model 1			Model 2		
	Coefficient [95%CI]	P value	Better cognition overtime	Coefficient (95%CI)	P value	Better cognition overtime
• Total n-3 FAs	0.12 [0.04, 0.2]	0.003		0.13 [0.04, 0.22]	0.004	
• EPA	0.35 [0.07, 0.63]	0.015		0.31 [0.001, 0.62]	0.049	
• DHA	0.11 [0.01, 0.22]	0.037		0.14 [0.02, 0.25]	0.027	
• ALA	1.01 [0.26, 1.76]	0.008		1.18 [0.37, 2.00]	0.005	
• DPA	0.27 [-0.04, 0.58]	0.086		0.28 [-0.06, 0.62]	0.101	

Figure 1: A forest plot on hazard ratio associated with variables with time to cognitive impairment (MoCA score <26)

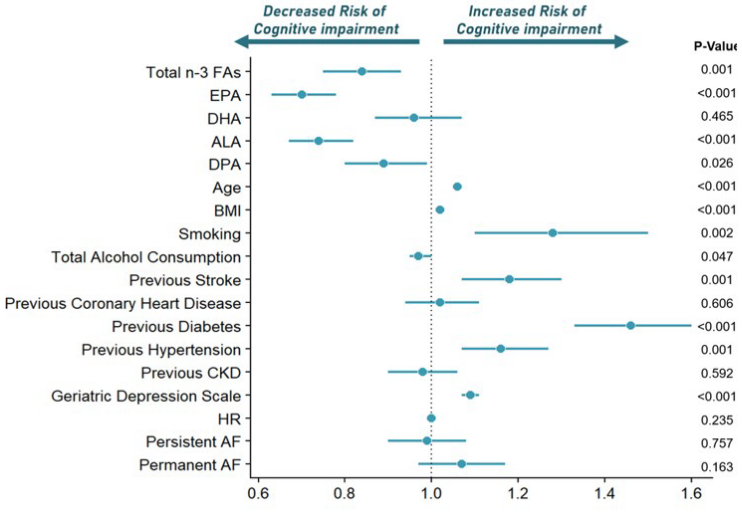
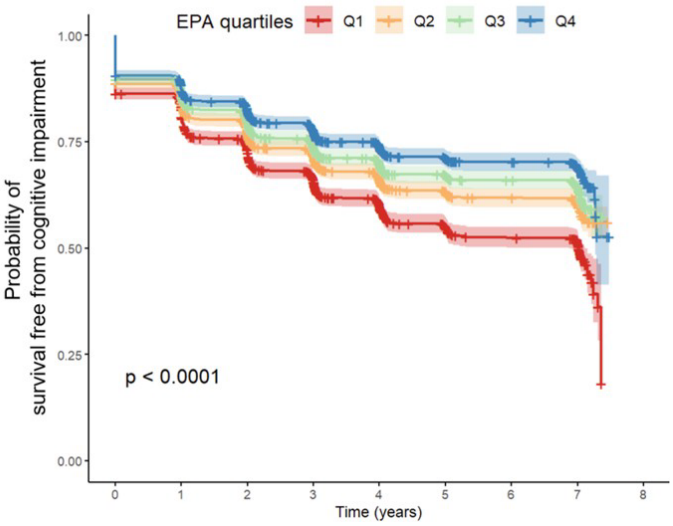


Figure 2: Kaplan Meier survival curves for the probability of cognitive impairment and EPA stratified into quartiles



O33

EFFICIENCY AND SAFETY OF ATRIAL FIBRILLATION CRYOABLATION GUIDED BY 3D- IMAGING FUSION

Jorge Solana Muñoz*[1], Adrian Luca[1], Cheryl Teres[1], Ciro Ascione[1], Giulia Domenichini[1], PatrizioPascale[1], Etienne Pruvot[1], Mathieu Le Bloa[1]

[1]Lausanne University Hospital (CHUV), Lausanne, Switzerland

Introduction: Pulmonary vein (PV) isolation is the cornerstone treatment of symptomatic atrial fibrillation (AF). Current 3D-navigation technologies used with radiofrequency (RF) ablation allow for drastic reductionin X-ray exposure and better anatomical characterization. Single shot isolation therapies like cryoballoon ablation (CA) typically rely on conventional fluoroscopy, resulting in significant X-ray exposure. We aimed to assess the impact of 3D-imaging integration to fluoroscopy system on proceduralefficiency and safety.

Material and methods: Using semi-automatic segmentation obtained from cardiac CT scan (Figure1A), left atrium including PVs, spine and primary bronchi walls were merged with the real-time fluoroscopy acquisitions in 3 standard views (AP, LAO, RAO) acquired at the beginning of the procedure (Figure1B). We comparedthe procedural characteristics of CA performed with 3D-fusion imaging (3D-guided) with that of conventional fluoroscopy-guided (Fluo-only) CA. Forty consecutive patients (aged 61±13 yo, 80% male), treated with CA for paroxysmal AF, were equally distributed in two groups (3D-guided and Fluo-only).

Results: 3D-guided compared to Fluo-only CA was associated with significantly shorter procedure duration (97±17 vs 81±16 min, p <0.01), left-sided dwelling time (76±15 vs 65±14 min, p <0.03) and lower X-rayexposure (Dose Area Product, 618±377 vs 384±302 cGy*cm^2 p <0.05). Up to 75% of 3D-guided CA were done in less than 90 min, while 75% of Fluo-only CA required more than 90 min (Figure 2B).

Conclusion: 3D-imaging integration allows for detailed PV anatomy depiction on fluoroscopy during CA, which significantly decreased procedure duration, X-ray exposure and left-sided dwelling time. Further research is needed to evaluate whether 3D-guided CA improves the maintenance of sinus rhythm on thelong term as it reduces the likelihood of missing intermediate PVs.

Conflict of interest: No

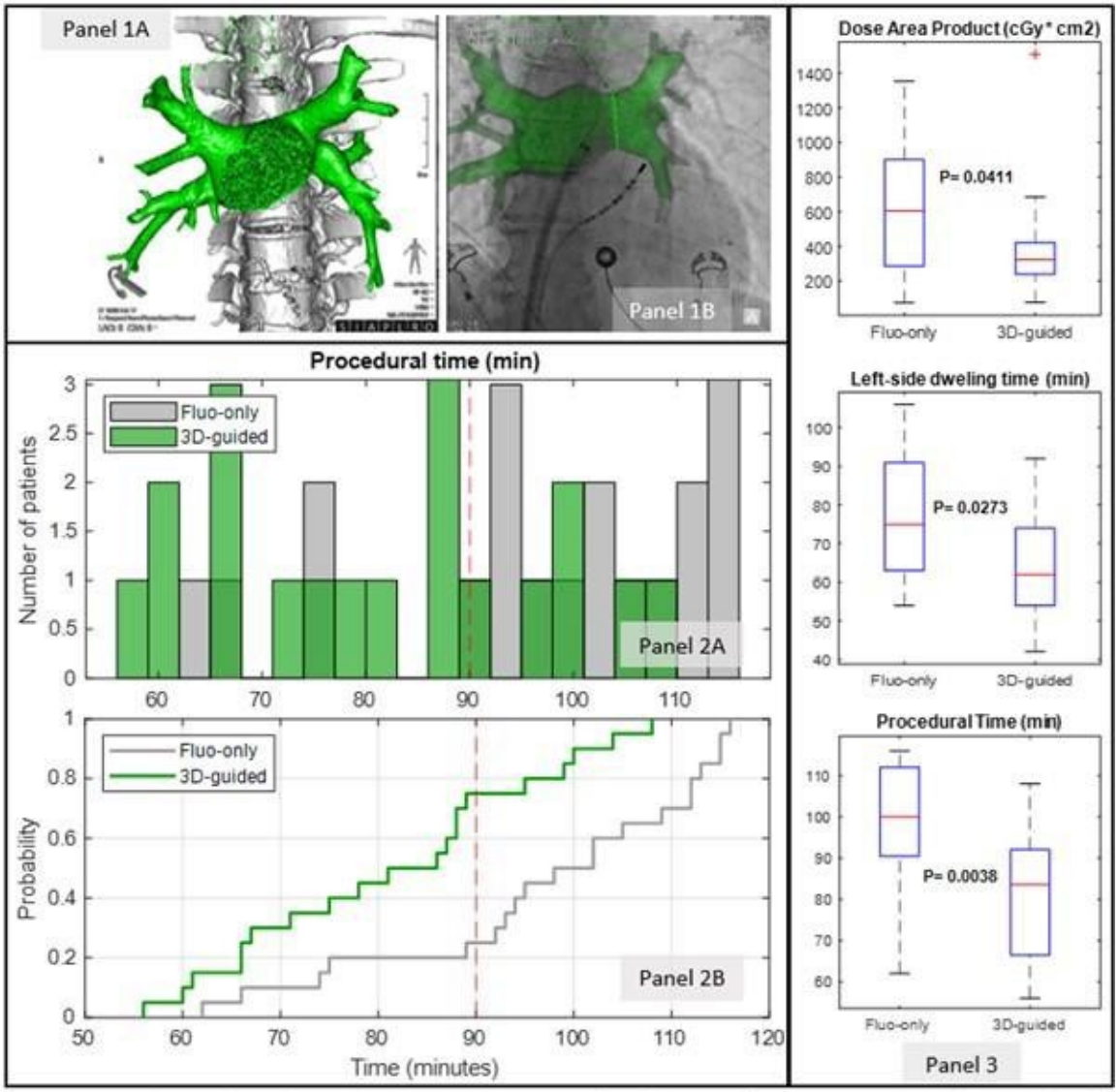


Figure 1: Panels 1A and 1B show cardiac-CT segmentation and 3D-fusion on fluoroscopy, respectively. Procedural time is illustrated with a histogram in Panel 2A and as a probability in Panel 2B. Panel 3 shows the differences in Dose Area Product, left-side dwelling time and procedural time between the two groups.

O34

PERCUTANEOUS LEFT ATRIAL APPENDAGE OCCLUSION CAN IMPAIR PULMONARY VEIN ISOLATION WITH PULSE FIELD ABLATION

Nadine Molitor*[1], Florian Berger[1], Alexander Breitenstein[1], Shaojie Chen[2], Oskar Marian Galuszka[3],Tobias Reichlin[3], Thomas Kueffer[3], Laurent Roten[3], Markus Lemoine[4], Ardan Saguner[1]

[1]Departement of Cardiology, University Heart Center, University Hospital Zurich, [2]Cardioangiologisches Centrum Bethanien (CCB), Kardiologie, Medizinische Klinik III, Agaplesion Markus Krankenhaus, Frankfurt am Main, Germany, [3]Department of Cardiology, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland, [4]Department of Cardiology, Asklepios KlinikSt. Georg, Hamburg, Germany

Introduction: Pulsed-field ablation (PFA) is a promising new ablation modality for pulmonary vein isolation (PVI). However, the feasibility in the presence of a percutaneous left atrial appendage occluder (LAAO) has not yet been investigated. We observed that PFA applications in the left pulmonary veins after LAAO can be interrupted. The aim of this analysis was to investigate the feasibility of PFA with a single-shot device for PVI after LAAO.

Material and methods: Retrospective multicenter analysis. A total of 16 patients (male 81.3%, mean age 71.6 +/-7.4) underwent PVI with PFA after LAAO at 5 different centers in Switzerland and Germany, from August

2021 until July 2023 using the Farapulse single-shot device (Boston Scientific).

Results: In 5 patients PFA application at the left-sided PVs was aborted due to interference with the LAAO (Figure). In one patient, the left superior PV could be isolated by repositioning the PFA catheter, in 2 cases successful PVI was achieved after switching to radiofrequency ablation, and in 2 cases the respective left sided PV was not isolated. In all 5 patients the LAAO was an Amplatzer Amulet device (Amplatzer Amulet vs. other LAAO, p = 0.069). Mean LAAO size was not significantly different among both groups.

Conclusion: LAAO can interfere with PFA applications around the left superior pulmonary vein. This effect may be associated with the design of the LAAO.

Conflict of interest: No

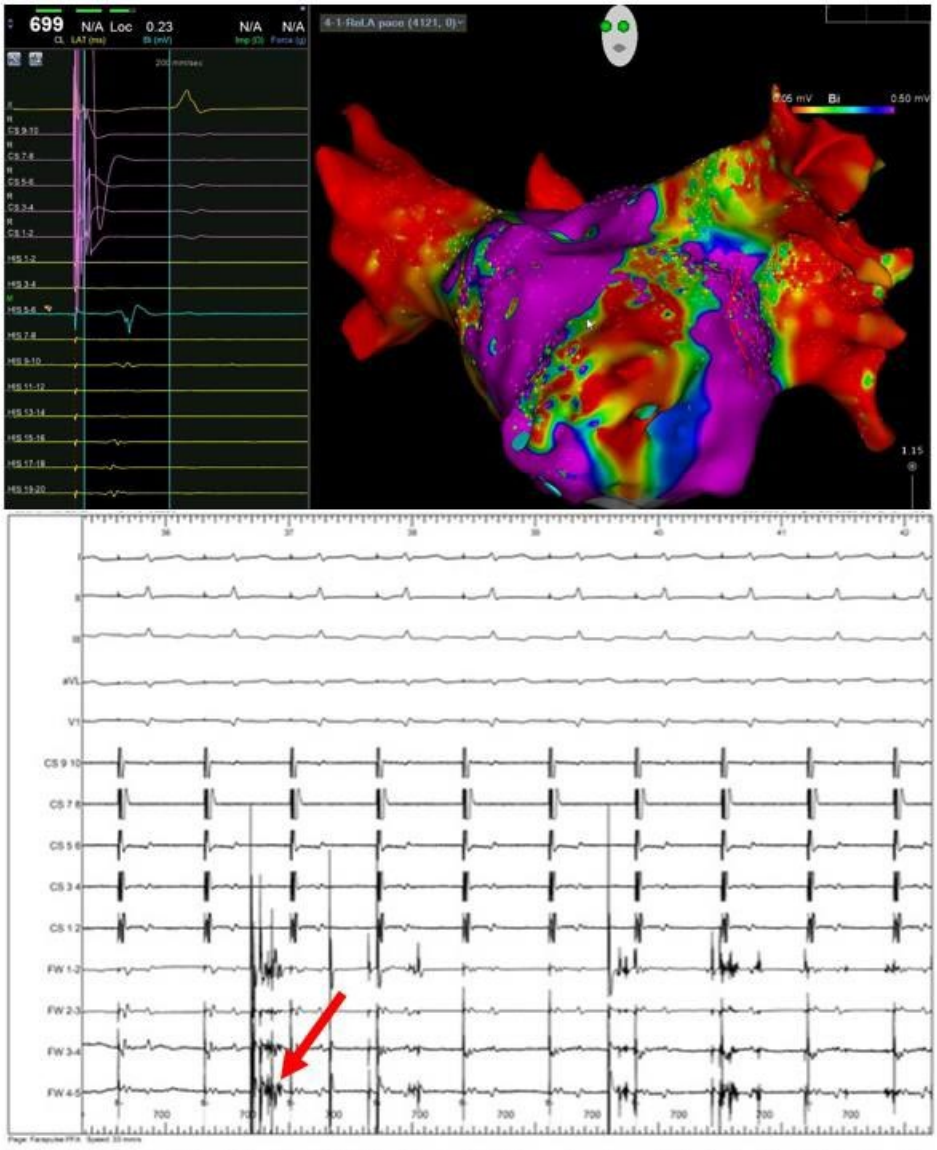


Figure 1a: Non isolated left-sided PV. 1b Aborted PFA application at the left-sided PVs due to interference with the LAAO (red arrow)

O35

EVALUATION OF THE CAVOTRICUSPID ISTHMUS CONTRACTILE KINETICS AND IMPACT ON RADIO FREQUENCY ABLATION TIME WITHIN AN INTERVENTIONAL CARDIAC MAGNETIC RESONANCE ENVIRONMENT

Agathe de Cidrac*[1 2], Jorge Solana Muñoz[1], Adrian Luca[1], Panagiotis Antiochos[1], Ambra Masi[1], IngoPaetsch[3], Cosima Jahnke[3], Patrizio Pascale[1], Jürg Schwitter[1], Etienne Pruvot[1]

[1]Lausanne University Hospital, Lausanne, Switzerland, [2]EPFL, Lausanne, Switzerland, [3]Herzzentrum Leipzig, Leipzig, Germany

Introduction: Cavotricuspid isthmus (CTI)-dependent flutter is a common arrhythmia with recurrences following ablation up to 50%. Morphological analysis of the CTI has shown that anatomical variability impacts negatively ablation time and procedural success. However, whether the CTI contractile kinetics affect procedural success remains unknown to date. We aim to assess the CTI contractile kinetics and their impact on radio-frequency (RF) application duration in patients with typical right atrial (RA) flutter.

Material and methods: We included 32 consecutive patients (66±1*yo,* 29 males) with typical RA flutter in sinus rythm.RA wall contours during one cardiac cycle were delineated on cardiac magnetic resonance (CMR) 2D-images using Tomtec (Philips). The CTI lengths were measured in RA diastole and systole. Quantification of CTI kinetics was performed by computing the normalized elongation:(RA diastolic length – RA systolic length) / RA systolic length.

Results: Mean CTI length was 24±10*mm* during RA systole and 36±11*mm* during RA diastole, resulting in a mean CTI elongation of 11±5*mm* over one cardiac cycle. Panel A shows CMR views of the CTI of a representative patient during RA systole and diastole. Panel B shows examples of hypo- and hyperkinetics CTI from 2 representative patients. Panel C shows that patients with a small CTI (length<26*mm*) display higher normalized elongation (0.7±0.3 vs 0.4±0.1, p <0.05) than that of patientswith a long CTI (length≥26*mm*). Panel D shows a negative relationship between RF ablation timeand elongation in patients with a long CTI but less in those with a short CTI (-0.3 vs -0.1, Pearsoncoefficient).

Conclusion: To our knowledge, this is the first study investigating the kinetics properties of the CTI of patients with typical RA flutter within an interventional CMR. Short CTIs displayed higher contractile kinetics than that of long CTIs. For long CTI, the higher the elongation the shorterthe ablation time.

Conflict of interest: No

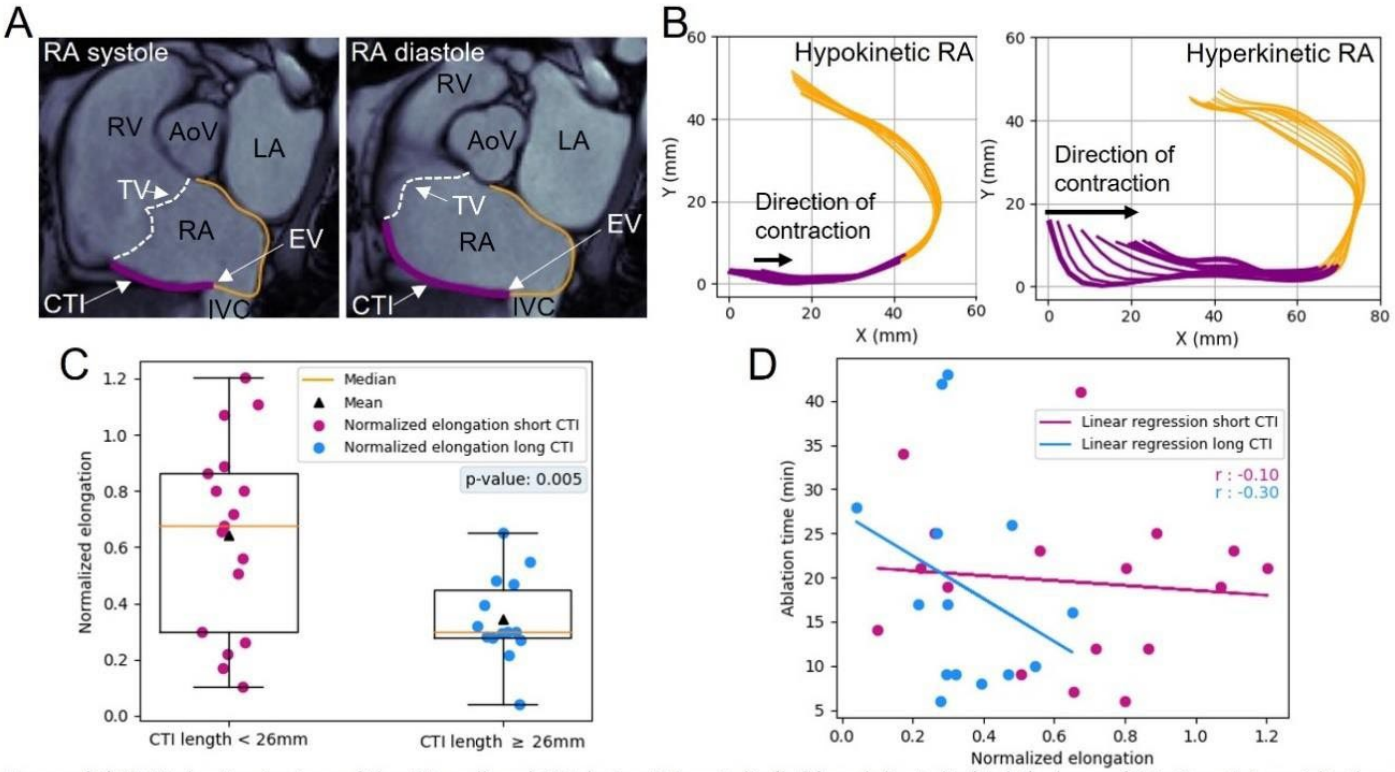


Figure: (A) CMR short axis view of the RA wall and CTI during RA systolic (left) and diastolic (right) phases (CTI: CavoTricuspid Isthmus, RV: Right Ventricule, TV: Tricuspid Valve, RA: Right Atrium, IVC: Inferior Vena Cava, LA: Left Atrium, AoV: Aortic Valve, EV: Eustachian Valve). (B) Representative example of an hypokinetic RA (left) and hyperkinetic RA (right) from RA systole to diastole. (C) Variation in elongation based on the RA systolic CTI length. (D) Variation in ablation time depending on the CTI elongation with linear regression.

RAPID FIRE ABSTRACT SESSION – RHYTHM DISORDERS

O36

MID-TERM OUTCOMES AFTER STEREOTACTIC ARRHYTHMIA RADIOABLATION FOR REFRACTORY VENTRICULAR TACHYCARDIA

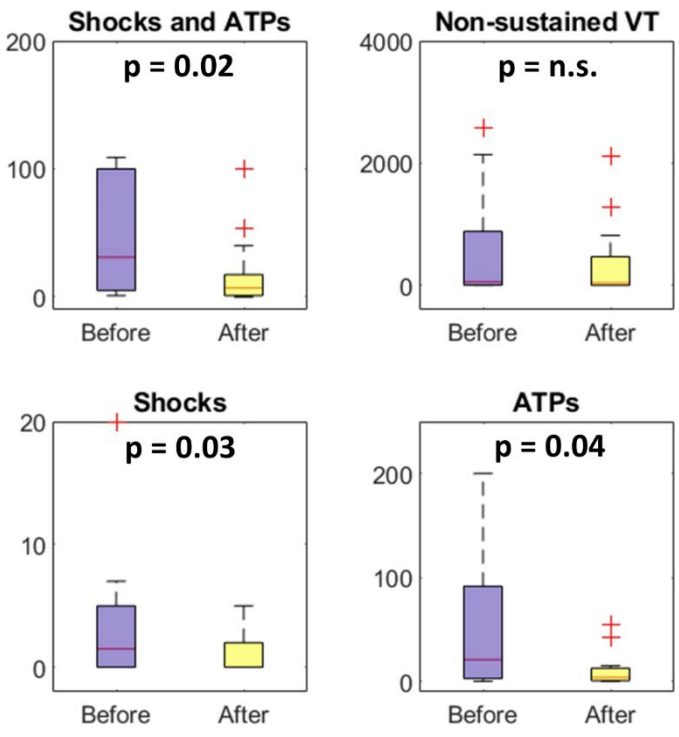
Cheryl Teres*[1], Adrian Luca[1], Mathieu Le Bloa[1], Jorge Solana[1], Ciro Ascione[1], Giulia Domenichini[1],Patrizio Pascale[1], Etienne Pruvot[1]

[1]Centre Hospitalier Universitaire Vaudois, Coeur-Vaisseaux, Lausanne, Switzerland

Introduction: stereotactic arrhythmia radioablation (STAR) is a bailout treatment for refractory ventricular tachycardia (VT)following unsuccessful catheter ablation (RFCA). Mid-term outcomes of STAR, remain poorly known

Material and methods: Consecutive pts treated by STAR (2017-2023). 3D-electroanatomical maps (EAM) of the VT substrate during unsuccessful RFCA were used to delineate the planned target volumes (PTV) on a CT scan

Results: 21 pts [age 66±8 y], median LVEF pre-STAR 46% (29%–54%). VT substrate: ischemic in 7 (33%); non-ischemic dilated in 7 (33%); inflammatory in 4 (19%); hypertrophic in 1 (5%); neoplasic in 1 (5%); and malignant mitral valve prolapse in 1 (5%). A dose of 21±2 Gray was delivered to the PTV (26 ml, IQR 18-43 ml). After a median follow-upof 39 [IQR, 14-48] months, 12 pts (57%) remained in stable condition, 1 (5%) underwent a heart transplantation, 1 (5%) a left ventricular assistance device, 1 (5%) was in incessant slow VT and 6 (29%) pts died. 15 (71%) presentedVT recurrences of whom 9 (43%) required redo RFCA. VT burden requiring ICD therapies decreased significantly from 31 (IQR, 4-100) to 7 (IQR, 1-23) (p <0.05); for nsVT from 57 (IQR, 1.5- 1196) to 41 (IQR, 0.5-584) (p ns); ICD shocks from 1.5 (IQR, 0-5.5) to 0 (IQR, 0-2) (p <0.05); for ATPs from 21 (IQR, 2.5-94) to 4 (IQR, 0.5-13) (p <0.05). STAR didn't result in changes in LVEF. However, worsening of valve function occurred in 5 pts (25%) after STAR as a rapid progression of a known aortic stenosis in 2, occurrence of aortic regurgitation in 2, one tricuspid and onemitral regurgitation



Conclusion: in this cohort of pts with refractory VT, STAR significantly reduced the arrhythmic burden after a 3-year follow-up. Death rate remained high (29%), mostly by terminal heart failure. Valvular dysfunction occurred over time, which deserves further attention

Conflict of interest: No

O37

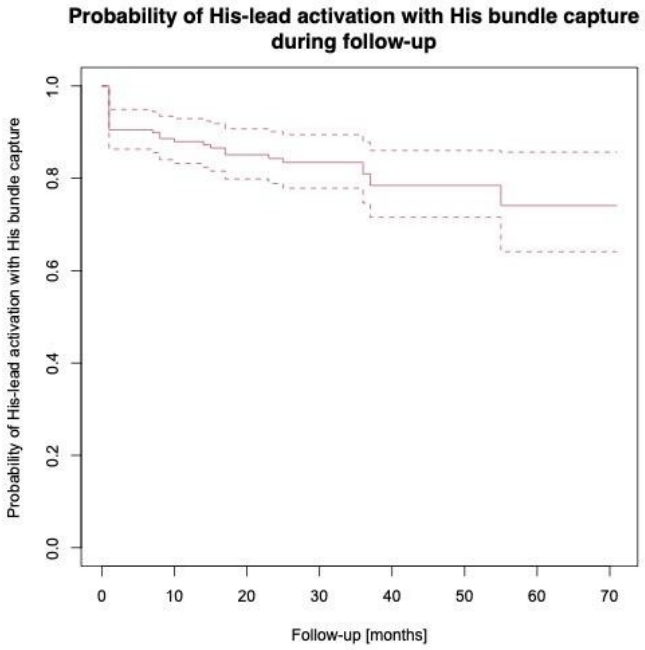
SURVIVAL OF HIS BUNDLE PACING FUNCTION AND UTILITY OF BACKUP LEADS

Herbert Julia*[1], Kovacsovics Ariane[1], Burri Haran[2]

[1]University of Geneva, Faculty of Medicine, Geneva, Switzerland, [2]Geneva University Hospital,Cardiac Pacing Unit, Geneva, Switzerland

Introduction: Although His bundle pacing (HBP) is probably the most physiological form of conduction system pacing, its use has been hampered by suboptimal electrical parameters which compromise battery longevity and patient safety. These factors have led to a high rate of lead revision. According to current guidelines, implantation of ventricular backup pacing leads should be considered in selectedcircumstances, but it remains unknown to what extent this mitigates requirement for lead revision.

Material and methods: Patients implanted with HBP at a single center were evaluated. Electrical parameters, maintenance of His bundle capture, adverse events, and requirement for lead revision were evaluated over follow-up.Results were compared in patients with and without a ventricular backup lead.



Results: Successful HBP implantations was achieved in 86% of patients. A total of 184 patients were followed up for 2.2 ± 1.6 years. At last follow-up, 147 (79.9%) patients still had His bundle capture at programmed output. Loss of follow-up occurred in seven patients after a successful implantation. Lossof His bundle capture occurred in 20 (10.9%) patients due to capture threshold elevation and in 12 (6.5%) patients due to complete loss of His bundle capture, and occurred throughout follow-up (see figure 1). There were fewer lead revisions in patients with (3/148) compared to without backup leads (5/36), p = 0.008.

One patient without a backup lead had recurrent syncope due to atrial oversensing by the His lead.

Conclusion: Our series is aligned with previous data showing a relatively high rate of loss of conduction system capture with HBP. Our study shows the importance of ventricular backup leads for the prevention ofadverse clinical events and to avoid lead revision in selected patients with HBP.

Conflict of interest: No

O38

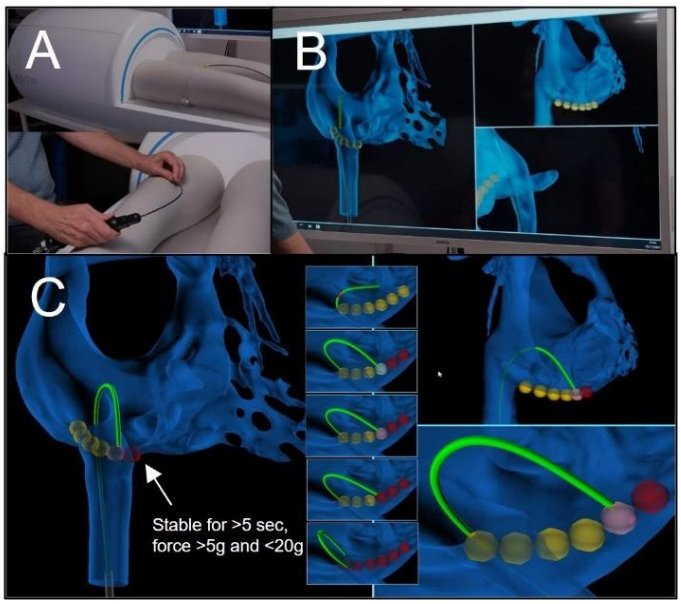
AN IMMERSIVE CATHETER ABLATION PLATFORM BASED ON PATIENTS' 3D HEART MODEL FOR THE SIMULATION AND TRAINING OF FUTURE ELECTROPHYSIOLOGISTS

Etienne Pruvot*[1], Jürg Schwitter[1], Panagiotis Antiochos[1], Ambra Masi[1], Nora Bacha[1], Ballan Hussein[2],Wickramasinghe Udaranga[2], Erard Raphaël[2], Corazza Giulio[2], Georges Caron[2]

[1]Cardiology, Cardiovascular, Lausanne, Switzerland, [2]ADIS, Advanced Interactive Software, Lausanne

Introduction: Training of future EPs relies on direct teaching of ablation catheter (CATH) steerability on patients (pts). Other domains have established the utility of simulators, but dedicated systemsfor EPs based on pts' real anatomy are lacking. Our simulator is aimed at speeding up the handling of CATH on MRI-based 3D heart models to optimize ablation road maps.

Material and methods: ARTS is an Artificial AI and Augmented Reality-based platform comprising two key components: HeARTS and ARTSim. HeARTS is designed to automatically generate 3D heart models from pts' MRI. ARTSim is a simulator that utilizes pts' 3D heart models for the planningand simulation of CATH procedures, which incorporates innovative techniques for movementstracking of a physical CATH, and enabling its navigation within a completely virtual heart.



Results: Panel A of the figure shows the mannequin used for the simulator, where a real CATH is introduced within the pt's heart through a venous introducer. Panel B shows right anterior oblique (RAO) view ofa pt with a typical right atrial flutter. Note yellow tags along the cavotricuspid isthmus (CTI) that the trainee must reach for a given duration using the CATH shown in panel A. Panel C shows the virtual CATH in green positioned on the CTI target dots. The pink color indicates that the trainee reached thedesired target, which became red when the CATH remained stable at the same location for a durationof 5 sec (i.e. stability) with a force >5g (i.e. efficacy) and <20g (i.e. safety).

Conclusion: Herein, we present a realistic CA simulator for the training of future EPs, that offers 3D navigation. ARTS is based on pts's true anatomy to establish and discuss roadmaps to optimizeprocedures efficacy. Version 2.0 will include 3D late gadolinium enhancement and transseptalpuncture for virtual left-sided procedures

Conflict of interest: No

O39

IMPACT OF ELECTROANATOMICAL DATA INTEGRATION ON THE PLANNING PHASE OF STEREOTACTIC ARRHYTHMIA RADIOABLATION FOR REFRACTORY VENTRICULAR TACHYCARDIA

Jorge Solana Muñoz*[1 1], Adrian Luca[1], Agathe De Cidrac[1 2], Claudia Herrera Siklody[3], Cheryl Teres[1],Mathieu Le Bloa[1], Giulia Domenichini[1], Patrizio Pascale[1], Luis Shiappacasse[1], Etienne Pruvot[1]

[1]Lausanne University Hospital (CHUV), Lausanne, Switzerland, [2]EPFL, Lausanne, Switzerland, [3]Inselspital, Bern, Switzerland

Introduction: Stereotactic arrhythmia radioablation (STAR), used as a rescue treatment for refractory ventricular tachycardia (VT), still suffers from limitations to delineate the clinical target volume (CTV). We recently adapted a protocol to overcome the incompatibility of data formats between 3D electro-anatomical mapping (EAM) systems used duringVT ablation and STAR planning software. We aimed to analyze the impact of EAM data integration on STAR planning phase.

Material and methods: Two protocols were retrospectively compared in 13 patients (65±7 yo) treated by STAR for refractory VT. Both protocols relied on the segmentation of 4D CT-scans. Protocol 1 comprised the manual delineation of the CTVs on the 4D-CT side-by-side (CTVSBS) with EAM screenshots. Protocol 2 included three steps: (1) previous VT substrate annotation on EAM with STAR tags; (2) 3D-alignment of EAM with the 4D-CT segmented cavities; and (3), 3D-delineation of CTVs (CTVEAM) identified as the transmural section of ventricular myocardium surroundingthe STAR tags (Figure 1). Dice coefficient (100% meaning complete overlap), and averaged Hausdorff distances (aHD) between both CTVs were compared. We then computed CTV values and cumulative average of redo VT ablation rate (RedoA) over time.

Results: Figure 1 illustrates the last treated patient (#13) in whom the delineated CTVs, CTVSBS (red) and CTVEAM (blue), displayed good matching (Dice 72% and aHD<3 mm). Figure 2 shows the cumulative RedoA (green), the cumulative averaged CTVSBS (red) and CTVEAM (blue) over time, and the comparison between CTVSBS and CTVEAM. Interestingly, the need for redo VT ablation decreased with increasing CTVs. The averaged Dice and aHD were 53±10% and 4.15±1.4 mm, respectively.

Conclusion: Our confidence in STAR led to higher CTVs and lower need for redo ablation over time. Appointing intraprocedural anatomical landmarks allows for simpler and more confident CTV delineation.

Conflict of interest: No

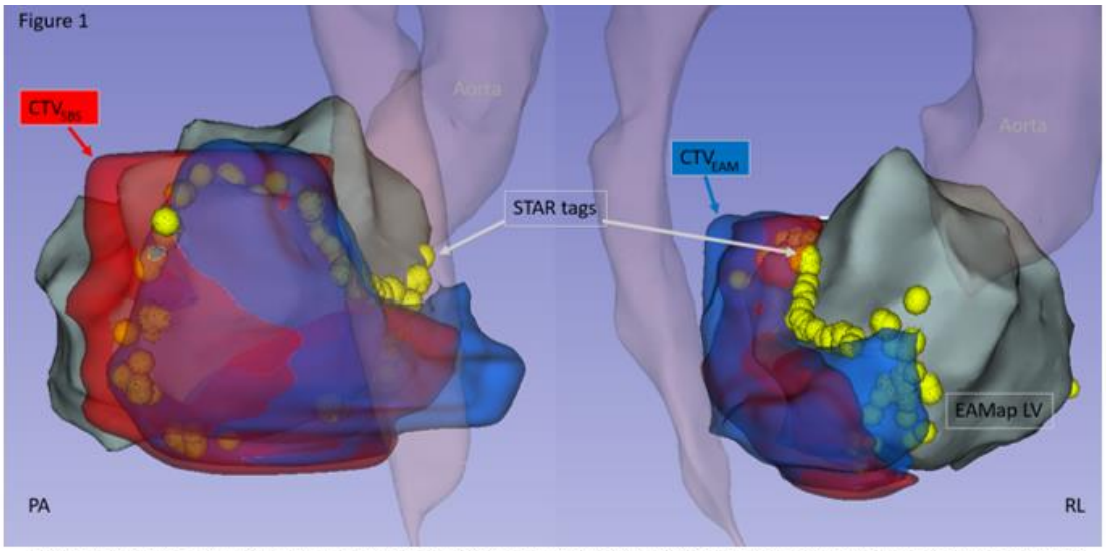


Figure 1. Superposed CTVs on the electro-anatomical maps (EAM) with STAR tags (yellow dots) delineating the origin of the ventricular tachycardia, in our patient #13. Left: Posterior-Anterior (PA) view. Right: Right-Lateral (RL) view.

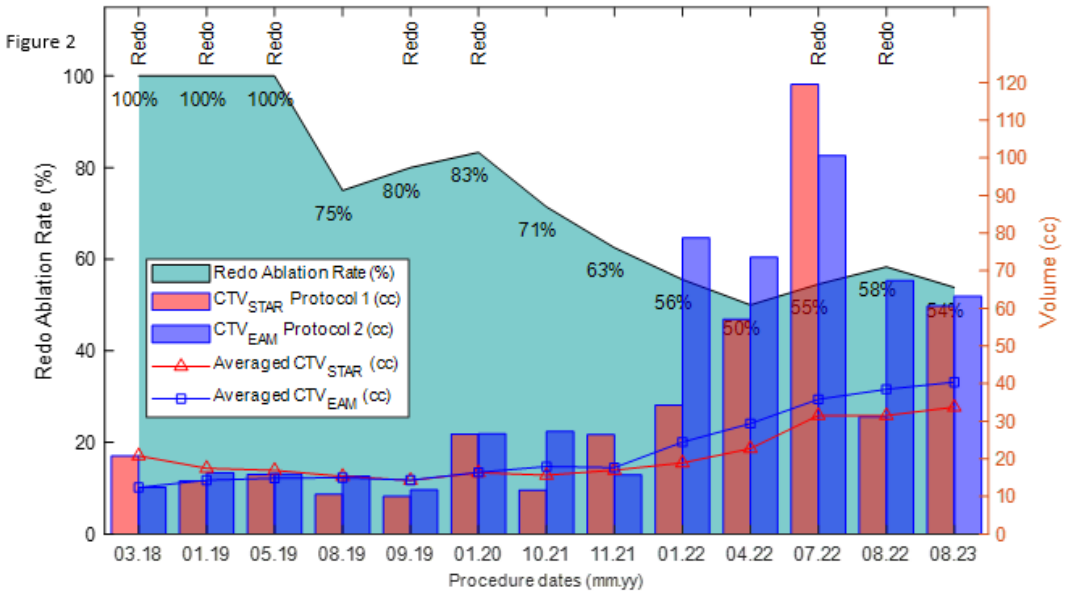


Figure 2: Red and blue bars represent the CTVs for each protocol, in cubic centimeters (cc). Similarly, red and blue graphs represent the averaged CTVs over time. The numerical values represent the redo ablation rate over time. The word 'Redo' indicates the cases with at least one redo ablation after STAR.

O40

CARDIAC IMPLANTABLE ELECTRONIC DEVICE POCKET INFECTIONS UNDERGOING TRANSVENOUS LEAD EXTRACTIONS IN A TERTIARY CENTRE: PATIENT CLINICAL PROFILE AND MICROBIOLOGICAL PATTERNS OVER A 9-YEAR OBSERVATION

Sophie Jayet*[1], Mathieu Le Bloa[1], Cheryl Teres Castillo[1], Ciro Ascione[1], Denis Graf[1], Patrice Carroz[1],Alessandra Pia Porretta[1], Patrizio Pascale[1], Etienne Pruvot[1], Giulia Domenichini[1]

[1]*Lausanne University Hospital*

Introduction: Pocket infections account for up to two-third of cardiac device infections overall. Extractionof the entire system (device and leads) represents the recommended treatment for these conditions. Patients with several comorbidities and with previous device procedures are at higher risk to develop pocket infections. In this study we sought to delineate the clinical profile and the microbiological patterns of patients with pocket infections referred to our centre for cardiac device extraction over the last decade.

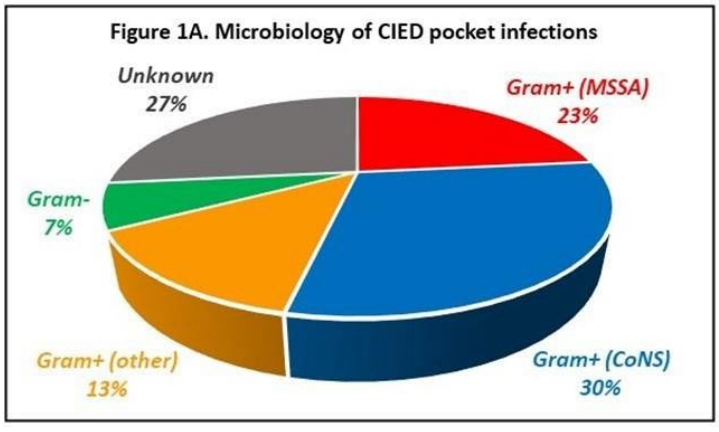
Material and methods: All consecutive patients undergoing cardiac device extraction because of pocket infectionsbetween 2013 and 2021 were included. Patient's demographics and microbiological data were retrospectively collected.

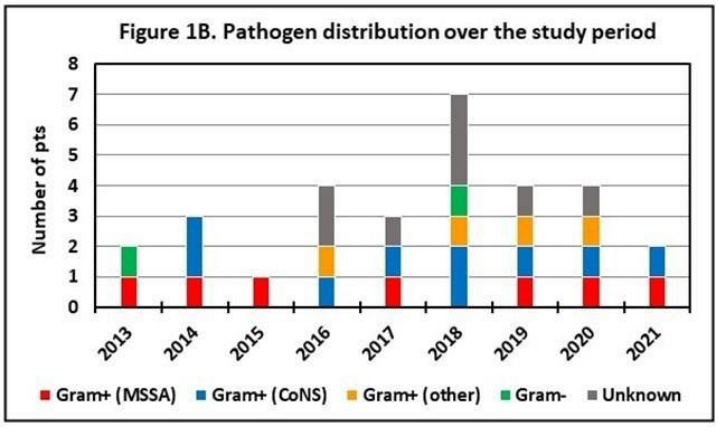
Results: A total of 30 patients were included. Twenty-two patients (73%) had previous device procedures with a time interval since the latest intervention of 2.6 ± 2.5 years (see Table). Coagulase-negative staphylococci (CoNS) were more frequently detected followed by methicillin-susceptible Staphylococcus aureus (MSSA) (see Figure 1A). Of note, in about one third of cases the pathogen remained unknown. The microbiology distribution was relativelyhomogenous over the study period without significant differences over the years (see Figure 1B). No significant differences were found in patients' clinical profile according to the microbiological patterns (see Table). However, CoNS-related infections occurred more frequently in patients with previous device procedures, whereas MSSA-related infections were more common in diabetic and anticoagulated patients.

Conclusion: In our cohort, no specific correlation between clinical profile and microbiological patterns could be found in patients with cardiac device pocket infection. As previously reported in theliterature, frail patients previously exposed to device procedures are at higher risk to develop pocket infections mainly due to CoNS. Culture of device pocket tissue is advisable toimplement microbiological diagnosis and target the antibiotic treatment.

Conflict of interest: No

	Number of pts	Age (years)	Males (%)	PM (%)	Previous procedures (%)	Time interval since the latest procedure (years)	Diabetes mellitus (%)	Chronic kidney disease (%)	LVEF	Anticoagulation (%)	BMI
Gram+ (MSSA)	7	68.6 ± 20.5	86	57	57	2.7 ± 2.6	57	0	44.3 ± 19.9	71	28.0 ± 6.3
Gram+ (CoNS)	9	68.0 ± 13.9	89	44	89	2.8 ± 2.3	22	11	44.8 ± 18.5	67	24.4 ± 4.6
Gram+ (other)	4	68.0 ± 28.2	100	75	50	3.4 ± 2.6	25	50	42.5 ± 25.0	25	25.1 ± 2.9
Gram-	2	76.5 ± 19.1	50	50	100	1.7 ± 1.6	50	100	48.0 ± 11.3	100	29.2 ± 2.9
Unknown	8	79.8 ± 6.4	100	50	75	2.0 ± 3.1	37	50	44.3 ± 10.6	50	29.1 ± 6.1
Total	***30***	***71.8 ± 16.5***	***90***	***50***	***73***	***2.6 ± 2.5***	***37***	***30***	***44.5 ± 34.0***	***60***	***26.9 ± 5.3***





ORAL ABSTRACT SESSION – CONGENITAL & PAEDIATRIC CARDIOLOGY

O41

T1 MAPPING PREDICTS OUTCOME IN PATIENTS WITH SYSTEMIC RIGHT VENTRICLES

Odile Burdet*[1], Kerstin Wustmann[2], Emanuela R. Valsangiacomo Büchel[3], Jean-Paul Vallée[4], Judith Bouchardy[1], Matthias Greutmann[5], Markus Schwerzmann[6], Daniel Tobler[7], Juerg Schwitter[1], TobiasRutz[1] on behalf of SERVE study group

[1]Lausanne University Hospital, Lausanne, Switzerland, [2]Deutsches Herzzentrum München – GermanHeartcenter Munich, München, Germany, [3]Universität Kinderspital Zürich, Zürich, Switzerland, [4]Hôpitaux Universitaires de Genève (HUG), Genève, Switzerland, [5]University Hospital of Zürich, Zürich, Switzerland, [6]University of Ottawa Heart Institute, Ottawa, Canada, [7]Universitätsspital Basel, Basel, Switzerland

Introduction: The heart of patients with a systemic right ventricle (sRV) suffers from the increased afterload and isthus prone to the development of fibrosis. The cardiac magnetic resonance (CMR) T1 mapping (T1) technique, and its derived parameters like the extracellular volume (ECV), allows quantification of myocardial tissue alterations estimating the degree of fibrosis. The aim of this prospective study is toevaluate whether T1 mapping predicts outcome in patients with sRV.

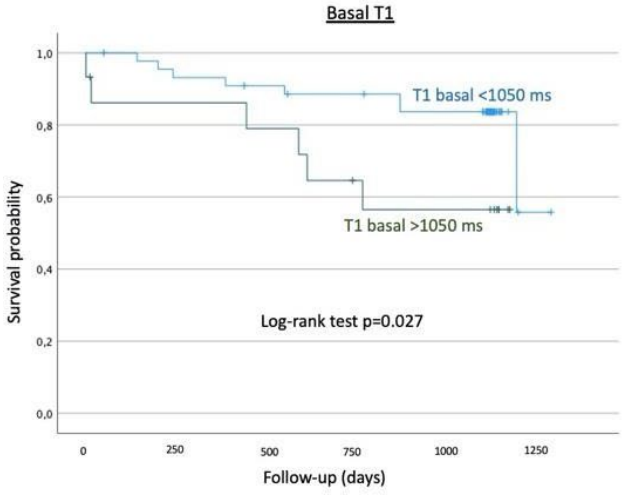
Material and methods: Patients with transposition of the great arteries (TGA) and a sRV from the SERVE study were included. T1 mapping was performed at study inclusion at basal and midventricular level. For each CMR exam, native and post-contrast T1 relaxation times as well as the ECV based on the hematocritmeasured the same day were calculated. The primary outcome was a composite of hospitalization for heart failure, clinically relevant arrhythmias, and all-cause death. Comparison in the survival distribution between groups with T1 and ECV values above versus below a determined cut-off (75th percentile) were assessed by Kaplan-Meier analysis.

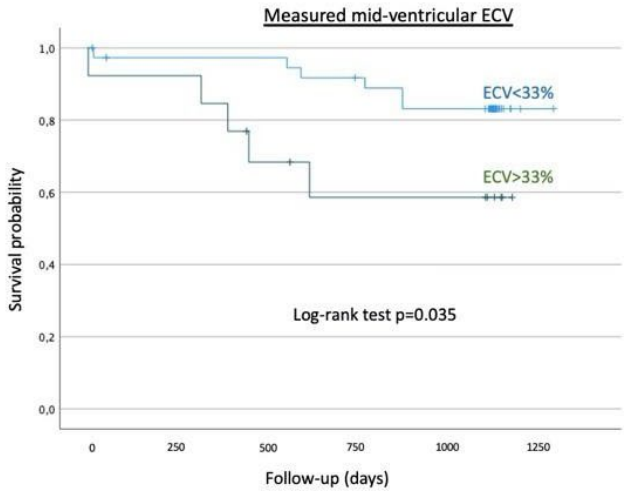
Results: CMR were available for sixty patients (age 39 years (25-75), 33% women). Table 1 shows RV and LV volumes and function at baseline (Table 1). Patients experiencing adverse cardiac events showed higher RV T1 at baseline in comparison to patients without any adverse event during follow-up (Table 1-2). The Kaplan-Meier survival analyses showed statistically significant worse outcomes in patients with values above our determined cut-off for RV native T1 at basal (P75 = 1050 ms) and for ECV at

mid-ventricular level (P75 = 33%, Figure)

Conclusion: We find a relationship between the non-invasively determined degree of fibrosis and outcome in patients with sRV. CMR T1 mapping techniques help to predict outcome of patients with a sRV andshould be routinely applied for risk evaluation of this patient group.

Conflict of interest: No





O42

DOUBLE-ROOT ROTATION FOR COMPLEX TRANSPOSITION OF THE GREAT ARTERIES – REVIEW OF A SINGLE CENTER SERIES

Tornike Sologashvili*[1], Tomasz Nalecz[1]

[1]HUG, Cardiac surgery, Geneve

Introduction: When transposition of the great arteries (TGA) is associated with ventricular septal defect (VSD) and pulmonary valve stenosis (PS), Rastelli or Bex-Nikaidoh (posterior aortic translocation) procedures are usually performed. Right and left ventricular outflow tract obstruction are common complication after these surgeries. A modification of a novel surgicaltechnique, initially described by Yamagishi, currently known as outflow tract rotation (OTR),has been used at our center in selected cases. OTR allows for conservation of both semilunar native valves, replaced in their physiological position by a half-turn rotation of the truncal block. The aim of this study was to analyse our general experience with this surgical technique and the mid-term results regarding growth of the arterial trunci and function of sumilunar valve when preserved.

Material and methods: We reviewed all patients that underwent OTR in our center, performed by the same surgeon.Preoperative patient selection was performed in multidisciplinary cardiology team after echocardiography, and CT. Included: TGA/VSD/PS, TGA with inlet VSD. Intra-operative anatomy was carefully inspected to confirm the adequacy of OTR. 23 Patients with TGA VSD PS underwent OTR between 2016 and 2022. Patient age ranged from 4 days to 11.5 years with a median of 2.2. Pulmonary valves could be preserved in 11 cases whereas 2 patients underwent monocusp pulmonary valve plasty and 2 Contegra implantation.

Results: Two patients with inlet VSD required pacemaker implantation. Short- and medium-term outcome were excellent, with no mortality, and no need for reoperation after a mean follow upof 18,7 months.

Conclusion: OTR is physiological surgical option in TGA/PS/VSD, when PV is unsuitable for arterial switch but acceptable in the pulmonary position. It allows for a free and straight LVOT, wall growth potential of pulmonary annulus, without the need for conduit replacement. It seems tobe a safe and reproducible technique with excellent outcomes.

Conflict of interest: No

O43

ALTERED PLACENTAL WEIGHT IN PREGNANCIES COMPLICATED BY CONGENITAL OR ACQUIRED HEART DISEASE

Alice Proto*[1], Jarmila Zdanowicz[1], Fabienne Schwitz[2], Mathias Possner[2], Luigi Raio[1]

[1]Inselspital, Bern University Hospital, University of Bern, Department of Obstetrics and Gynaecology, Bern, Switzerland, [2]Inselspital, Bern University Hospital, University of Bern, Department of Cardiology,Bern, Switzerland

Introduction: It has been postulated that maternal cardiovascular maladaptation during pregnancy may cause defective placentation, challenging the concept that preeclampsia is a primarily placental-driven complication. Pregnancy imposes a substantial cardiovascular load on the maternal heart and a higher incidence of obstetric, particularly placenta-related complications has been reported in women with heart disease, which may also be reflected in placental weight. The aim of the following study was to investigate placental weight in pregnancies complicated by preexisting cardiac anomalies.

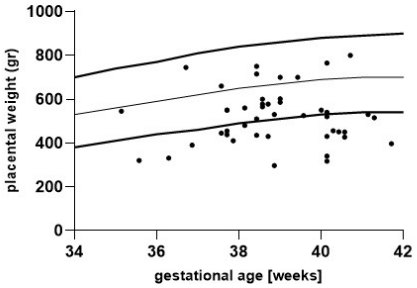
Material and methods: In this observational study, women with congenital or acquired heart disease and singleton pregnancies who delivered between January 2020 and December 2023 were included. Placental weight and the birthweight to placental weight ratio (b/p ratio) were compared to published reference charts (Thompson et al. BJOG 2007). Moreover, observed (o) to expected (e) mean placental weight ratios were generated. Mean placental weight "e" for a given gestational age "x" was calculated usinga second-order polynomial regression were e = -3740 + 209x -2.459x^2, as derived from the mentionedpublication.

Results: We included 62 pregnancies of 59 women with congenital or acquired heart disease. Placental weightswere available in 45 cases. Mean±SD gestational age at delivery was 39±1.5 weeks (range 35.1 to 41.7)and placental weight 582±126 gr (range 297 to 800). A placental weight <10th centile was observed in 22/45 (48.9%), and the b/p ratio was >90th centile in 16/45 (35.6%) of cases. The mean o/e ratio was 0.79±0.19.

Conclusion: Nearly 50% of analyzed placental weights were <10th centile and more than one-third of the b/p weightratios were >90th centile for gestational age. Along with the finding of an o/e ratio of <1, this underpins the hypothesis that preexisting maternal cardiac anomalies may have an important influence on placental development, its function and the incidence of placenta- related adverse pregnancy outcomes.

Conflict of interest: No

Figure 1: Placental weights (black dots) plotted on reference ranges derived from Thompson et al. The lines represent the 10th, 50th, and 90th percentile for gestational age.



O44

LATE PSEUDO-ANEURYSMS AFTER COARCTATION REPAIR WITH EXTRA-ANATOMIC ASCENDING-DESCENDING AORTIC BYPASS SURGERY

Francesca Bonassin Tempesta*[1], Bruno Santos Lopes[1], Matthias Greutmann[1]

[1]University Hospital Zurich, Cardiology, University Heart Center, Zurich, Switzerland

Introduction: Extra-anatomic ascending-descending aortic bypass operations are an alternative to complexaortic arch reconstruction in patients with complex aortic coarctation. Reported short-term outcomes are favorable, however, data on long-term outcomes are sparse. The aim of our study was to report long-term outcomes in affected adult patients.

Material and methods: We identified all adults with extra-anatomic ascending-descending aortic bypass surgeriesfollowed at our center. Outcomes were assessed by chart review with a specific focus on formation of late pseudo-aneurysms and requirement for redo surgery.

Results: We identified a total of 12 adults (67% males) with previous ascending-descending aortic bypass surgery. These patients account for 12/171 (7%) of adults with aortic coarctation followed at our center. 10/12 patients (83%) had undergone coarctation repair by different repair techniques before ascending-descending aortic bypass surgeries. Median age at ascending-descending aortic bypass surgery was 17 years (range: 7-42 years). Prosthetic conduit sizes ranged from 12-22mm. In long-term follow-up, 11/12 patients (92%) required antihypertensive medication (median 2 antihypertensive drugs, 50% ≥ 3 drugs). A total of 5/12 patients (42%) required redo-surgery for formation of pseudo-aneurysms (figure 1) at graft anastomoses (4 proximal anastomosis at ascending aorta, 1 distal anastomosis to descending aorta) at a median age of 47.6 years (28.2-65.0 years) and a median of 22.1 years(range: 14.7-24.6 years) after the initial extra-anatomic ascending-descending aortic bypass operation (figure 2). Two of these patients required redo-operations / interventions for recurrent pseudo-aneurysms at 26 and 33 months after the redo-operations.

Conclusion: Although reported short- and medium-term outcomes after ascending-descending aortic bypass surgery for complex aortic coarctation are favorable, our data suggest a high rate ofpseudo-aneurysm formation late (>10 years) after surgery. Our data highlight the need for careful long-term (lifelong!) follow-up of these patients at specialized centers.

Conflict of interest: No

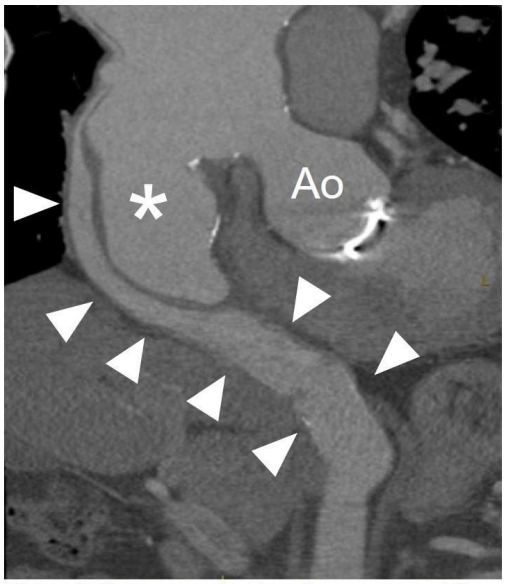


Figure 1: Case example. Pseudo-aneurysm at the proximal graft anastomosis (asterisk) of the extra-anatomic ascending-descending aortic graft (arrow-heads); Ao: Aortic root with mechanical aortic valve prosthesis.

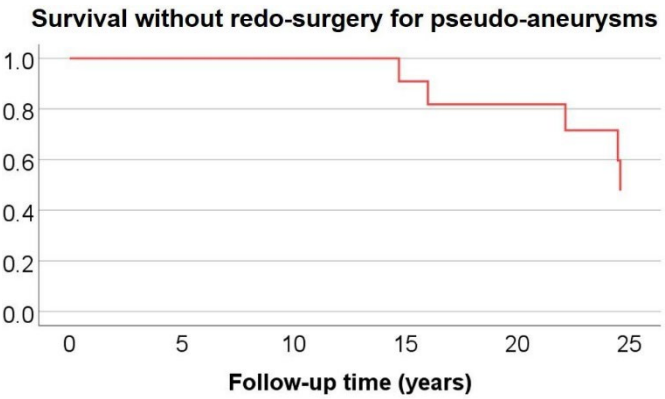


Figure 2. Long-term survival without redo-surgery for pseudo-aneurysms.

O45

`TRIPLE SWITCH' AORTIC AND PULMONARY ROOT INVERSION AND MODIFIED SENNING PROCEDURE FOR ANATOMICALLY COMPLEX LEFT TRANSPOSITION OF THE GREAT ARTERIES WITH INLET VENTRICULAR SEPTAL DEFECT AND PULMONARY STENOSIS

Tomasz Nalecz*[1], Tornike Sologashvili[1]

[1]HUG, Cardiac surgery, Geneve

Introduction: Left transposition of the great arteries with inlet ventricular septal defect and pulmonary stenosis is a relatively uncommon cardiac malformation. Two surgical treatments are available: double switch or physiological correction. The choice of surgical technique depends on the results of a discussion between the family and the surgeon. Choosing the appropriate technique is challenging because all options present various complications and benefits. We present a 'triple switch' aortic and pulmonary root inversion and modified Senning procedure for an anatomically complex left transposition of the great arteries with an inlet ventricular septal defect and pulmonary stenosis.

Material and methods: Case report. Video

Results: Postoperative echocardiography shows good biventricular function, laminar flow on the systemic and pulmonary baffles, competent atrioventricular valves and unobstructed left and right outflow tracts. The postoperative course was without complications, and the patient wasdischarged 10 days after the operation.

Conclusion: The postoperative results were excellent, with only a minor residual stenosis in the right outflow tract. The potential for growth of the pulmonary valve offers the patient a chance toavoid future re-operations. Although this technique requires long-term follow-up, the short-term outcomes are promising.

Conflict of interest: No

O46

FIRST DOCUMENTED CLINICAL CASE OF ARRHYTHMOGENIC PHENOTYPE IN AHETEROZYGOUS TECRL VARIANT CARRIER

Alessandra Pia Porretta*[1], Mathieu Le Bloa[1], Bhuiyan Zahurul Alam[2], Etienne Pruvot[1]

[1]Service of Cardiology, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland, [2]Service of Genetics, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, Switzerland

Patients' presentation: A 12-year-old asymptomatic girl experienced a cardiac arrest due to ventricular fibrillation during a pole danse session. Fig 1A. Cardiopulmonary resuscitation was started and one electrical shock allowed sinus rhythm restauration. Neurologic assessments were normal as well as the cardiac work- up including ECG, echocardiography, cardiac magnetic resonance imaging and cardiac positron emission tomography. Conversely, the exercise stress test (EST) showed isolated polymorphic premature ventricular contractions (PVCs) deteriorating, during heart rate increase, in short episodesof non-sustained ventricular tachycardia (NSVT), some of which bidirectional, ceasing during recovery. Fig. 1B. CPVT was diagnosed and Nadolol was introduced. A cardiogenetic consultation was performed, and patient was finally discharged with scheduled cardiac follow-up. The index patient underwent genetic test screening 41 genes included in our arrhythmia panel. The analysis revealed the homozygous pathogenic variant c.658-2A>G in the *TECRL* gene. The same pathogenic variant, at a heterozygous state, was detected in patient's parents and in the 11-year-old sister. The 43-year-old patient's mother was asymptomatic. Her ECG and echocardiography were normal, but the EST revealed isolated polymorphic PVCs, couplets, and an episode of bidirectional NSVT. Fig 2A and 2B. CPVT was similarly diagnosed and Nadolol was introduced at increasing doses up to 2 mg/kg/day. Since then, she remained asymptomatic. Due to the phenotype of the patient's mother, we completed the genetic analysis in the mother by exome sequencing, which did not reveal any further pathogenic variant. The patient's father and sister were asymptomatic and had normal cardiac work-up.

Conclusions: We document, for the first time to our knowledge, the co-segregation of a *TECRL* heterozygous pathogenic variant with a clear cardiac phenotype. Given the arrhythmogenic potential of heterozygous *TECRL* variants, heterozygous *TECRL* variant carriers should always undergo meticulous cardiological assessment and receive appropriate therapy in case of CPVT diagnosis.

Conflict of interest: No –

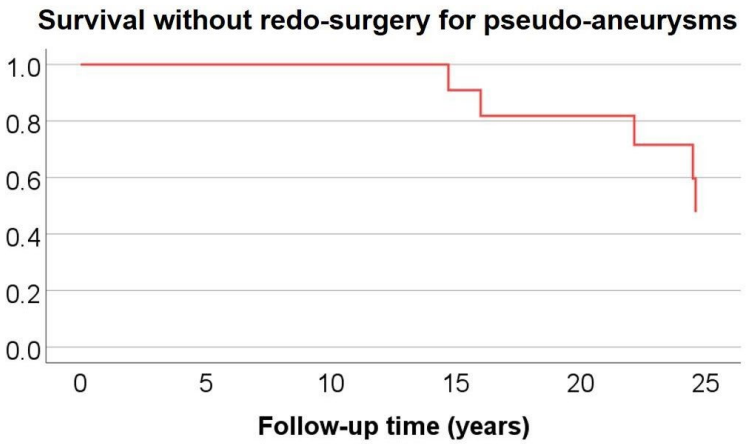


Figure 2. Long-term survival without redo-surgery for pseudo-aneurysms.

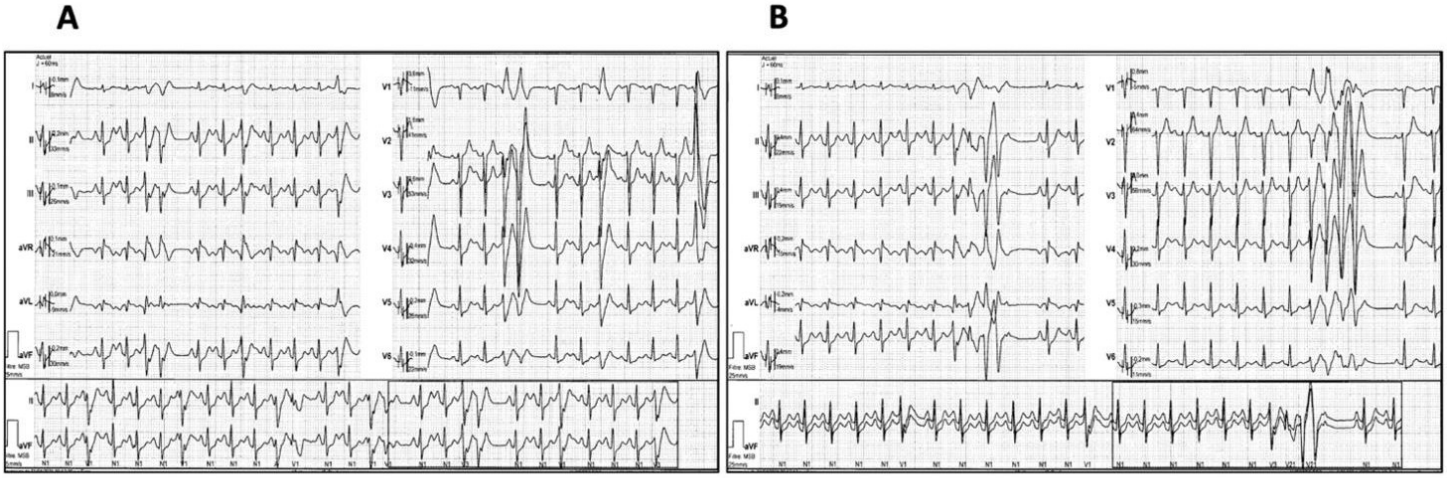


Figure 2. (A-B) Patient's mother stress test.

POSTER WALK: BASIC SCIENCE

P01

SIRT5 AS A MEDIATOR OF ENDOTHELIAL AND VASCULAR DYSFUNCTION: POTENTIAL THERAPEUTIC TARGET IN AGING-RELATED VASCULAR DISEASES

Kangmin Yang*[1], Alexander Akhmedov[1], Tetiana Lapikova-Bryhinska[1], Yustina Puspitasari[1], Susan Bengs[1], Giovanni G. Camici[1 2], Thomas F. Lüscher[1 3]

[1]Center for Molecular Cardiology, University of Zürich, Schlieren, Switzerland, [2]Department of Research and Education, University Hospital Zurich, Switzerland., Zurich, Switzerland, [3]Department of Cardiology, Royal Brompton & Harefield Hospitals and National Heart & Lung Institute, Imperial College, London, United Kingdom

Introduction: Aging is one of the most dominant cardiovascular (CV) risk factor. Sirt5 belongs to the lifespan-regulating sirtuin superfamily as a protein deacylase. However, its regulatory effects on vascular function and aging are yet unclear. We therefore investigate roles of Sirt5 in endothelial and vascular function during aging, decipher the underlying mechanisms in vitro and animal models.

Material and methods: Wild Type (WT) and Sirt5 overexpressed (Sirt5/Tg) mice of young and old groups were assayed for the aortic function using myography system. The structural differences were assayed with histological staining. Accordingly, SIRT5 and eNOS levels and its activity were analysed. In primary human aortic endothelial cells (HEACs), the mechanisms of the regulating effects of Sirt5 were explored by knocking down of this protein using siRNA and by the inhibition of its activity using the Sirt5 inhibitor (Sirt5i).

Results: Sirt5/Tg mice displayed significant increasement in phenylephrine-induced con-traction and decreased relaxation to acetylcholine. In particular in aged Sirt5/Tg this was most pronounced, indicating the vascular dysfunction is indeed caused by the upregulation of Sirt5 protein levels. Inhibition of Sirt5 rescued normal endothelial function in aortae of aged mice. In line with that, the eNOS expression level and activity were down regulated in Sirt5Tg compared to the WT group. In human HAECs, knocking down or inhibition of Sirt5 upregulated the protein level and activity of eNOS, indicating Sirt5 is a modulator of eNOS expression and a potential therapeutic target in aging related endothelial disorders.

Conclusion: Upregulation of Sirt5 markedly contributes to vascular aging, a major driver of cardiovascular disease, by downregulating the protective eNOS pathway. Inhibition of Sirt5 may represent a novel therapeutic target in maintaining vascular function during aging.

Conflict of interest: No

P02

SIRT1 IMPROVES DIABETIC NEPHROPATHY BY REGULATING SGLT2: A NOVEL PATHWAY AND THERAPEUTIC TARGET

Kangmin Yang*[1], Michele Visentin[2], Srividya Velagapudi[1], Carsten Wagner[3], Giovanni G. Camici[1 4], Hongmei Zhang[5], Qing Su[5], Aimin Xu[6], Thomas F. Lüscher[1 7]

[1]Center for Molecular Cardiology, University of Zurich, Schlieren, Switzerland, [2]Department of Clinical Pharmacology and Toxicology, University Hospital Zurich, Schlieren, Switzerland, [3]Institute of Physiology, University of Zurich, Zürich, Switzerland, [4]Department of Research and Education, University Hospital Zurich, Zurich, Switzerland, [5]Department of Endocrinology and Metabolism, Xinhua Hospital, Shanghai Jiaotong University, School of Medicine, Shanghai, China, [6]State Key Laboratory of Pharmaceutical Biotechnology, Department of Medicine and Department of Pharmacology and Pharmacy. The University of Hong Kong, Hong Kong, Hong Kong, [7]Department of Cardiology, Royal Brompton & Harefield Hospitals and National Heart & Lung Institute, Imperial College, London, United Kingdom

Introduction: Type 2 diabetes mainly occurs in middle-aged and elderly subjects with obesity. Sodium-glucose cotransporter 2 (SGLT2), the main transporter for glucose reabsorption in renal proximal tubules, is upregulated in diabetes and a therapeutic target to treat diabetes, heart failure and preserves renal function. It is not established yet whether and how SGLT2 is regulated by aging related pathways such as SIRT1. We aimed to investigate the potential role of SIRT1 on SGLT2 to provide renal protection in diabetes.

Material and methods: Patients with newly diagnosed T2DM (n = 117) and the corresponding age-and sex- matched healthy subjects (n = 117) were recruited for analysis of the association between plasma SIRT1 and soluble SGLT2 level in urine. Twelve-week-old diabetic male db/db mice and their lean (db/+) controls were treated with either vehicle or recombinant mouse SIRT1 (rmSIRT1) by intraperitoneal injection for 4 weeks. At the end of the treatment, kidneys, plasma and urine samples were collected for analysis of renal injury, as well as levels of SIRT1 and SGLT2 activity. Finally, human renal primary tubular epithelial cells (RPTEC) were used to study the mechanisms of regulating effects of SIRT1 on SGLT2.

Results: T2DM patients has higher level of SGLT2 in urine compared to healthy subjects and was negatively correlated with their circulating SIRT1 levels. The protein level of SIRT1 in renal cortex in diabetic mice was restored after chronic treatment, and their protein expression and activity of SGLT2 were significantly downregulated, coinciding with an enhanced urinary glucose excretion, reduced levels of urinary albumin, NGAL and soluble SGLT2. Accordingly, glomerular injury and renal interstitial fibrosis were alleviated after the treatment. In line, SIRT1 activation could downregulate the level of SGLT2 and oxidative stress in RPTEC.

Conclusion: SIRT1 has a high potential for renal protection in obesity-associated diabetes by blunting the expression and activity of SGLT2.

Conflict of interest: No

P03

BEMPEDOIC ACID INDUCES ENDOTHELIAL TISSUE FACTOR: A POTENTIAL CLINICAL CONCERN?

Susan Bengs*[1], Stefano Ministrini[1], Yustina Puspitasari[1], Luca Liberale[2 3], Thomas F. Lüscher[1 4], Giovanni G. Camici[1 5]

[1]University of Zurich, Center for Molecular Cardiology, Schlieren, Switzerland, [2]University of Genoa, Department of Internal Medicine, First Clinic of Internal Medicine, Genova, Italy, [3]IRCCS Ospedale Policlinico San Martino , Genoa—Italian Cardiovascular Network, Genova, Italy, [4]Royal Brompton and Harefield Hospitals and Imperial College, London, United Kingdom, [5]University Hospital Zurich, Department of Research and Education, Zurich, Switzerland

Introduction: Managing low-density lipoprotein cholesterol (LDL-C) levels is essential for preventing cardiovascular (CV) diseases, especially in patients with statin intolerance and high CV risk. Bempedoic acid (BA) is an adenosine triphosphate citrate lyase (ACLY) inhibitor that emerged as a novel LDL-C lowering drug for patients with hypercholesterolemia. In the recently published "CLEAR" randomized placebo- controlled trial, BA significantly reduced major adverse cardiovascular events similarly to other LDL- C lowering drugs such as statins. Yet, unlike statins, the pleiotropic profile of BA – particularly with respect to the coagulation cascade – has not been investigated yet.

Material and methods: Primary human aortic endothelial cells (HAECs p7-8) were stimulated with tumor necrosis factor (TNF)-α and then treated with ascending, clinically relevant, concentrations of BA ($2.2 \bullet 10^{-6}$ M, $2.2 \bullet 10^{-5}$ M, and $2.2 \bullet 10^{-4}$ M). To compare the potential pleiotropic effects of BA with those of commonly used statins, HAECs were also treated with either simvastatin ($1 \bullet 10^{-6}$ M), rosuvastatin ($1 \bullet 10^{-5}$ M), or atorvastatin ($1 \bullet 10^{-5}$ M) with or without TNFα. Intracellular expression of tissue factor (TF), tissue factor inhibitor pathway (TFPI), and plasminogen activator inhibitor 1 (PAI-1) were assessed by Western blotting. TF activity and TF secretion were determined using commercially available assay.

Results: Treatment with BA augmented TNFα-induced TF expression in a concentration-dependent manner. Similarly, TF activity was enhanced in HAECs stimulated with BA and TNFα. Conversely, neither PAI- 1 nor TFPI were affected. Unlike BA, treatment with statins (simvastatin, rosuvastatin, or atorvastatin) did not affect TF levels, and in line with this, PAI-1 and TFPI were also unaffected.

Conclusion: Our results indicate that BA induces expression and activity of TF in HAECs, potentially yielding prothrombotic effects, which warrants further mechanistic and clinical investigation.

Conflict of interest: No

P04

ECHOCARDIOGRAPHIC STRAIN PREDICTS THE PROGRESSION OF ACUTE AUTOIMMUNE MYOCARDITIS TO INFLAMMATORY CARDIOMYOPATHY

Anna Joachimbauer*[1 2], Nadine Cadosch[2], Cristina Gil-Cruz[2], Christian Perez-Shibayama[2], Kira Frischmann[2], Felix Tanner[1], Frank Ruschitzka[1], Burkhard Ludewig[1 2], Dörthe Schmidt[1]

[1]University Hospital Zurich, Department of Cardiology, Zürich, Switzerland, [2]Kantonsspital St. Gallen, Institute of Immunobiology, St. Gallen, Switzerland

Introduction: Myocarditis is an inflammatory heart disease that leads to myocardial remodeling and progression to inflammatory cardiomyopathy. Monitoring of myocardial function is crucial for diagnosis, treatment and prognosis of patients. However, the diagnosis of myocardial inflammation based on imaging modalities is challenging. Echocardiographic strain analysis bears the potential for accurate diagnosis and outcome prediction in various cardiomyopathies. Currently, it is still unclear to what extent strain analysis can be used for the diagnosis of acute myocardial inflammation and whether predictive parameters for the progression to inflammatory cardiomyopathy can be defined.

Material and methods: Here, we have used a mouse model of $CD4^+$ T-cell-driven acute autoimmune myocarditis that precipitates inflammatory cardiomyopathy and heart failure in approximately 50% of the animals. Monitoring of structural and functional changes was performed using high-resolution ultrasound. Detailed mechanical analysis was performed using speckle-tracking-based global strain. Flow cytometry was used for quantification and characterization of myocardial immune cell infiltration and histopathologic analysis including quantification of collagen deposition was used to quantify the degree of myocardial inflammation and fibrotic remodeling.

Results: We found that highly activated CD4+ T cells caused changes in cardiac morphology and function during the acute phase of myocardial inflammation. Both morphological and functional alterations correlated with the degree of immune cell infiltration in the myocardium. Longitudinal assessment of morphological and functional impairment during progressive myocardial inflammation identified longitudinal and circumferential myocardial deformation as robust parameters to predict progression of acute myocarditis to inflammatory cardiomyopathy.

Conclusion: This study indicates that the degree of early immune cell infiltration determines the severity of morphological and functional changes during the acute phase of myocardial inflammatory disease. Impairment of longitudinal and circumferential myocardial deformation represent robust parameters that predict the progression of acute myocarditis to inflammatory cardiomyopathy.

Conflict of interest: No

P05

DIRECT IL-6 INHIBITION PREVENTS ARTERIAL THROMBOSIS BY REDUCING COLLAGEN- MEDIATED PLATELETS ACTIVATION

Stefano Ministrini*[1], Yustina Puspitasari[1], Jiaying Han[2], Kilian Kirmes[2], Rebecca Niederberger[1], Susan Bengs[1], Thomas F. Lüscher[1], Dario Bongiovanni[3], Luca Liberale[4], Giovanni G. Camici[1]

[1]University of Zurich, Center for Molecular Cardiology, Schlieren, Switzerland, [2]Technical University of Munich, Department of Internal Medicine I, Germany, [3]University of Augsburg, Department of Internal Medicine I, Germany, [4]Università di Genova, Department of Internal Medicine I, Italy

Introduction: Interleukin 6 (IL-6) has a pivotal role in atherothrombosis. Yet, targeting IL-6 to prevent atherothrombotic events still requires validation of efficacy and safety. The recent phase 2 RESCUE trial reported that direct inhibition of IL-6 ligand by the monoclonal antibody (mAb) Ziltivekimab is safe in patients with elevated cardiovascular risk. This project investigated the effects of direct IL-6 inhibition on arterial thrombosis, and assessed the underlying cellular mechanisms.

Material and methods: Three month old C56Bl/6 male mice received very-low dose LPS i.p. for 4 weeks. During the last week they were randomized to receive in addition either anti-mouse IL-6 mAb 200 µg i.p. every other day or IgG1 isotype control. Then thrombosis of left common carotid artery (LCCA) was induced by laser injury under anesthesia. Platelets of treated mice were isolated and stimulated with either adenosine diphosphate (ADP), collagen-related peptide (CRP) or thrombin receptor activating peptide (TRAP). Platelets activation was measured by flow-cytometry, as expression of P-selectin and JON/A.The effect of direct IL-6 inhibition was confirmed in pa-

tients with stable coronary artery disease (sCAD) by ex-vivo incubation of isolated platelets with either anti-human IL-6 mAb 1.5 µg/mL or IgG1 isotype control. Platelet activation was measured by flow-cytometry, as expression of P-selectin.

Results: Mice treated with anti-IL6 antibody displayed a significantly longer time-to-occlusion after the LCCA (Figure 1), without any significant difference in coagulation parameters. After stimulation with CRP, platelets were significantly activated in control mice, but not in mice treated with anti-IL6 mAb. Similarly, activation of isolated platelets from patients with sCAD was significantly reduced by the ex-vivo treatment with anti-IL6 mAb.

Conclusion: The direct inhibition of IL-6 reduces platelets reactivity to collagen, thereby blunting arterial thrombosis upon endothelial damage. These results provide a potential mechanism to explain the reduction of cardiovascular risk associated to direct IL-6 inhibition.

Conflict of interest: No

P06

CARDIAC MACROPHAGE MODULATION IN HEART FAILURE WITH PRESERVED EJECTION FRACTION

Era Gorica*[1], Shafeeq Mohammed[1], Alessandro Mengozzi[1], Alessia Mongelli[1], Florian Wenzl[2], Frank Ruschitzka[1 3], Nazha Hamdani[4], Sarah Costantinio[1 3], Francesco Paneni[1 3]

[1]Center for Translational and Experimental Cardiology (CTEC), University of Zurich and Zurich University Hospital, Schlieren, Switzerland, [2]Center for Molecular Cardiology, University of Zurich, Schlieren, Switzerland, [3]University Heart Center, University Hospital Zurich, Zurich, Switzerland, [4]Institute of Physiology, Ruhr University, Bochum, Germany

Introduction: Heart failure with preserved ejection fraction (HFpEF) poses a significant worldwide public health challenge, lacking an effective treatment strategy[1]. Emerging as crucial factors in unfavourable structural changes in the left ventricle, pro-inflammatory cardiac macrophages remain inadequately understood in their contribution to HFpEF. This study aimed to clarify the involvement of macrophage- driven inflammation in both experimental models and human HFpEF cases.

Material and methods: Experiments were performed in rat cardiomyocytes (H9c2), transgenic mice, and left ventricular (LV) myocardial samples from patients with HFpEF. H9c2 treated with pro- inflammatory macrophage-like cells (RAW 264.7) conditional media in the presence or knockdown of a top-ranking activator of M1 type macrophages such as nuclear receptor corepressor 1 (NCOR1), were used to elucidate better the involvement of this gene in transcriptional regulation in vitro. The cardiac function of myeloid cell-specific NCOR1 knockout HFpEF mice undergoing a high-fat diet and L-NAME was investigated. LV myocardial samples were used to evaluate the pro-inflammatory activity of macrophages in human HFpEF tissues.

Results: Macrophage marker expression in left ventricular specimens from HFpEF-patients is shifted toward enhanced pro-inflammatory (M1) and decreased regulatory (M2) macrophage markers as compared with age-matched control donors. NCOR1 – an essential co-regulator of gene transcription – was highly expressed in cultured macrophages, which is shown to drive pro-inflammatory transcriptional programs. Moreover, the depletion of the NCOR1 gene in the myeloid line contributed to an improvement in the heart function of HFpEF mice.

Conclusion: Our findings underscore the significant role of immune regulation in HFpEF and lay the foundation for potential mechanism-cantered therapies in addressing this condition.

Conflict of interest: No

P07

IS ETHANOL A BETTER LINKER FOR PERICARIDUM FIXATION IN OZAKI PROCEDURE?

Nerea Lopez Perez*[1], Marisa Jaconi[2], Philippe Reymond[1], Alexandre Porcello[3], Gregory Khatchatourov[4], Mathieu van Steenberghe[1 4]

[1]Hôpitaux Universitaires de Geneve, Cardiovascular Surgery, Genève, [2]Université de Genève, Department Basic Neurosciences, Genève, [3]Université de Genève, Department of pharmaceutical technology, Genève, [4]Clinique Cecil, Cardiovascular Surgery, Lausanne

Introduction: The Ozaki procedure allows a biological, patient-tailored valve replacement by creating a new valve with glutaraldehyde fixed autologous pericardium with excellent hemodynamics outcomes and midterm clinical results. However, literature has proven that glutaraldehyde, used to fixate the pericardium, leads to calcification and high cytotoxicity for colonizing cells. Also, our experience showed partial endothelization of the fashioned valve and possible subsequent thrombosis and susceptibility to endocarditis. Therefore we assessed ethanol as an alternative.

Material and methods: Mechanical and biological properties were assessed and compared among five groups: native untreated pericardium (pN), pericardium fixed with glutaraldehyde for 2 min (pG2) and 10 min (pG10) and pericardium fixed with ethanol for 2 min (pE2) and 10 min (pE10). Mechanical tests were made on bovine pericardium (n = 4 per group). Maximal force, force at 50% and the slope were assessed with elongation stress test. Biological tests assessed adhesion and survival of human mesangioblasts (MAB) derived from fetal aorta on porcine pericardium decellularized as previously described (n = 3 per group). 10'000 mesangioblast per pericardial sample (8mm punch) were cultured and fixed at day 1 and day 4 of culture. Upon fixation, cells were stained with DAPI. Distribution and number of cells were counted using fluorescence microscopy and compared among groups.

Results: We observed no significant difference of mechanical properties between pE10 vs pG2 and pG10 with $p>0,05$.

MAB attachment to ethanol-fixed pericardium at 10 min was significantly higher than to glutaraldehyde- fixed at 10 min (2.1±0.9 and 0.6±0.3 per mm2, respectively, $p <0.001$). Better cell proliferation was observed only for ethanol-fixed pericardium at day 4 when compared to all groups (4.6±1.0 cells/mm2, $p <0.001$).

Conclusion: Ethanol proved to be equally resistant and proliferation-permissive in contrast to glutaraldehyde. It should therefore be a better linker for ozaki procedures.

Conflict of interest: No

P08

BEEINTRÄCHTIGTE NETZHAUT MIKROVASKULÄRE FUNKTION BEI PATIENTEN MIT SYSTEMISCHER SKLEROSE

Natallia Laptseva*[1], Konstantinos Bitos[1], Valentina Rossi[1], Thomas Haider[1], Matthias Nägele[1], Carmen-Marina Mihai[2], Frank Ruschitzka[1], Isabella Sudano[1 3], Andreas Flammer[1]

[1]USZ, Cardiology, Zürich, [2]USZ, Rheumatology, Zürich, [3]USZ, Cardio, Zürich

Introduction: Systemic sclerosis (SSc) is a chronic autoimmune disease characterized by widespread and progressive multi-organ fibrosis and vascular abnormalities. Endothelial dysfunction is an early manifestation of SSc and an important contributor to the progression and prognosis of the disease. Dynamic retinal vascular analysis (DVA) is a new method for non-invasive and precise determination of microvascular function. The primary aim was to assess micro- and macro- vascular function in patients with SSc.

Material and methods: In this study, vascular function was measured non-invasively with flicker-light induced vasodilation of retinal arterioles (FIDart) and branchial arterial flow-mediated vasodilation (FMD). Patients with SSc were prospectively enrolled in the study (n = 40, 29 females; mean ± SD age 56±11 years) and compared with age- and sex-matched HC (n = 40, 29 females; mean age 56±15 years)

Results: Retinal microvascular function was significantly impaired in patients with SSc compared to matched HC (2.3±2.0% versus 3.1±1.9% respectively, p = 0.04, *figure 1*). There was a trend for lower FMD in patients with SSc in comparison to HC (5.0± 3.2% versus 6.2±3.2% respectively, p = 0.07).

Conclusion: Patients with SSc have severe impairment of retinal vascular function compared to matched HC. Thus, microvascular dysfunction in these patients is of systemic nature and retinal vessel analysis may serve as an important marker for SSc disease, severity and prognosis. These results set the stage for further studies on retinal function in SSc patients.

Conflict of interest: No

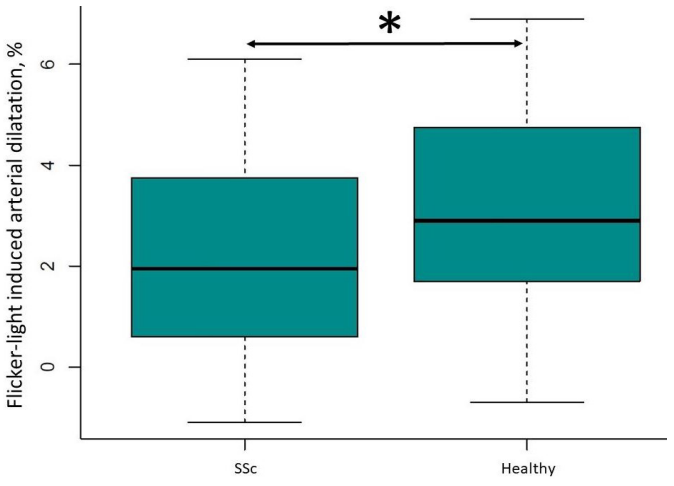


Figure 1

P09

PERIOPERATIVE INFARCTION IN CORONARY BYPASS SURGERY – AN ATTEMPT AT RETROSPECTIVE PRECISION

Lars Niclauss*[1 1], Liam-Kani Roulet[2 3], Piergiorgio Tozzi[1 1], Matthias Kirsch[1 1]

[1]Lausanne University Hospital, Lausanne, Switzerland, [2]UNIL, [3]UNIL – Université de Lausanne, Lausanne, Switzerland

Introduction: A clear definition of coronary artery bypass graft (CABG)-associated perioperative myocardial infarction (MI) is controversial because enzyme release is generally increased and is multifactorial.

Material and methods: A retrospective analysis of elective CABG surgery identified patients with perioperative MI who had increased enzyme release, permanent electrocardiographic changes, and/or loss of function on echocardiography. These were compared with patients without detectable perioperative ischemia to identify risk factors and possible enzyme thresholds.

Results: The incidence of perioperative MI was 2.8%. Family history of cardiovascular disease (odds ratio 2.8, p = 0.005), tobacco abuse (OR 3.8, p <0.001), recent (90-14 days before surgery) MI (OR 3.6, p <0.001) and three-vessel coronary disease (OR 2.8, p = 0.006) were associated risk factors. Increased mortality (OR 2.3, p = 0.02), prolonged intubation (OR 3.1, p = 0.002) and intensive care unit stay (OR 4.3, p <0.001), reduced creatinine clearance (OR -3.4, p = 0.001) and increased troponin release (1.8- to 2.7- fold) characterized the perioperative MI group. The type 5 MI threshold (10-fold upper reference limit: URL) was not specific and was exceeded in 88.4% (troponin I) and 96% (high-sensitivity troponin T: hs-cTnT) of patients without ischemia, whereas a higher hs-cTnT threshold (>45 URL) allowed correct assignment (MI versus control group) of more than 75% of the postoperative measurements.

Conclusion: Isolated consideration of postoperative enzyme rise is of limited diagnostic value for perioperative MI, which is associated with increased mortality and morbidity. High hs-cTnT release (>45 URL) is suspicious for early graft failure.

Conflict of interest: No

POSTER WALK: RHYTHMOLOGY

P10

SUCCESSFUL RETRIEVAL OF TINE-BASED LEADLESS PACEMAKERS

Stjepan Jurisic*[1], Mikael El-Chami[2], Marco Schiavone[3], Alessio Gasparetti[3], Claudio Tondo[3], Simone Gulletta[4], Clemens Steinwender[5], Giovanni Forleo[6], Daniel Hofer[1], Alexander Breitenstein[1]

[1]Department of Cardiology, University Hospital Zurich, Zürich, Switzerland, [2]Emory University School of Medicine, Atlanta, United States, [3]Department of Clinical Electrophysiology & Cardiac Pacing, Centro Cardiologico Monzino, IRCCS, Milan, Italy, [4]Arrhythmology and Electrophysiology Unit, San Raffaele Hospital, IRCCS, Milan, Italy, [5]Department of Cardiology, Kepler University Hospital Linz, Medical Faculty, Johannes Kepler University Linz, Linz, Austria, [6]Cardiology Unit, Luigi Sacco University Hospital, Milan, Italy

Introduction: Leadless cardiac pacemakers (LCP) are well established in daily practice and comparable in safety as well as efficacy to conventional transvenous pacemakers. With increasing implant volumes, more patients may need extraction and retrieval of these devices. Data on extractability of LCPs is however spare. The aim of this study is to analyze indication, feasibility, techniques and efficacy of LCP extractions in a multicenter international registry.

Material and methods: This is an international, multicenter retrospective registry. Demographic parameters, indication of LCP extraction, success and complication rate were analyzed

Results: A total of 50 patients (median age 71 years (IQR 64-81), 34% female) were included in this study. 52% of patients received the LCP for complete AV block. The primary underlying cardiac condition was coronary artery disease in 42%. The main indication for LCP extraction was rise in threshold with loss of capture (32%), upgrade to biventricular stimulation (26%) or upgrade to transvenous dual-chamber device (14%). The overall success rate of device explantation was 96% with a mean dwell time of the LCP of 715 days (range 0-1477 days). In most cases, a steerable sheath with a single loop snare (71%) was used. Procedure related adverse events were low and included two pericardial effusion (without further intervention) and one case of a device embolization.

Conclusion: Longterm retrieval of a LCP in this retrospective analysis seems to be safe and feasible.

Conflict of interest: No

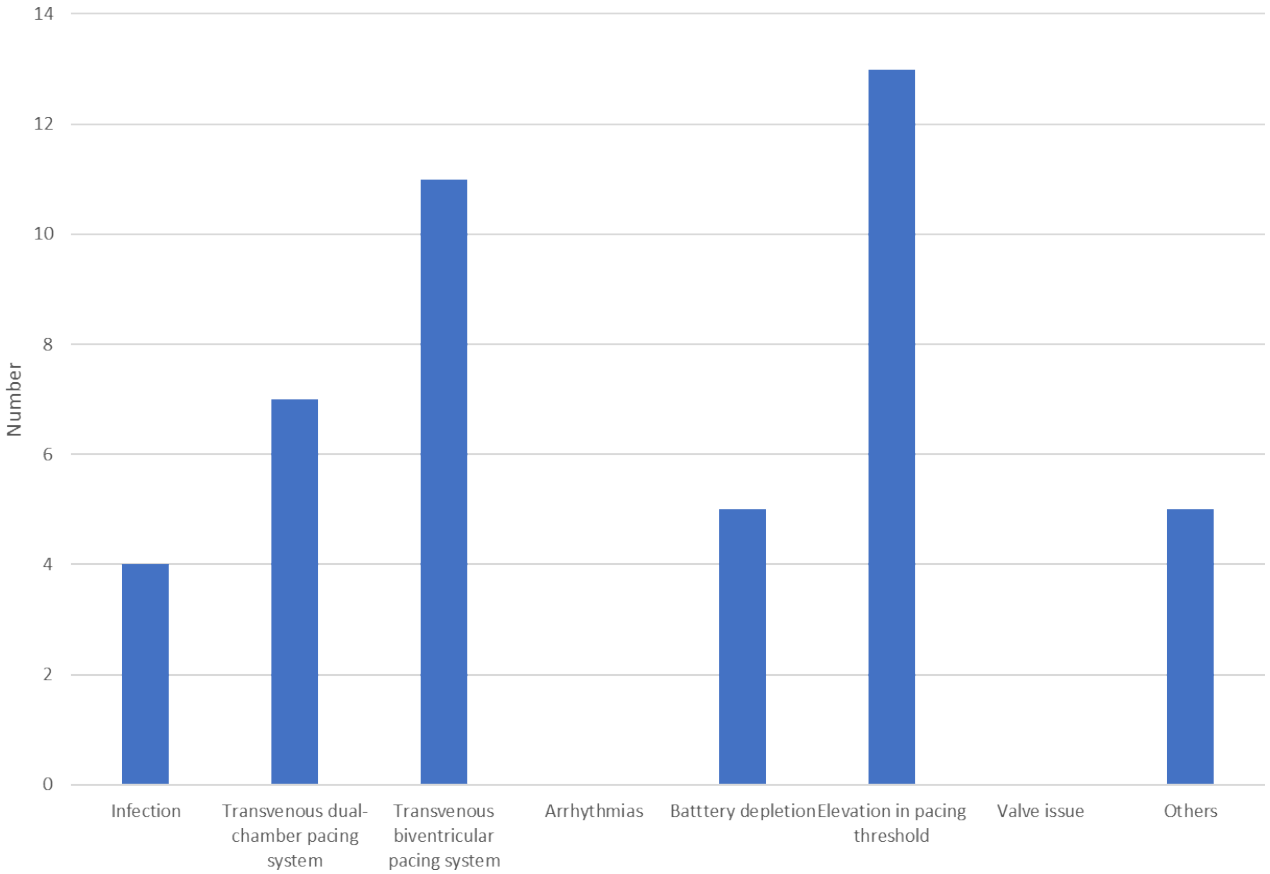


Figure 1: Indications for retrieval

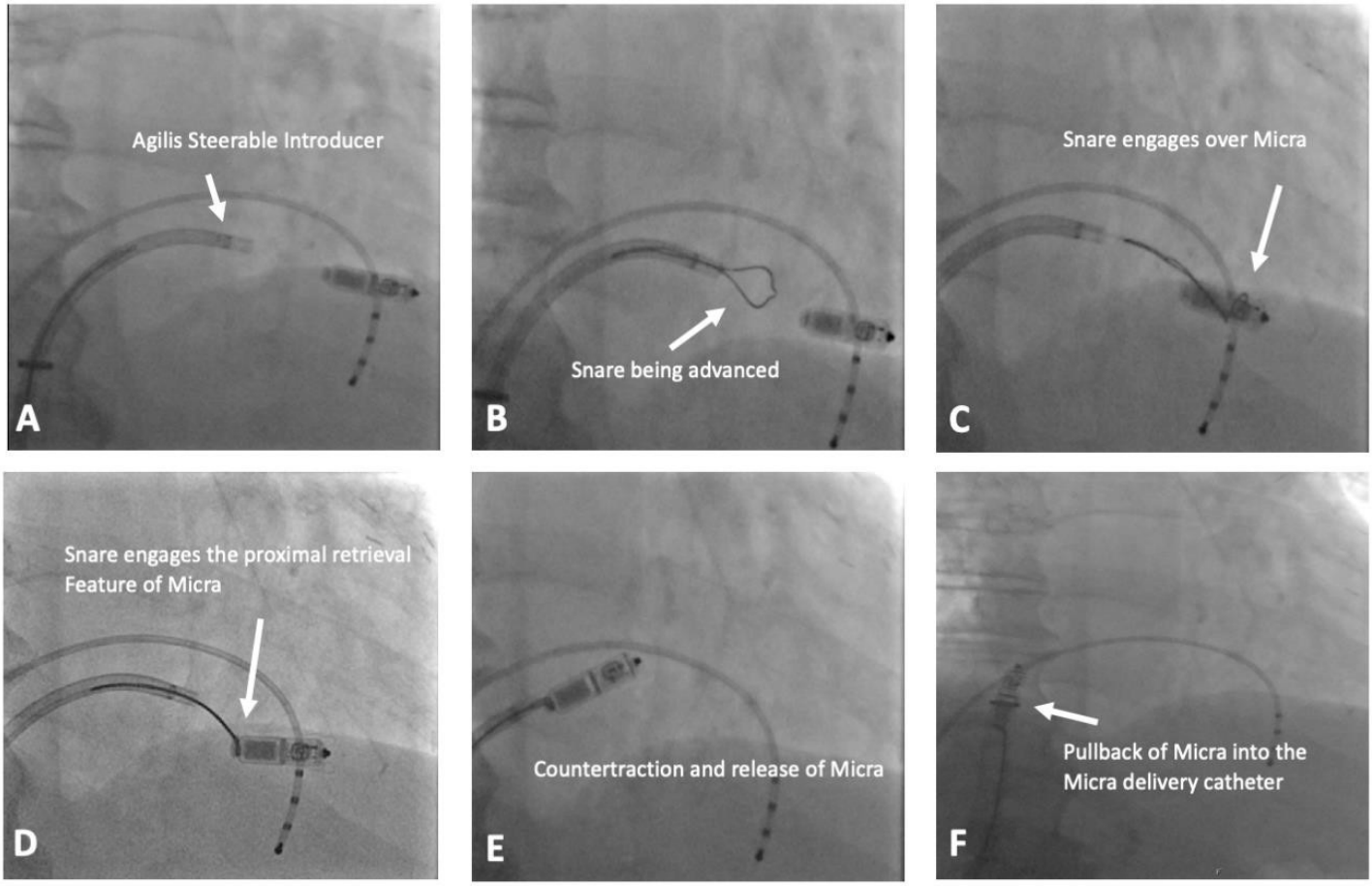


Figure 2: Fluoroscopic views of retrieval

P11

VERY EARLY FRACTURES OF THE STYLET-DRIVEN BIOTRONIK SOLIA LEAD USED FOR LEFT BUNDLE BRANCH AREA PACING

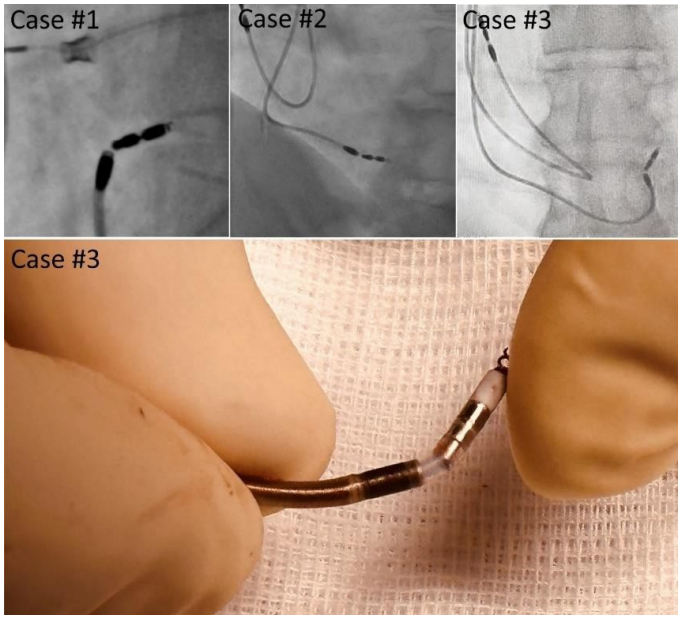
Andreas Haeberlin*[1], Daniel Hofer[2], Fabian Noti[1], Tobias Reichlin[1], Alexander Breitenstein[2]

[1]Inselspital, Dept. of Cardiology, Bern, Switzerland, [2]University Hospital of Zürich, Dept. of Cardiology, Zürich, Switzerland

Introduction: Left bundle branch area pacing (LBBAP) has become popular for conduction system pacing (CSP). Implanters are increasingly using conventional stylet-driven pacemaker (PM) leads in LBBA position, although data on lead performance is scarce.

Material and methods: In our two centers, we assessed all patients who underwent LBBAP lead implantation. We observed several very early lead fractures, which we illustrate in this series.

	R-wave [mV]	Bipolar impedance [Ω]	Pacing threshold [V/0.5ms]
Case #1	10.0/5.0	680/>2'500	0.8/>7.5
Case #2	8.0/9.2	620/>2'500	0.6/>7.5
Case #3	13.1/None	624/>2'500	0.7/>7.5



Results: From 01/2022-11/2023 343/393 patients (87.3%) were implanted with a Solia pacemaker lead (Biotronik, Germany), 46/393 (11.7%) received a SelectSecure 3830 lead (Medtronic, USA), 4/393 (1.0%) another stylet- driven lead. Three patients (0.8%) who were implanted with a Solia lead experienced very early lead fractures after implantation (Table shows initial electrode performance and values during the time of failure (bold)). The first patient was a 54 year-old woman with permanent 3[d]

degree AV block receiving an LBBAP lead after lead extraction. Four weeks later, she presented with presyncope and exit block. The second case was a 72 year-old man with intermittent 3rd degree AV block, who received a LBBAP-PM. 13 months after implantation, a bipolar impedance >2'500Ω and exit block were noted. The third case was a 65 year-old man suffering from sick sinus syndrome. He underwent extraction and LBBAP lead implantation. After 11 months, exit block was noticed. In all cases, X-rays and macroscopic analysis showed a disintegration of the lead distal to the ring (Figure). Likely, this was caused by repetitive stress at the hinge point of the lead where it enters the septum.

Conclusion: In LBBA position, leads may suffer from higher mechanical stress, making them more prone to fracture. Currently, the use of stylet-driven leads for LBBAP is off-label and lead performance should be monitored.

Conflict of interest: No

P12

CLINICAL VALIDATION OF AN ARTIFICIAL INTELLIGENCE ALGORITHM OFFERING AUTOMATED CORRECTED QT-INTERVAL MEASUREMENTS FROM A SINGLE LEAD ELECTROCARDIOGRAM

Diego Mannhart*[1 2] on behalf of University Hospital Basel, Kennedy Alan[3] on behalf of Pulse AI, Elisa Hennings[1 2] on behalf of University Hospital Basel, Corinne Isenegger[1 2] on behalf of University Hospital Basel, Rebecca Arnet[1 2] on behalf of University Hospital Basel, Sven Knecht[1 2] on behalf of University Hospital Basel, Stefan Osswald[1 2] on behalf of University Hospital Basel, Michael Kühne[1 2] on behalf of University Hospital Basel, Christian Sticherling[1 2] on behalf of University Hospital Basel, Patrick Badertscher[1 2] on behalf of University Hospital Basel

[1]CRIB, Basel, Switzerland, [2]Universitätsspital Basel, Basel, Switzerland, [3]Pulse-AI, Belfast, Northern Ireland

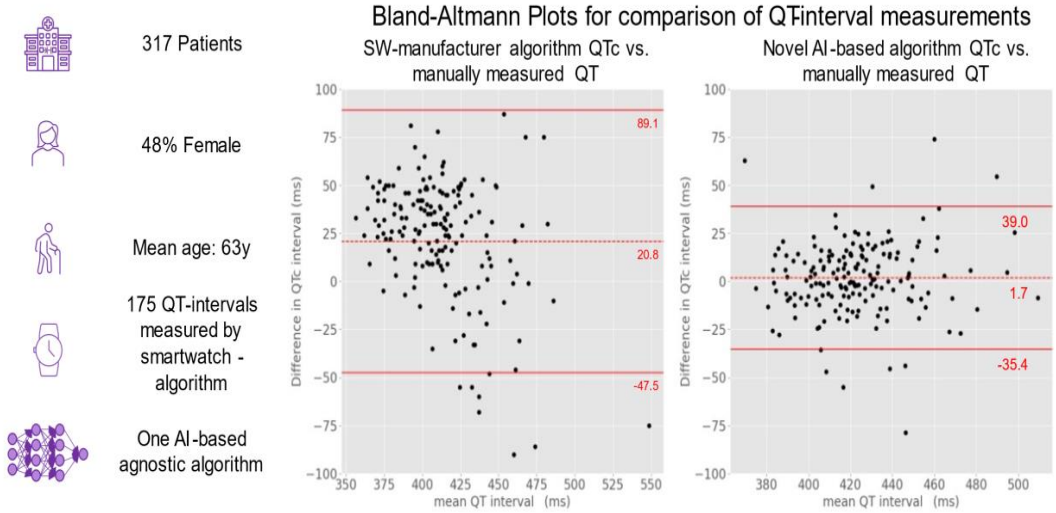
Introduction: A novel smartwatch (Withings Scanwatch, SW) offers automated analysis of the QTc based on single-lead ECG recordings. Prior clinical validation studies showed insufficient accuracy when compared to manual measurements based on a 12-lead ECG. We hypothesized that a novel AI-based algorithm (PulseAI) is capable of measuring QTc- interval based on PDF-exports from a single-lead ECG with improved accuracy compared to the manufacturer's automated QTc measurements.

Material and methods: In this prospective, observational study, consecutive patients underwent a nearly simultaneously 12-lead ECG and a single-lead ECG. Two blinded, independent cardiologists manually interpreted the QT-interval in leads I and II of the 12-lead ECG using the tangent-method, which served as the gold standard. QTc was calculated using Bazett's formula. QTc measurements were compared using the Bland-Altman method.

Results: A total of 317 patients (48% female, mean age 63 ± 17 years) were enrolled. QTc-intervals could be automatically calculated by the SW and by the novel AI algorithm in 175 patients (55%). Diagnostic accuracy of SW-ECG for detection of QTc-intervals ≥ 450 ms as quantified by the area under the curve was 0.85 for the manufacturer and 0.9 for novel AI algorithm. In 21 patients (12%) QTc was ≥450ms. The Bland-Altman analysis resulted in a bias of 21 ms [95% limit of agreement (LoA) -48 to 89 ms] for the manufacturer algorithm and 2 ms [95% LoA -35 to 39 ms] for the novel AI algorithm, respectively, when compared with manual QTc-measurement based on the 12-lead ECG.

Conclusion: A novel AI algorithm outperformed the manufacturer algorithm for automated QTc-measurements based on PDF- exported single-lead ECGs.

Conflict of interest: No



Central Illustration: Comparison of QT-interval measurements, manually measured QT on a 12-lead ECG and automated SW-ECG by the SW-manufacturers' algorithm (Withings Scanwatch) and a novel AI-based algorithm (PulseAI). Measurement agreement was analyzed using the Bland-Altmann Method. Bias is represented by the dashed red line, limit of agreement is represented via solid red line. AI, artificial intelligence; QTc, corrected QT-interval; SW, smartwatch; y, years

P13

DIAGNOSTIC ACCURACY OF SMARTWATCHES FOR AUTOMATED ATRIAL FIBRILLATION DETECTION OVER TIME: INSIGHTS FROM THE BASEL WEARABLE STUDY

Corinne Isenegger*[1], Diego Mannhart[1], Simon Weidlich[1], Rebecca Arnet[1], Jeanne du Fay de Lavallaz[1], Philipp Krisai[1], Sven Knecht[1], Michael Kühne[1], Christian Sticherling[1], Patrick Badertscher[1]

[1]Cardiovascular Research Institute Basel, Department of Cardiology, University Hospital Basel, Basel, Switzerland

Introduction: The first smart-watch (SW) able to record a single-lead ECG (SL-ECG) with automated atrial fibrillation (AF) detection algorithm was introduced 2018. Multiple other manufacturers followed. While manufacturers claim to continuously improve their devices' algorithm, little is known about the impact on diagnostic accuracy on AF detection over time in a real-world cohort of patients. The aim was to assess if the diagnostic accuracy of algorithm- based AF detection of 5 smart devices has improved over time.

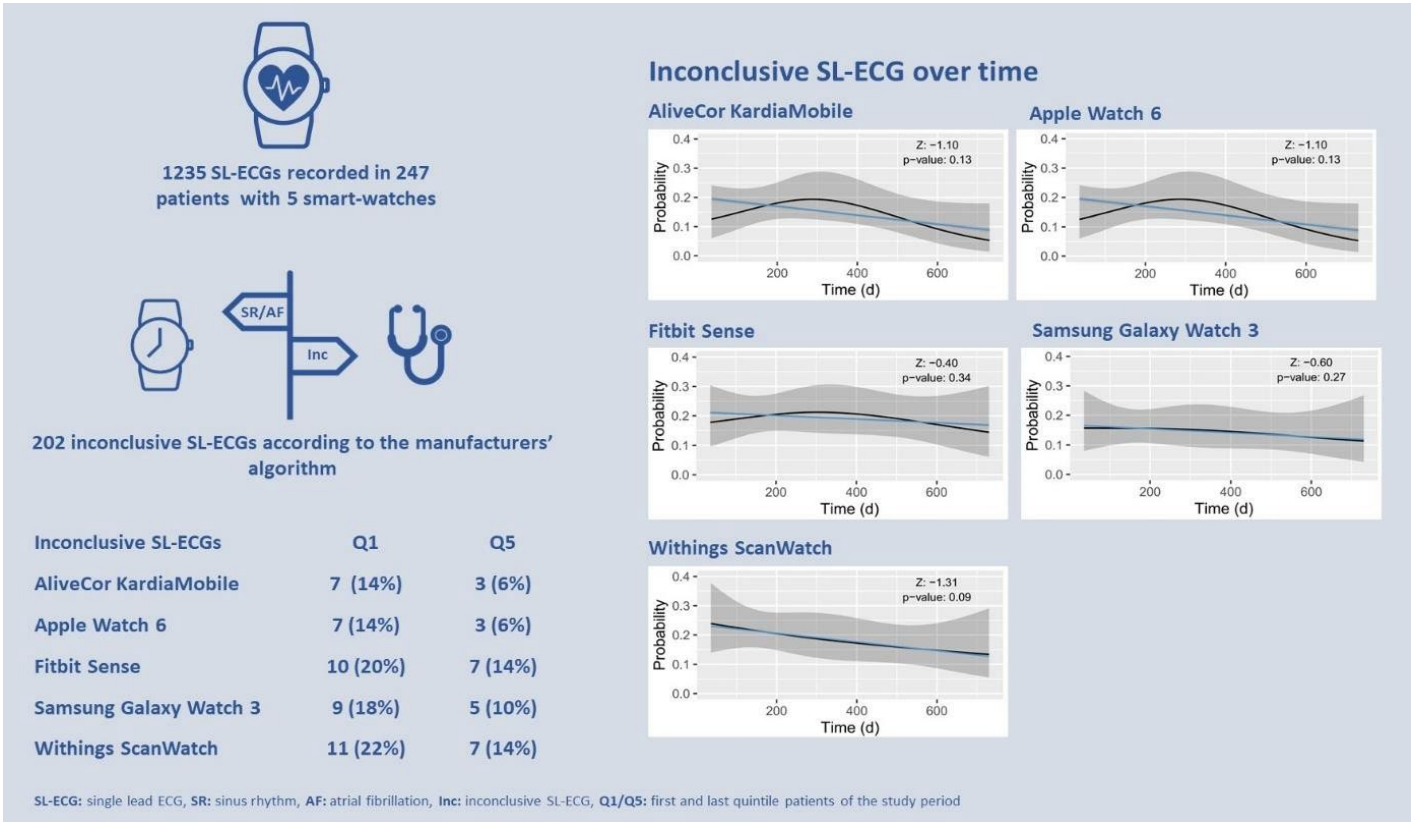
Material and methods: In this prospective study, consecutive patients undergoing electrophysiological procedures in a tertiary referral center were included (April 2021 to May 2023). Each participant received a 12-lead ECG and 5 SL-ECGs from AliveCor KardiaMobile, Apple Watch 6, Fitbit Sense, Samsung Galaxy Watch 3 and Withings ScanWatch. All SW were continuously updated for newest software or firmware as recommend by manufacturers. The change in number of inconclusive SL-ECGs by manufacturer's algorithm were investigated over time via Cochran-Armitage test for trend and illustrated via logistic regression.

Results: 247 participants were included (30% female, mean age 66 [IQR: 57-74] years) resulting in a total of 1'235 SL-ECGs. Among these, 202 SL-ECGs (16%) were labeled as inconclusive by at least one smart-device. Inconclusive rates

for each SW ranged from 15% to 19%. When comparing the first and last quintile of patients in the study period, the inconclusive rates were 14% vs. 6% (Kardia), 14% vs. 6% (Apple), 20% vs. 14% (Fitbit), 18% vs. 10% (Samsung) and 22% vs. 14% (Withings), respectively. When assessed continuously over time, we observed a trend towards fewer inconclusive tracings, without reaching statistical significance (Figure).

Conclusion: Over 26 months, inconclusive tracings of 5 SW didn't significantly decrease despite frequent software updates in a real-world patient cohort. Larger, long-term cohorts are needed to assess if automated AF detection has significantly improved over time.

Conflict of interest: No



Inconclusive SL-ECGs	Q1	Q5
AliveCor KardiaMobile	7 (14%)	3 (6%)
Apple Watch 6	7 (14%)	3 (6%)
Fitbit Sense	10 (20%)	7 (14%)
Samsung Galaxy Watch 3	9 (18%)	5 (10%)
Withings ScanWatch	11 (22%)	7 (14%)

SL-ECG: single lead ECG, **SR:** sinus rhythm, **AF:** atrial fibrillation, **Inc:** inconclusive SL-ECG, **Q1/Q5:** first and last quintile patients of the study period

P14

THE EFFECT OF TISSUE-ELECTRODE DISTANCE ON UNIPOLAR AND BIPOLAR VOLTAGE ELECTROGRAMS FOR LARGE-TIP, RING-, AND MINI-ELECTRODES

Sven Knecht*[1,1], Schlageter Vincent[1,1], Badertscher Patrick[1,1], Krisai Philipp[1,1], Luca Adrian[2,2], Küffer Thomas[3,3], Spreen David[1,1], Osswald Stefan[1,1], Kühne Michael[1,1], Sticherling Christian[1,1]

[1]Universitätsspital Basel, Basel, Switzerland, [2]Lausanne University Hospital, Lausanne, Switzerland, [3]Inselspital, Bern, Switzerland

Introduction: The characteristics of intracardiac unipolar and bipolar voltage electrograms (EGM) acquired by electrophysiological catheters depend on the characteristics of the electrode design and configuration.

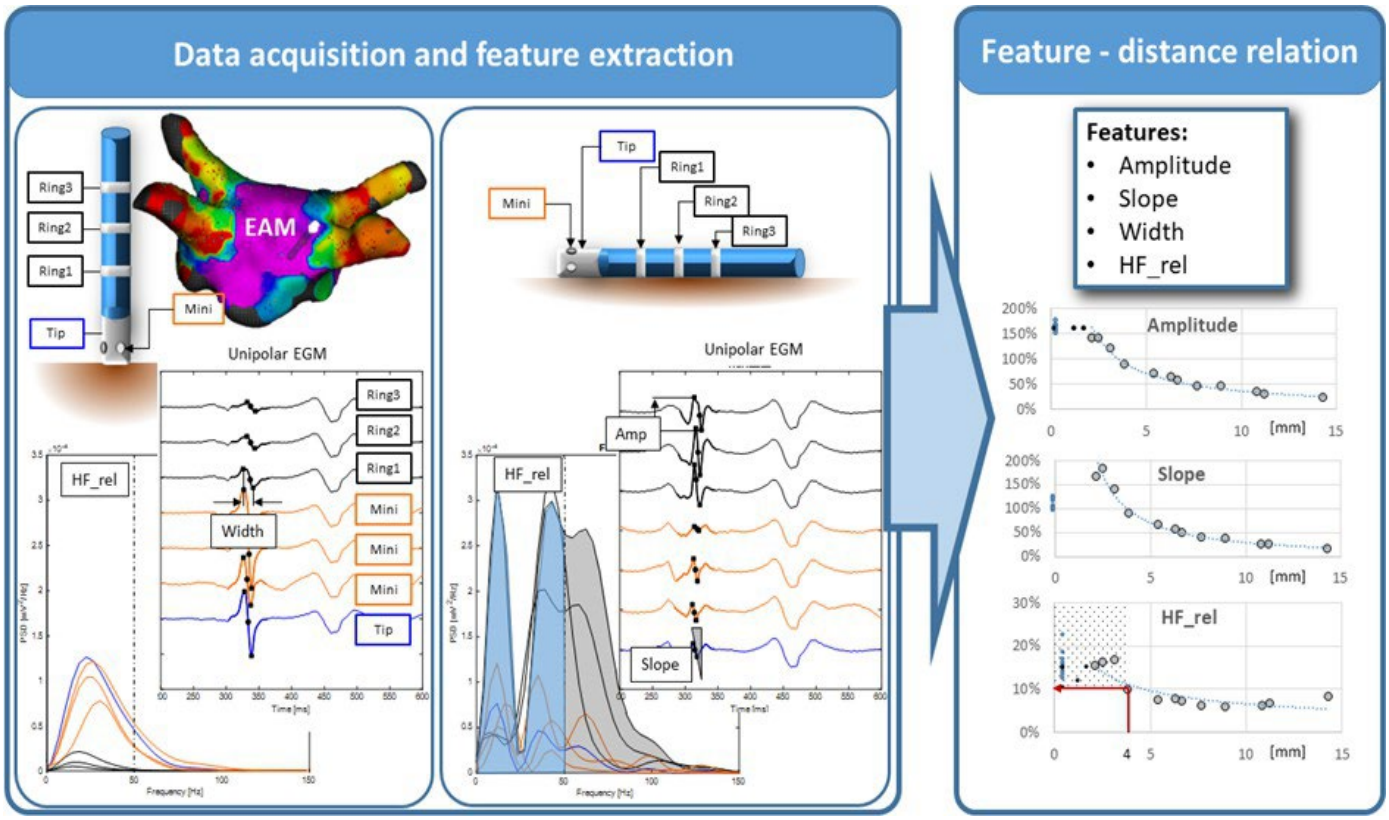
The aim of the study was to assess the impact of the electrode design and distance from the myocardial electric source on the unipolar and bipolar intracardiac electrograms recorded with a multi-electrode ablation catheter.

Material and methods: We retrospectively analyzed left atrial electroanatomical maps (EAM) of 25 patients performed in sinus rhythm using an ablation catheter with a 4.5 mm tip-, mini- and 2 mm ring electrodes. The unipolar and bipolar EGMs were characterized based on peak-to-peak amplitude (amp), signal duration (width), maximal slope, and relative high-power spectrum (HF_rel) (Figure). Distances of the electrode from the tissue were calculated from the electroanatomic reconstruction.

Results: We analyzed EGMs of 5183 catheter positions. The unipolar EGM of ring electrodes showed an increased amplitude (140%), slope (150%) and HF_rel (16% vs 11%) compared to the tip- and mini- electrodes. In contrast for bipolar EGM, the tip-ring pair showed the largest amplitude, width, and slope. The median amp, slope, and HF_rel for the ring electrodes showed a strong power-law decay function with distance. At distance of 4 mm, a HF_rel cutoff of >10% for unipolar and >30% for bipolar EGMs was to identify as far-field cutoff.

Conclusion: We confirmed a higher amplitude for small ring-electrodes compared to larger tip electrodes in unipolar amplitude. Furthermore, a strong decay of the amplitude, slope, and HF_rel with distance could be observed. The decay functions are suggestive for a near-field boundary distance below 4mm from the tissue. Further studies are warranted to confirm this observation. From EAM, unipolar and bipolar electrograms were extracted. Amplitude, slope, width and relative HF component were calculated. Characteristic feature-distance relationship for unipolar voltage is shown in right column.

Conflict of interest: No



P15

DIGITAL BIOMARKERS FOR THE PREDICTION OF CARDIAC ARRHYTHMIAS

Gil Sharvit*[1] on behalf of PRECARRHD, Martin Camenzind[1] on behalf of PRECARRHD, Filippo Parisi[1] on behalf of PRECARRHD, Patric Eberle[1] on behalf of PRECARRHD

[1]Hochschule Luzern – Technik & Architektur, iHomeLab, Horw, Switzerland

Introduction: The impact of cardiac arrhythmias can be severe, as they contribute to stroke, heart failure, and mortality, affecting individuals of all ages. Early detection through Electrocardiogram (ECG) assessments performed by trained cardiologists is of paramount importance for averting heart-related illnesses and preserving lives. However, the early recognition and diagnosis of the most common arrhythmia, atrial fibrillation (AF), with a worldwide prevalence of 6-12 million individuals, remains challenging due to its frequent lack of symptoms and/or sporadic occurrence, leading to underdiagnosis. Additionally, current screening methods are limited by the diagnostic yield and cost constraints for reimbursement.

Material and methods: Utilizing an affordable, portable long-term ECG recording Holter device, in collaboration with company evismo AG and renowned Swiss cardiologists, we showcase our advancement in creating an automated artificial intelligence (AI) algorithm for early detection of AF, even when no AF is present in the recording. We used 3-lead ECG data from both healthy and cardiac patients (N = 785 | 74 AF, 711 H) to train a deep learning Convolutional Neural Network (CNN) model for predicting AF events from a normal sinus rhythm.

Results: At this stage, our top-performing model achieved high scores with specificity of 0.71 and sensitivity of 0.80. We will also present the performance of previous models.

Conclusion: Although it is still a work in progress, we are demonstrating a promising application for the use of AI in the clinical diagnosis of cardiac arrhythmias, such as AF.

Conflict of interest: No

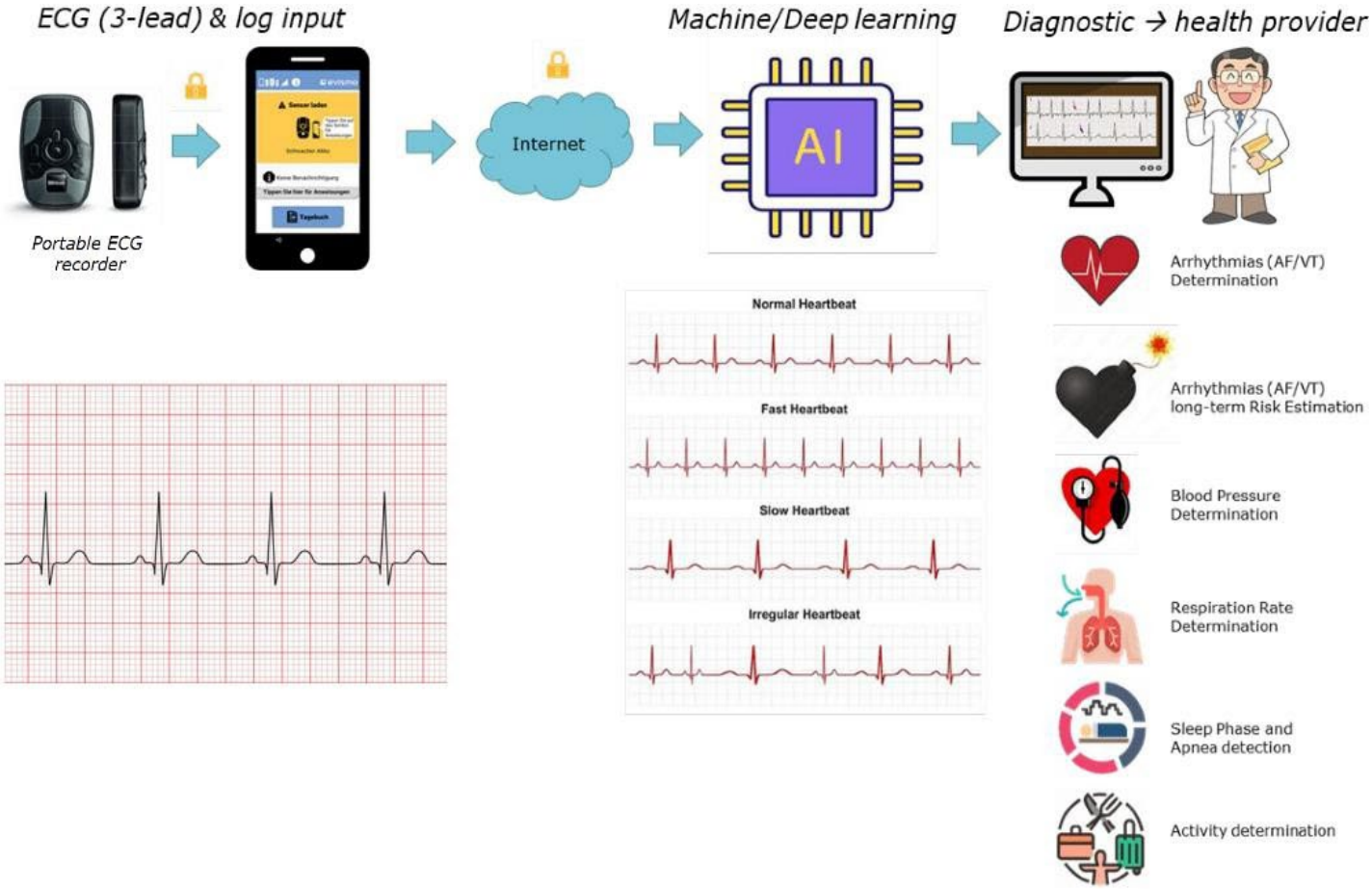


Figure 1 – Summary of the project

P16

EARLY EXPERIENCE WITH THE SUBSTERNAL IMPLANTABLE CARDIOVERTER DEFIBRILLATOR

Julia Hermes-Laufer[1], Nadine Molitor[1], Michal Gruszczynski[2], Alexander Breitenstein[1]

[1]Department of Cardiology, University Hospital Zurich, Zürich, Switzerland, [2]Department of Cardiac Surgery, Triemli Hospital, Zürich, Switzerland

Introduction: A novel implantable cardioverter defibrillator (ICD) with the lead being implanted substernally has been approved recently. The aim of this study is to summarize periprocedural characteristics including complication rate of patients undergoing implantation of a substernal, extravascular ICD (EV-ICD).

Material and methods: Prospective single center analysis of the first 6 patients who underwent implantation of substernal ICD. Procedural efficacy and safety were analyzed.

Results: 10 patients with a mean age of 62.4 (range 29-73) were included in this analysis. Underlying heart disease was ischemic or dilated cardiomyopathy in 6 patients, while one other patient suffered from cardiac sarcoidosis, one patient from valvular heart disease and two patients from hypertrophic cardiomyopathy. Indication for implantation was primary prevention in 6 patients and secondary in 4. One patient had a previous transvenous ICD implantation with sensing issues after 4 years and the patient with valvular heart disease had prior mitral valve repair via right sided thoracotomy. All patients got the intervention under general anesthesia. The patient with a previous transvenous ICD underwent lead extraction during the same procedure. Mean procedure time was 49±17 minutes. The RV sensing was 3.1±1.7 mV in vector configuration Ring1-Ring2 and the capture threshold 5.4±2.2 V at 2 ms. There were no acute periprocedural complications and chest X-ray the day after confirmed stable lead and device position. RV-Sensing remained stable in all patients the day after as well as after 14 days. All patients were discharged the day after.

Conclusion: Implantation of the substernal ICD (EV-ICD) is a fast and safe intervention even in the early experience, and offers a novel treatment strategy for patients in need of an ICD.

Conflict of interest: No

POSTER WALK – POSTER WALK: CAD & AORTA

P17

NEW-ONSET ATRIAL FIBRILLATION IN PATIENTS WITH ST-ELEVATION MYOCARDIAL INFARCTION

Judith Minder*[1 2], Diego Mannhart[1 2], Josip Katic[1 2], Sven Knecht[1 2], Philipp Krisai[1 2], Thomas Nestelberger[1 2], Gregor Leibundgut[1 2], Christian Sticherling[1 2], Michael Kühne[1 2], Patrick Badertscher[1 2]

[1]CRIB, Department of Cardiology, Basel, Switzerland, [2]Universitätsspital Basel, Department of Cardiology, Basel, Switzerland

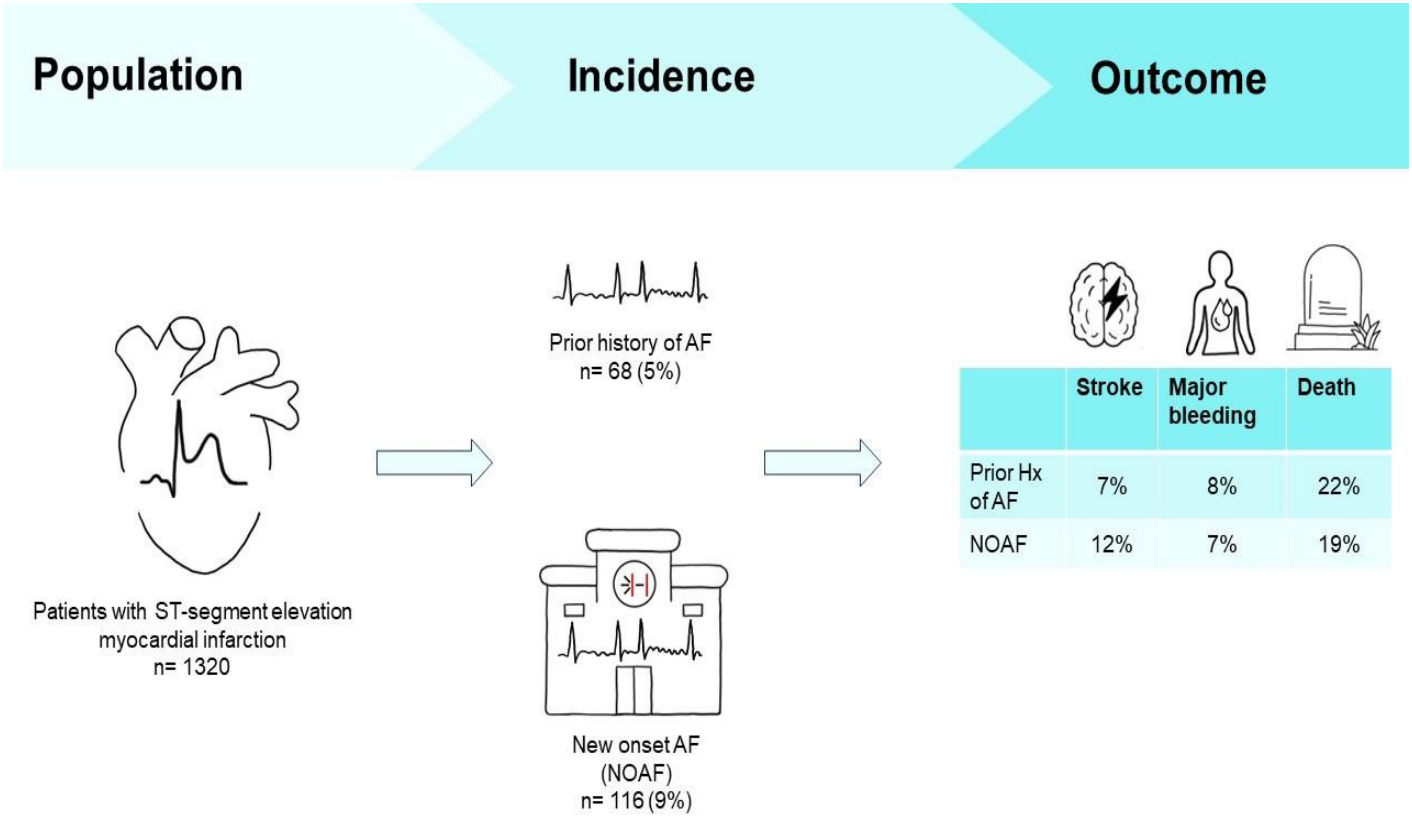
Introduction: New-onset atrial fibrillation (NOAF) complicating ST-elevation myocardial infarction (STEMI) remains clinically challenging. Little is known regarding the long-term clinical impact of NOAF in the acute STEMI phase compared to a prior diagnosis of AF before the onset of STEMI.

Material and methods: We retrospectively reviewed consecutive patients undergoing percutaneous coronary intervention (PCI) for STEMI between May 2015 and September 2023. Patients were stratified based on NOAF diagnosis during the index- hospitalization vs. preexisting AF prior to the onset of STEMI. Long-term follow-up was obtained for stroke, major bleeding, or death.

Results: We analyzed 1320 consecutive patients undergoing PCI for STEMI. NOAF was detected in 116 patients (9%) and 68 patients (5%) had prior AF. Patients with NOAF and prior AF had similar baseline characteristics. NOAF patients were 72% males, with a mean age of 70 ± 12 years. All patients were treated with enoxaparin, but only 52% of patients with NOAF and 66% with prior AF were discharged with triple therapy. During a median follow-up of 696 days, the rates of stroke were 12% in patients with NOAF compared to 7% (p = 0.21) in patients with prior AF. Major bleeding occurred in 7% vs. 8%, p = 0.99, and death in 19% vs. 22%, p = 0.7 of patients with NOAF vs. prior AF.

Conclusion: NOAF was detected in almost 1 out of 10 STEMI patients and was associated with a similar rate of major bleeding and death as in patients with prior AF. The risk of NOAF for stroke might be higher than that of prior AF. These finding warrant confirmation in larger data sets

Conflict of interest: No



New-onset atrial fibrillation in patients with ST-elevation myocardial infarction. *AF: atrial fibrillation, Hx: history, NOAF: new-onset atrial fibrillation*

P18

CLINICAL AND ANALYTICAL PERFORMANCE OF A NOVEL POINT-OF-CARE HIGH- SENSITIVITY CARDIAC TROPONIN I ASSAY

Luca Koechlin*[1] on behalf of Cardiovascular Research Institute Basel (CRIB), Jasper Boeddinghaus[1] on behalf of Cardiovascular Research Institute Basel (CRIB), Pedro Lopez Ayala[1] on behalf of Cardiovascular Research Institute Basel (CRIB), Thomas Nestelberger[1] on behalf of Cardiovascular Research Institute Basel (CRIB), Gro Leite Størvold[2] on behalf of SpinChip Diagnostics, Marianne Nordlund Broughton[2] on behalf of SpinChip Diagnostics, Torbjørn Omland[2] on behalf of K. G. Jebsen Center for Cardiac Biomarkers, Institute of Clinical Medicine, University of Oslo, Oslo, Norway, Magnus N. Lyngbakken[2] on behalf of K. G. Jebsen Center for Cardiac Biomarkers, Institute of Clinical Medicine, University of Oslo, Oslo, Norway, Helge Røsjø[2] on behalf of K. G. Jebsen Center for Cardiac Biomarkers, Institute of Clinical Medicine, University of Oslo, Oslo, Norway, Christian Müller[1] on behalf of Cardiovascular Research Institute Basel (CRIB)

[1]Universitätsspital Basel, Basel, Switzerland, [2]Oslo, Oslo, Norway

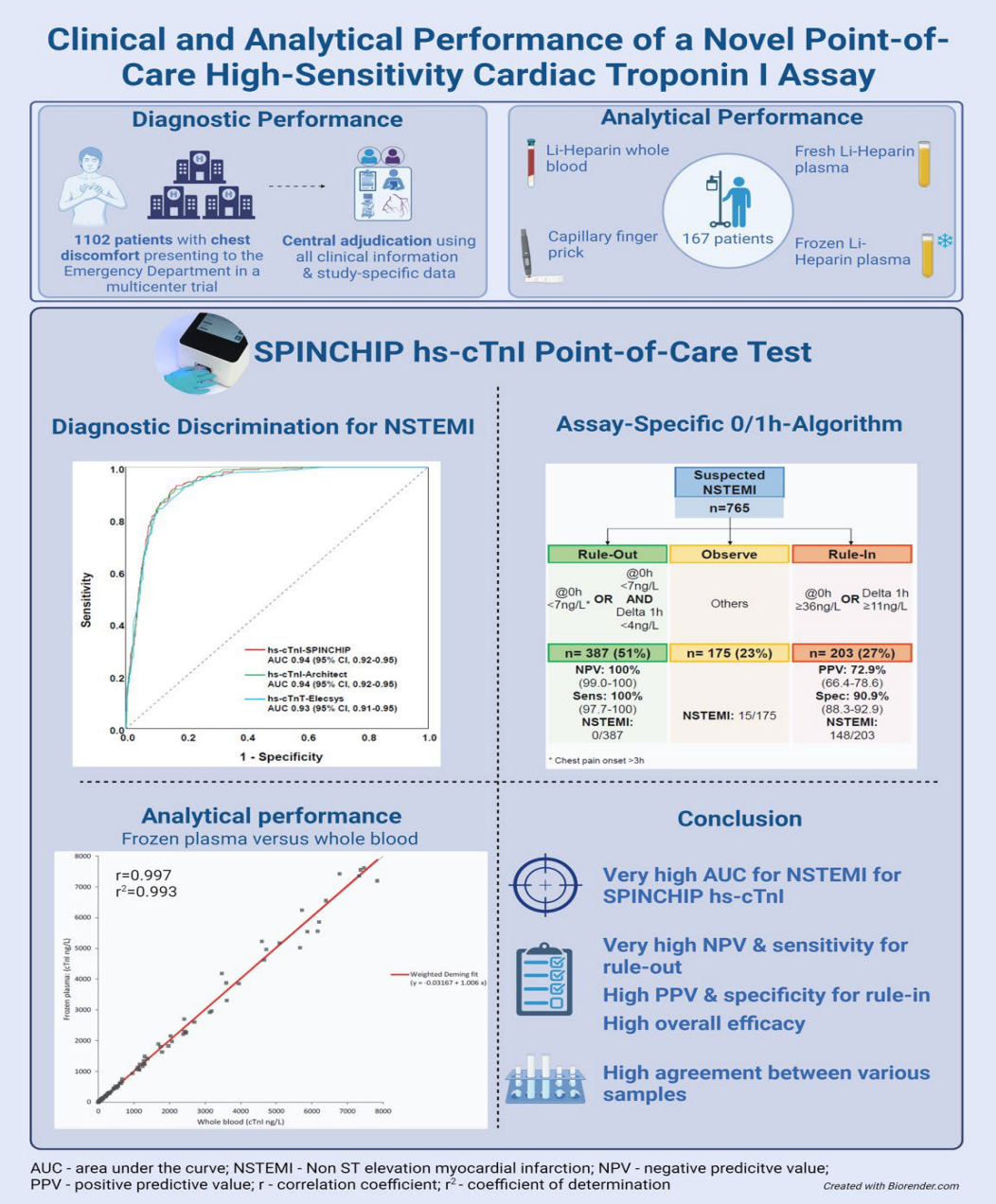
Introduction: Point-of-Care (POC) high-sensitivity cardiac troponin (hs-cTn) assays may further accelerate the diagnosis of myocardial infarction (MI). We aimed to assess the clinical and analytical performance of the novel hs-cTnI-SPINCHIP® POC test.

Material and methods: Adult patients presenting with acute chest discomfort to the emergency department were enrolled in an international, diagnostic, multicenter study. Final diagnosis was centrally adjudicated by two independent cardiologists using all clinical information. We compared the discriminatory performance of hs-cTnI-SPINCHIP with current established central laboratory assays and derived an assay-specific hs-cTnI-SPINCHIP 0/1h-algorithm. Secondary analyses included sample type comparisons (whole blood, fresh/frozen plasma, and capillary finger prick) and precision.

Results: MI was the adjudicated final diagnosis in 214 of 1,102 patients (19%). Area under the receiver operating characteristics curve (AUC) was 0.94 (95% Confidence Interval [CI] 0.92-0.95) for hs-cTnI- SPINCHIP versus 0.94 (95%CI 0.92-0.95) for hs-cTnI-Architect (p = 0.907) and 0.93 (95%CI 0.91-0.95) for hs-cTnT-Elecsys (p = 0.305). A cutoff <7ng/L at presentation (if chest pain onset >3h) or <7ng/L together with a 0/1h-delta of <4ng/L ruled-out 51% with a sensitivity and negative predictive value (NPV) of 100% (95%CI 97.7-100) and 100% (95%CI 99.0-100), respectively. A hs-cTnI-SPINCHIP concentration ≥36ng/L or a 0/1h-delta ≥11ng/L ruled-in 27% with a specificity and positive predictive value (PPV) of 90.9% (95%CI 88.3-92.9) and 72.9% (95%CI, 66.4-78.6), respectively. Bootstrap internal validation confirmed excellent diagnostic performance of the derived cutoffs. High agreement was observed between different sample types.

Conclusion: The SPINCHIP hs-cTnI POC test has very high diagnostic accuracy. Its assay-specific 0/1h-algorithm achieved very high sensitivity/NPV and specificity/PPV for rule-out/in MI.

Conflict of interest: Yes – Research grant: SHF, University of Basel, Swiss Academy of Medical Sciences, Gottfried and Julia Bangerter-Rhyner Foundation, FAG. and speaker honoraria:Roche Diagnostics, Abbott, Siemens.



P19

SEX-SPECIFIC OUTCOMES FOLLOWING PERCUTANEOUS CORONARY INTERVENTIONS WITH DRUG-COATED BALLOONS – INSIGHTS FROM THE SIROOP REGISTRY

Matthias Bossard*[1], Adrian Attinger-Toller[1], Luca Federico Vercelli[1], Giacomo Maria Cioffi[1], Spahr Yanick[1], Federico Moccetti[1], Mathias Wolfrum[1], Stefan Toggweiler[1], Mehdi Madanchi[1], Florim Cuculi[1]

[1]Cardiology Division, Heart Center, Luzerner Kantonsspital, Luzern, Switzerland

Introduction: Following percutaneous coronary interventions (PCI) with drug eluting stents (DES), some sex- specific differences in terms of outcomes have been seen (e.g. increased risk of early myocardial infarction, but lower risk for repeat revascularization among females). If similar outcomes can be seen in patients undergoing PCI contemporary drug coated balloons (DCB) remains unclear. Therefore, this study aimed to assess the sex-specific outcomes from a large real-world PCI cohort treated with DCBs.

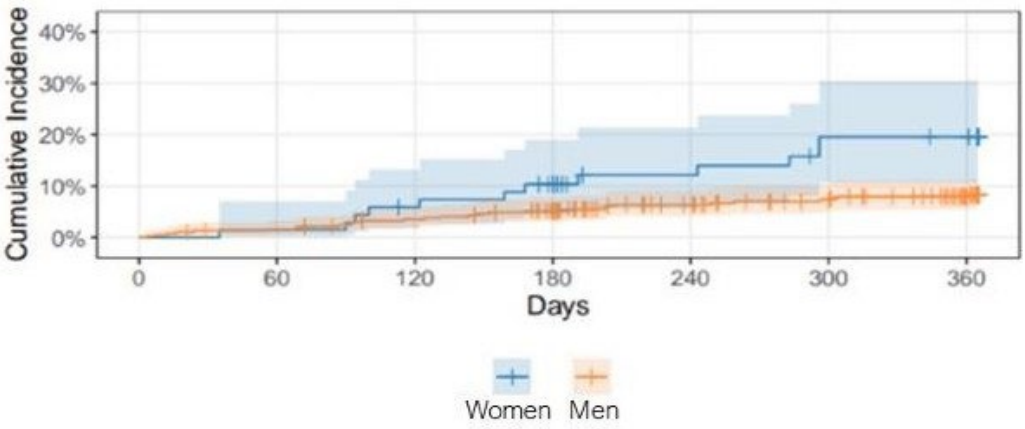
Material and methods: We analyzed consecutive patients from the ongoing, prospective SIROOP registry (NCT:04988685). Outcomes of interest included among others, major adverse cardiac major adverse cardiac and cerebrovascular events (MACCE), target lesion revascularization (TLR), target vessel myocardial infarction (TV-MI) and cardiovascular death (CV-death).

Results: Overall, 550 patients and lesions were included, 93 (17%) were women and 456 (83%) men. In this cohort, approximately one third (37%) of patients presented with an acute coronary syndrome (ACS), and females were significantly older than males (69±12years versus 66±10years, respectively). The cohort's mean SYNTAX score was 18±11, we treated 131 (24%) patients with ISR lesions, 43 (8%) with chronic total occlusions (CTOs) and 302 (55%) with moderately to severely calcified lesions. The rate of complications (e.g coronary dissection, perforations) was similar among females and males. After 12 months, women showed a significantly higher rate of MACCE compared to men (20% versus 8.3%, p = 0.009). This was mainly driven by the higher target lesion failure (TLF) rate seen among females versus males, see Figure.

Conclusion: In a real-world CAD cohort, we found that females show worse outcomes following PCI with contemporary DCBs. In specific, females seem to have a higher risk for TLF with DCBs. These findings warrant further investigation in dedicated prospective studies. (Comment: Here, we report preliminary results from our ongoing analysis. If accepted for the meeting, we aim to present a dataset including >800 patients.)

Conflict of interest: Yes – MB has received consulting and speaker fees from Abbott Vascular, Abiomed, Amarin, Amgen, Astra Zeneca, Bayer, Boehringer Ingelheim, Daichii, MedAlliance, Mundipharma, Novartis, OmPharma and SIS Medical.

Figure The cumulative incidence of target lesion failure (TLF) following PCI with drug coated balloons (DCB) by sex.*



Women							
At Risk	68	67	63	58	48	43	42
Events	0	1	4	7	8	12	12
Men							
At Risk	370	362	352	339	304	290	269
Events	0	6	13	19	23	26	28

** This analysis includes a preliminary dataset from the ongoing SIROOP registry (est. in 2021; NCT04988685).*

P20

BENEFITS OF THE ASCYRUS MEDICAL DISSECTION STENT IN ACUTE TYPE A AORTIC DISSECTION

Sebastien Colombier*[1], Daniel Danzer[2], Sandra Bommeli[1], Alexandre Pelouze[1], Dominique Delay[1]

[1]Hôpital du Valais, Service de Chirurgie Cardiaque, Sion, Switzerland, [2]Hôpital du Valais, Service de Chirurgie Vasculaire, Sion, Switzerland

Introduction: Ascyrus Medical Dissection Stent (AMDS) is an uncovered aortic graft dedicated to the surgical treatment of acute Stanford type A aortic dissection. By direct antegrade implantation in the aortic arch during hypothermic circulatory arrest and selective cerebral perfusion, it promotes true lumen expansion and enhance positive aortic remodeling. The aim of this study is to investigate clinical and radiological results in patients benefiting of AMDS implantation for type A aortic dissection.

Material and methods: We selected retrospectively all patients admitted in hospital for acute Stanford A DeBakey I aortic dissection who benefited from a surgical ascending and hemi-arch aortic replacement with AMDS implantation, between October 2020 to December 2023. Clinical data, pre- and post-operative angioCT were reviewed.

Results: Twelve patients (median age 57 years [42-76], 75% male) benefited from an open ascending replacement with AMDS implantation. Pre-operative clinical and radiological malperfusions were observed respectively in 25% and 33% of patients. Operative AMDS implantation was achieved with success for all patients without device related injury. All patients discharged alive from the hospital and angioCT control revealed a positive arch remodeling in all of them. Aortic arch False Lumen Obliteration (FLO) was observed in 11 (92%) patients and 59% of patients had a concomitant descending thoracic FLO. One patient with pre- operative cerebral malperfusion developed a transient stroke after discharge (day+17) due to distal common left carotid occlusion. A stent was implanted with success and patient remains asymptomatic. Three patients reached 3 years of follow-up and thoracic aortic diameters (arch, descending aorta and true/false lumens ratio) remained stable.

Conclusion: The use of AMDS in ascending aorta replacement for Stanford A aortic dissection appears safe and offers excellent immediate and mid-term results. In addition to its simple technical implantation, this uncovered nitinol stent seems to offer an additional arch and descending aorta treatment at mid-term follow-up..

Conflict of interest: No

P21

PROENKEPHALIN IMPROVES RISK PREDICTION IN ACUTE CORONARY SYNDROMES: DERIVATION AND EXTERNAL VALIDATION OF THE KID-ACS RISK SCORE

Florian A. Wenzl*[1], Peizhi Wang[1], Donald J.L. Jones[2] on behalf of Thong H. Cao, Jatinderpal K. Sandhu, Oliver Hartmann, Simon Kraler[1], Kok Weng Ow[2], Giovanni G. Camici[1] on behalf of Francesco Bruno, Alexander Akhmedov, Stefano Ministrini, Luca Liberale, Victor Schweiger, Arnold von Eckardstein, Olivier Muller, Lorenz Räber3 on behalf of Marco Roffi, Andreas Bergmann4, Leong L. Ng5, Thomas F. Lüscher1

[1]Center for Molecular Cardiology, Schlieren, Switzerland, [2]Glenfield Hospital, University of Leicester, Department of Cardiovascular Sciences, , Leicester, United Kingdom, [3]Cardiovascular Center, University Hospital Bern´, Department of Cardiology, , Bern, Switzerland, [4]SphingoTec GmbH, Hennigsdorf, Germany, [5]University Hospital Zurich, Department of Research and Education, Leicester, United Kingdom

Introduction: Circulating proenkephalin (PENK) is a stable opioid metabolite with fast response to changes in kidney function. This study examined the predictive value of PENK for acute kidney injury (AKI) and mortality in patients presenting with acute coronary syndromes (ACS).

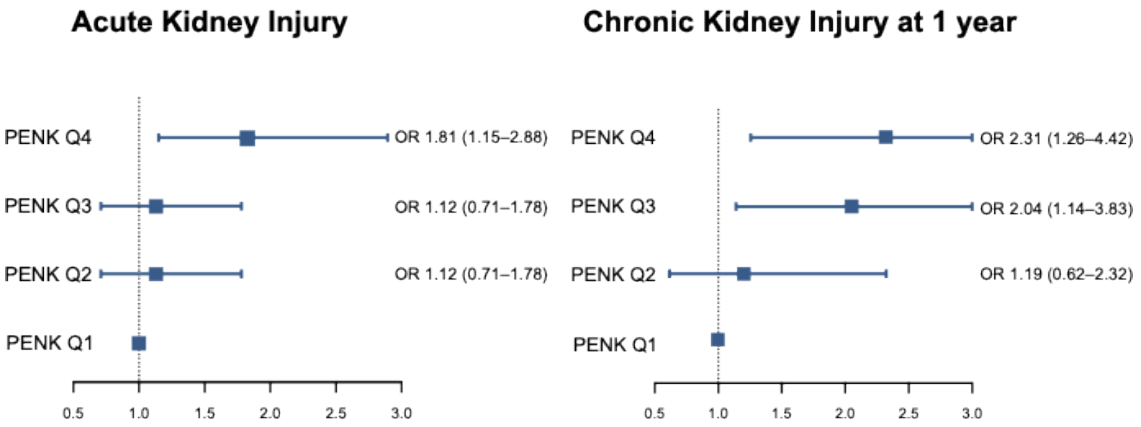
Material and methods: Plasma PENK levels were measured in a prospective multicentre ACS cohort from Switzerland (*n* = 4'787) and in a validation cohort from the UK (*n* = 1'141). A biomarker-enhanced risk score for in-hospital AKI and 30-day death (KID-ACS score) was developed and externally validated.

Results: Circulating PENK ranked among the top predictors of renal outcomes and mortality in patients with ACS. Accounting for established risk factors and risk models, circulating PENK levels at presentation were independently associated with in-hospital AKI (per log2 increase: 1.56, 95% CI, 1.14-2.12, *P* = 0.005) and 30-day mortality (per log2 increase: 2.69, 95% CI, 1.89-3.84, *P* <0.001). Moreover, PENK levels translated into higher rates of incident chronic kidney disease (CKD) at 1-year follow-up. The simple 6-item KID-ACS risk score for in-hospital AKI and 30-day mortality integrates PENK levels and showed an AUC of 0.72 (95% CI 0.70–0.76) and 0.73 (95% CI 0.69–0.76) for in-hospital AKI and AUC of 0.91 (95% CI 0.87–0.95) and 0.88 (95% CI 0.83–0.92) for 30-day mortality in the external validation cohort, respectively.

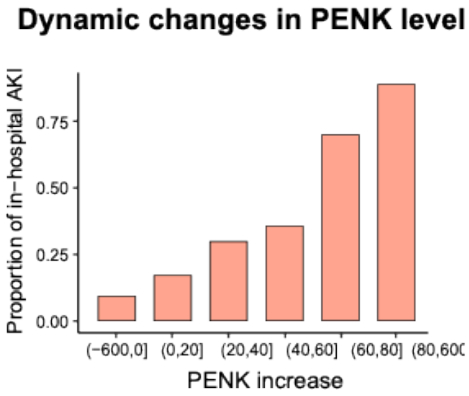
Conclusion: Early assessment of renal and mortality risk is essential for effective management of patients with ACS. The simple 6-item KID-ACS risk score accounts for circulating PENK levels and provides improved predictive performance in patients with ACS.

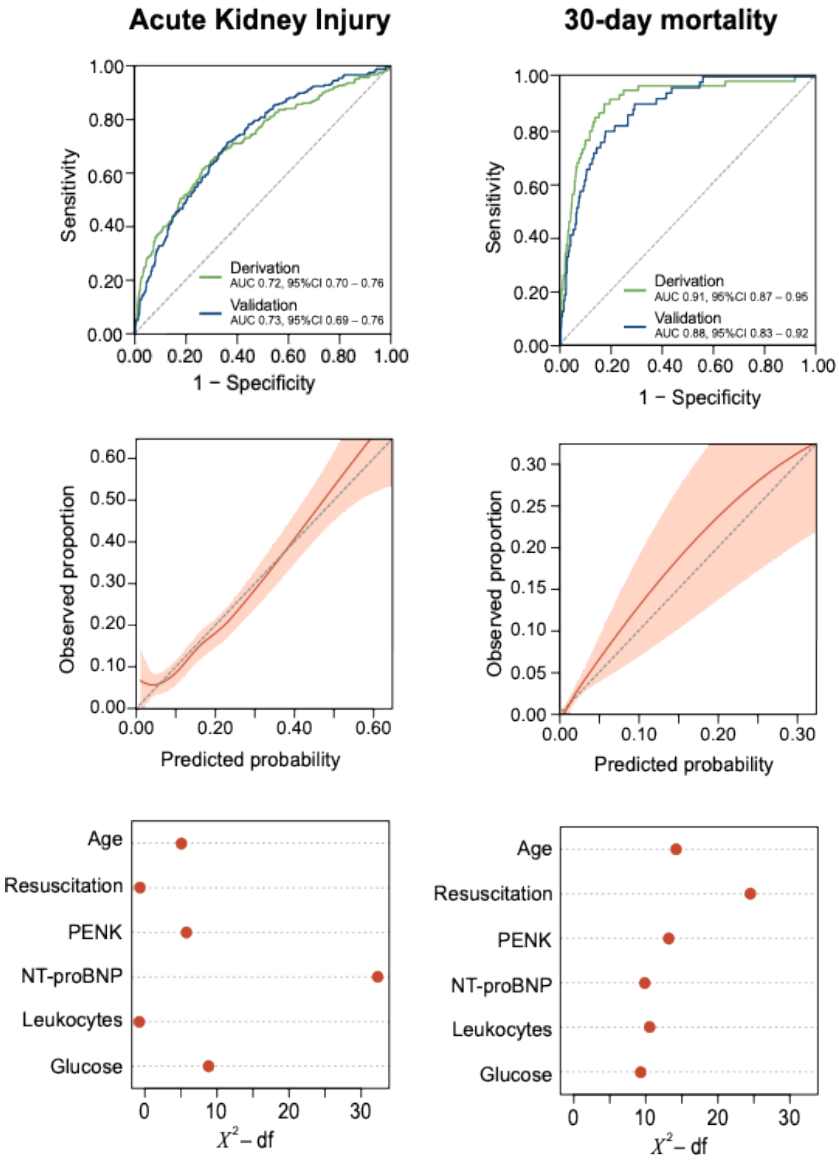
Conflict of interest: Yes – PENK measurements were performed by SphingoTec GmbH.

F.A.W. received travel support by the Sphingotec GmbH, the 4TEEN4 Pharmaceuticals GmbH, and PAM Theragnostics GmbH.



Q denotes quantile.





P22

TREATMENT OF CORONARY ARTERY DISEASE WITH SIROLIMUS- VERSUS PACLITAXEL-COATED BALLOONS

Matthias Bossard*[1], Mehdi Madanchi[1], Giacomo Maria Cioffi[1], Adrian Attinger-Toller[1], Spahr Yanick[1], Luca Federico Vercelli[1], Federico Moccetti[1], Mathias Wolfrum[1], Stefan Toggweiler[1], Florim Cuculi[1]

[1]Lucerne Cantonal Hospital, Cardiology Division, Luzern, Switzerland

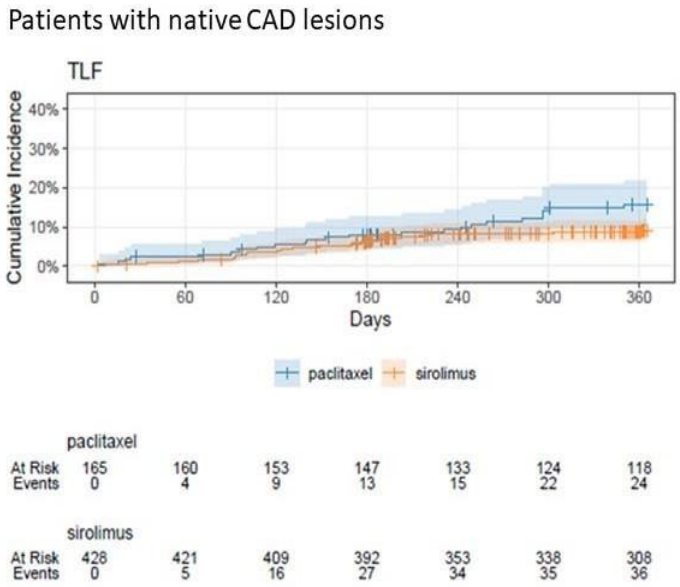
Introduction: Percutaneous coronary interventions (PCI) with paclitaxel-coated balloons (PCB) represent an established treatment for in-stent restenosis (ISR) and small coronary arteries. Lately, sirolimus-coated balloons (SCB) have been introduced. We sought to assess clinical outcomes at 12 months of an all-comer population presenting with coronary artery disease (CAD) treated with either a novel SCB or an established PCB.

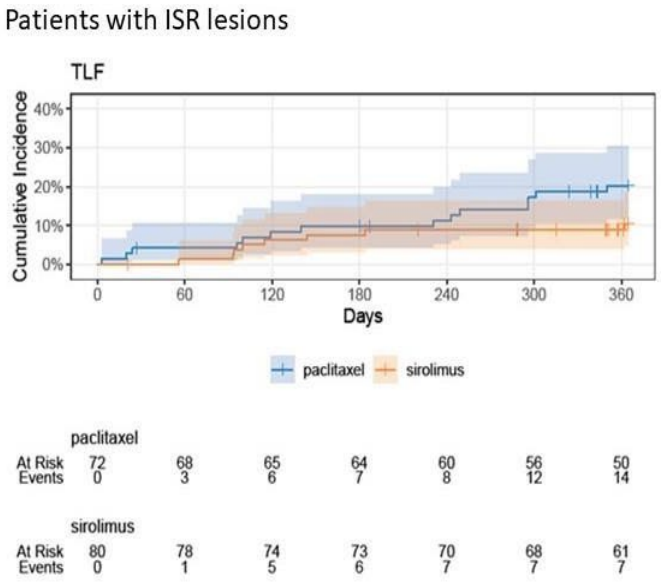
Material and methods: We analysed consecutive patients from the ongoing, prospective SIROOP registry (NCT:04988685). Outcomes of interest included, major adverse cardiac and cerebrovascular events (MACCE), target lesion revascularization (TLR), target vessel myocardial infarction (TV- MI) and cardiovascular death (CV death). Outcomes were independently adjudicated.

Results: In total 667 patients (733 lesions) were included, whereas 534 (70%) and 199 (30%) patients were treated with SCBs and PCBs, respectively. Diabetes was present in 197 (31%) patients and 275 (38%) patients presented with an acute coronary syndrome (ACS). The mean SYNTAX score was 18±10, 154 (21%) of the lesions represented ISR, 111 (15%) chronic total occlusions (CTOs) and 435 (60%) had moderate to severe calcifications. PCI with a "DCB-only" approach accounted for 513 (70%) of the procedures. At 12 months, patients treated with SCBs compared to PCBs showed a significantly lower MACCE rate (37 (9%) versus 24 (16%), respectively, p = 0.04). We also observed a lower TV-MI rate with SCBs versus PCBs (2 (0.4%) versus 5 (3.3%), respectively, p = 0.007). In ISR lesions, there was no significant difference in MACCE between SCBs and PCBs (8 (10%) versus 14 (20%), p = 0.1), see *Figure.*

Conclusion: In this real-world CAD cohort undergoing PCI with the latest generation of DCBs, treatment with SCBs, in comparison to PCBs, appeared associated with more favourable outcomes, specifically a lower MACCE rate. This finding warrants further investigation in a dedicated randomized trial.

Conflict of interest: Yes – I have received consulting and/or speaker fees from Abbott Vascular, Abiomed, Amarin, Amgen, Astra Zeneca, Bayer, Boehringer Ingelheim, Daichii, MedAlliance, Mundipharma, Novartis, OmPharma and SIS Medical.





(Abbreviations: CAD = Coronary artery disease; ISR = In-stent restenosis; TLF = Target lesion failure.)

P23

CANGRELOR IN CRITICAL CORONARY ARTERY DISEASE PATIENTS REQUIRING PERCUTANEOUS CORONARY INTERVENTIONS WITH MECHANICAL CIRCULATORY SUPPORT DEVICES: A REPORT FROM A PROSPECTIVE REGISTRY

Yanick Spahr*[1], Thomas Seiler[1], Tersalvi Gregorio[1], Mehdi Madanchi[1], Giacomo Maria Cioffi[1], Chiara Schaffner[1], Jacomet Matias[2], Adrian Attinger-Toller[2], Florim Cuculi[1], Matthias Bossard[1]

[1]Lucerne Cantonal Hospital, Luzern, Switzerland, [2]

Introduction: Optimal antiplatelet therapy (APT) of critical coronary artery disease (CAD) patients requiring percutaneous coronary interventions (PCI) with mechanical circulatory support devices (MCSD) remains challenging. APT including oral $P2Y_{12}$-inhibitors may have some limitations in this context (e.g. delayed or unpredicatable onset). It remains unclear if APT involving the intravenous $P2Y_{12}$-inhibitor cangrelor offers any benefits in critical CAD patients managed with MCSDs. Therefore, we assessed outcomes of patients undergoing PCI with MCSDs receiving APT including cangrelor compared to APT with oral $P2Y_{12}$-inhibitors only.

Material and methods: From an ongoing, prospective Swiss registry, consecutive patients undergoing PCI with MCSDs – Impella or ECMO – were analyzed. We compared outcomes according to the APT regimens. Outcomes of interest included among others periinterventional complications, bleedings, ischemic events and deaths.

Results: Totally 231 patients were analysed, mean age was 67.5±11.8years, 55(23.8%) had a cardiac arrest and 139(60.2%) had STEMI presentation. The two groups showed similar demographics and procedural characteristics. APT including cangrelor was applied in 47patients and APT with oral $P2Y_{12}$-Inhibitors only was ordered in 184 patients. Overall, 43.4% of all patients had an adverse outcome, and 20.3% died during follow-up. There were no differences between the patients receiving APT including cangrelor versus oral $P2Y_{12}$- Inhibitors only, see *Table*. There was also no difference in ischemic events (4.3% versus 2.7%) and bleeding events (21.3% versus 23.3%) with APT with cangrelor compared to APT with oral $P2Y_{12}$-Inhibitors only.

Conclusion: In a real-world cohort of critical CAD patients undergoing PCI with MCSDs, we found that applying APT regimens involving cangrelor led to similar rates of bleeding and ischemic events as APT regimens with oral $P2Y_{12}$-Inhibitors only. Albeit the observational character of this study does not permit any firm inferences, these results may underscore that a practice involving APT regimens relying only on oral administration of P2Y12-inhibitors in critical PCI patients requiring MCSDs is justifiable.

Conflict of interest: No

Table. *Procedure-related and other major adverse outcomes in critical CAD patients undergoing PCI with MCSDs receiving antiplatelet therapy with cangrelor compared to oral P2Y12 inhibitors only*

	Overall (p=231)	Cangrelor group (n=47)	Control group (n=184)	*p-value*
Procedure-related and bleeding complications				
Major bleeding BARC 3-5 (%)	52 (22.9)	10 (21.3)	42 (23.3)	*0.917*
Device-related major bleeding (%)	40 (17.6)	7 (14.9)	33 (18.3)	*0.737*
Device-related minor bleeding (%)	34 (15.0)	6 (12.8)	28 (15.6)	*0.804*
Vascular complications (%)	31 (13.6)	4 (8.5)	27 (14.9)	*0.367*
Death	5 (2.2)	1 (2.1)	4 (2.2)	*1.000*
Other major adverse outcomes				
Non cardiac death (%)	11 (4.8)	1 (2.1)	10 (5.4)	*0.571*
Cardiac death (%)	47 (20.3)	8 (17.0)	39 (21.2)	*0.666*
Myocardial infarction (%)	7 (3.0)	2 (4.3)	5 (2.7)	*0.942*
Cerebrovascular events (%)	9 (3.9)	2 (4.3)	7 (3.8)	*1.000*

Abbreviations: CAD = coronary artery disease; MCSD = mechanical circulatory support devices; PCI = percutaneous coronary intervention.

P24

FREE-BREATHING RESPIRATORY-NAVIGATOR-GATED 2D RADIAL MR FINGERPRINTING OF THE TRANSPLANTED HEART AT 3T

Pauline Calarnou*[1], Augustin Ogier[1], Tamila Abdurashidova[2], Jean-Baptiste Ledoux[1 3], Jérôme Yerly[1 3], Roger Hullin[2], Ruud van Heeswijk[1]

[1]Lausanne University Hospital (CHUV) , Radiology, Lausanne, Switzerland, [2]Lausanne University Hospital (CHUV) , Cardiology, Lausanne, Switzerland, [3]CIBM Center for BioMedical Imaging, Lausanne, Switzerland

Introduction: Cardiac allograft vasculopathy (CAV) is a leading cause of late post-transplant mortality for heart transplantation patients. Previous studies explored whether myocardial interstitial fibrosis, quantified with cardiac MR, may serve as a biomarker for early-stage CAV. In this study, we aimed to validate the use of a free-breathing navigator-gated cardiac magnetic resonance fingerprinting (cMRF) technique called PARMA (PARametric Mapping) for calculating native and post-contrast parametric maps at 3T. T1 and T2 relaxation times were compared to the to the reference techniques in N = 10 healthy volunteers and in N = 9 heart transplant recipients.

Material and methods: PARMA (Figure 1) and clinical routine (MOLLI and T2-prepared bSSFP) maps were acquired at a 3T clinical scanner (Magnetom Prisma, Siemens Healthcare) in N = 10 healthy volunteers in N = 9 heart transplant recipients (58±9y, 3F, time since transplant = 8±5y) pre- and post-contrast-agent injection (0.05 mmol/kg Gadovist, Bayer). extracellular volume fraction (ECV) maps were calculated based on the registered T1 maps.

Results: In all transplant recipients and healthy volunteers, high-quality maps were obtained (Figure 2). None of the transplant recipients had allograft rejection, and only two had CAV, which precluded statistical separation into subgroups. Both the native PARMA T1 and T2 values were similar in the two groups but varied less in the healthy volunteers (1311±44ms and 46.9±2.9ms) than in the transplant recipients (1246±129ms and 45.8±6.8ms). ECV values were in line with reported values (34.5±6.1%).

Conclusion: We preliminarily demonstrated the feasibility of respiratory-navigator-gated cMRF in heart transplant patient. PARMA maps had high accuracy in the phantom and were successfully acquired with high precision in all participants and without the need of breath holding. The result in the transplanted hearts needs to be further explored in a larger cohort, including those with confirmed CAV.

Conflict of interest: No

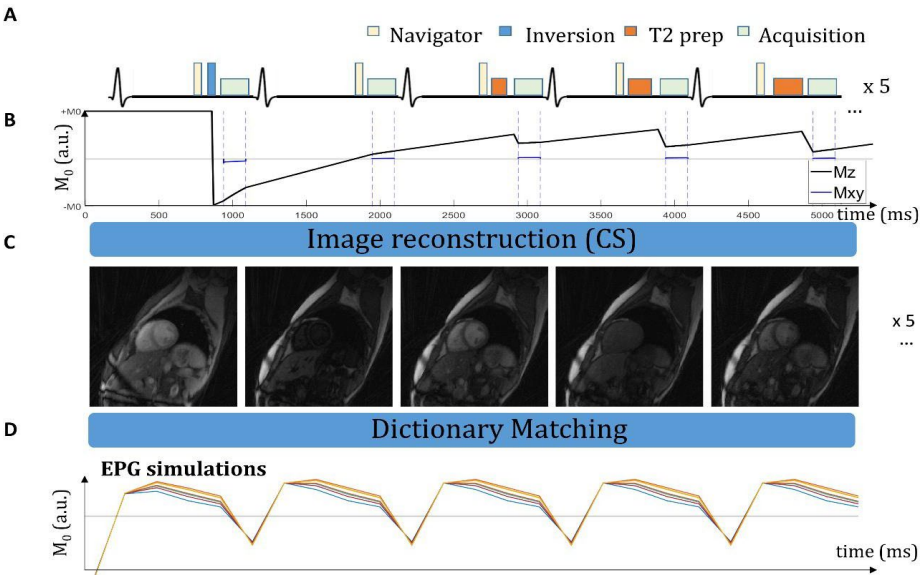


Figure 1 : Pulse sequence diagram

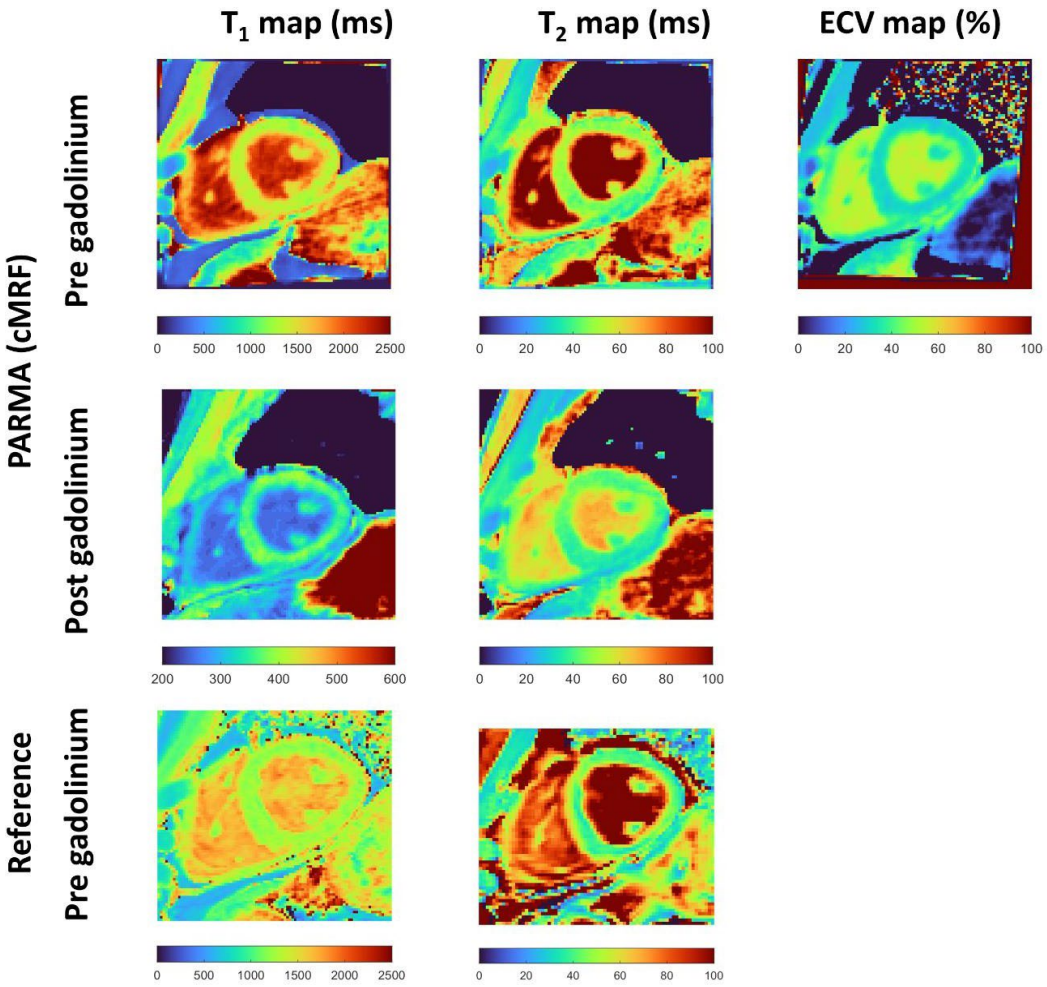


Figure 2: PARMA T1 and T2 maps, and ECV

P25

MICROCIRCULATORY RESISTANCE AFTER PRIMARY PERCUTANEOUS CORONARY INTERVENTION PREDICTS RESIDUAL MYOCARDIAL DAMAGE: A POST HOC ANALYSIS FROM THE CLEVER-ACS TRIAL

Alessandro Candreva*[1], Alexander Gotschy[1], Julia Stehli[1], Roland Klingenberg[2], Dierik Heg[3], Robert Manka[1], Thomas Lüscher[4], Christian Matter[1], Frank Ruschitzka[1], Barbara Staehli[1]

[1]University Hospital of Zürich, Zürich, Switzerland, [2]Kerckhoff-Klinik, Bad Nauheim, Germany, [3]University of Bern, Bern, Switzerland, [4]Royal Brompton & Harefield Nhs Foundation Trust, United Kingdom

Introduction: Coronary microvascular dysfunction has been associated with adverse cardiovascular events following ST- segment elevation myocardial infarction (STEMI). This study evaluates the role of the angiography-derived index of microcirculatory resistance (angio-IMR) in predicting myocardial damage in patients with STEMI undergoing primary percutaneous coronary intervention (PCI).

Material and methods: In this post hoc analysis of the Controlled Level Everolimus in Acute Coronary Syndromes (CLEVER-ACS) trial, the associations between post-PCI angio-IMR of infarct-related coronary arteries (IRAs) and infarct size, microvascular obstruction (MVO), and left ventricle ejection fraction (LVEF) at 30 days as assessed with cardiac magnetic resonance (CMR) imaging were investigated. High post-PCI angio-IMR value was defined as >40 U. In non-IRAs angio-IMR was measured before IRA-PCI.

Results: A total of 52 IRAs and 94 non-IRAs of 52 patients were analysed. Post-PCI Angio-IMR was 41.5 (IQR 28.5–55.7) U in IRAs and pre-PCI Angio-IMR was 43.7 (31.7–54.0) U in non-IRAs (p = 0.70). Patients with high post-PCI angio-IMR (52%) exhibited a larger myocardial infarct size (36.0 [23.0–52.5] g vs. 14.5 [6.50–26.5] g, p <0.001) and a lower LVEF (46.5 [39.5–49.5]% vs. 55.0 [48.0–61.4]%, p = 0.002) at 30 days as compared to those with low post-PCI angio-IMR values. Post-PCI angio-IMR correlated with myocardial infarct size (r = 0.45, p = 0.001) and extent of MVO (r = 0.40, p = 0.004) at 30 days. Post-PCI angio-IMR predicted myocardial infarct size (AUC = 0.78 [0.65–0.92], p = 0.001) and extent of MVO (AUC = 0.74 [0.60–0.89], p = 0.009) at 30 days.

Conclusion: In patients with STEMI undergoing PCI, post-PCI angio-IMR was identified as independent predictor of myocardial infarct size and extent of MVO at 30 days. The assessment of post-PCI angio-IMR values may represent a novel tool for early risk stratification of patients with STEMI.

Conflict of interest: No

P26

NORMOTHERMIC AORTIC SURGERY AS A STANDARD OF CARE IN TYPE A AORTIC DISSECTION

Laura Rings*[1], Boulos Rasha[2], Ntinopoulos Vasileios[1], Risteski Petar[2], Rodriguez Cetina Biefer Hector[2], Dzemali Omer[2]

[1]City Hospital of Zurich – Site Triemli, Department of Cardiac Surgery, Zürich, Switzerland, [2]University Hospital Zurich, Department of Cardiac Surgery, University Hospital Zurich, Zürich, Switzerland

Introduction: Acute type A aortic dissection (AADA) remains a surgical challenge due to high risk of morbidity and mortality. Deep to moderate hypothermia is a standard for aortic surgery, such as AADA. There is a trend in aortic surgery to avoid deep hypothermia due to possible deleterious effects. Our institution has adopted normothermic surgery in AADA. In this retrospective propensity score-matched analysis, we aim to set a new standard of care for patients undergoing surgery for AADA.

Material and methods: A retrospective database analysis was performed for patients undergoing surgery for AADA from January 2007 – January 2023 at a single center. Patients undergoing surgery in normothermia (>35 °C) were matched with patients undergoing surgery in mild hypothermia (28 – 34 °C). Out of 218 patients, 20 propensity score-matched pairs were created. All patients were operated on using selective antegrade cerebral perfusion. Retrospective statistical analysis was performed regarding 30-day mortality, new neurological symptoms, and benefits in the intra and postoperative course (e.g., bypass time, need for transfusions).

Results: Our data shows very strong evidence favoring normothermia for lower extracorporeal bypass and cross-clamping times. The normothermic group had a limited trend towards lower ICU stay (p = 0,59), intubation times (p = 0.4), and postoperative delirium (p = 0.1797). There was no evidence favoring hypothermia in terms of new neurological symptoms (n = 4 vs 6 in both groups; p = 0.8), 30-day mortality (n = 3 vs. 1 patients, p = 0.6), blood transfusion (Erythrocytes and Thrombocytes) and Cell- Saver blood. A detailed breakdown of our results is in Table 1.

Conclusion: Normothermic surgery in AADA reduces operation times, extracorporeal perfusion, and aortic cross- clamping that might be beneficial for the patients. Moreover, normothermic surgery is comparable to the current hypothermic standard in AADA surgery, and does not affect early mortality.

Conflict of interest: No

	Normothermia Group	Hypothermia Group	p- value
Operation (min)	199.5 (173 – 236.3)	222 (178.8 – 260.3)	0.24
Cumulative bypass (min)	68 (59 – 79)	95 (64.8 – 143.5)	0.066
Aortic cross clamp (min)	47.5 (38.5 - 55)	66.5 (50 - 85.5)	0.013
Cerebral Perfusion (min)	11 (8.5 – 16.5)	13 (11 - 17)	0.22
Intensive Care Unit duration (d)	4.5 (3 - 8)	5 (3 – 7.5)	0.59
Intubation (h)	6 (4.8 - 8.3)	8 (5.5 – 15.5)	0.4
Blood Products Erythrocytes (n)	0 (0 – 2)	0.5 (0 – 2.5)	0.133
Blood Products Thrombocytes (n)	0 (0 – 2)	1 (0 – 4)	0.3
Cell Saver Blood (ml)	380 (526 – 1050)	320 (561 – 1759)	0.324
30 – Day Mortality (n)	1	3	0.6

POSTER WALK: HEART FAILURE

P27

UNHAPPY HEARTS WITH THE ANTIDEPRESSANT VENLAFAXINE

Bujana Batusha Sopi*[1], Keiko Yonekawa[1], Jasminka Bernheim[1], Stefano Caselli[1], Christian Schmied[1], Anna Lam[1], Helene Hammer[1], Christine Attenhofer Jost[1]

[1]HerzGefässZentrum Im Park, Zürich, Switzerland

Introduction: Venlafaxine (VEN), a serotonin-norepinephrine - dopamine reuptake inhibitor , may induce cardiotoxicity (CTOX) with heart failure (HF), arterial hypertension (HTN), arrhythmias. VEN level is dependent on kidney function and genotype.

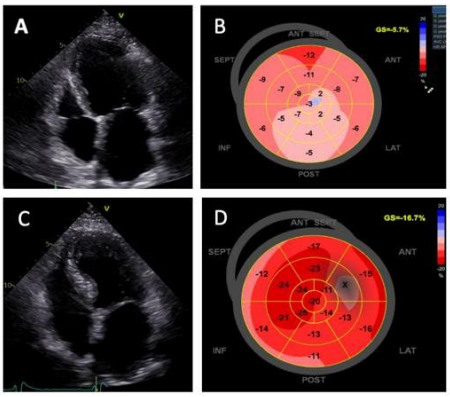
Material and methods: We searched our database for patients with suspected VEN CTOX analyzing left ventricular ejection fraction EF and global longitudinal strain GLS, ECG findings and clinical data .

Results: We identified 4 patients (Figure) with severe reversible HF (2 patients) taking higher VEN dosis or atypical cardiac hypertrophy with reversible changes of wall thickness, GLS and ECG (2 patients) taking lower VEN doses for a long time. Patient 1 (82 yo male, chronic renal failure) with depression took 150mg VEN daily. Within 4 months he developed severe HF, EF 20%. proBNP 9473ng/l. VEN was reduced : EF went up to 50% and symptoms regressed within 4 months. Patient 2 (77 yo female) with depression receiving VEN for years (375mg daily). She had HF with EF 42% and NTproBNP of 3464ng/l. VEN +O-desmethyl level was 6.83 (normal 0.36-1.44). VEN was reduced and EF went up to 50% with regression of NTproBNP. Patient 3 (52 yo female) taking 150mg VEN for depression >2 years. She developed HTN and cardiomyopathy with wallthickening and abnormal GLS. After VEN was stopped, of cardiomyopathy regressed, blood pressure normalized and GLS improved. Patient 4 (51 yo female anorectic) taking VEN for many years (150mg). She developed impressive left ventricular hypertrophy and HTN. VEN was halfed and LV hypertrophy regressed within one year with improvement in GLS and HTN.

Conclusion: VEN CTOX is more frequently than thought. Besides hypertension and HF it can cause changes of ECG, and echocardiography resembling hypertrophic cardiomyopathy. Any patient with abnormal cardiac findings taking VEN should reduced the dosage or change the antidepressant with determination of VEN serum levels .

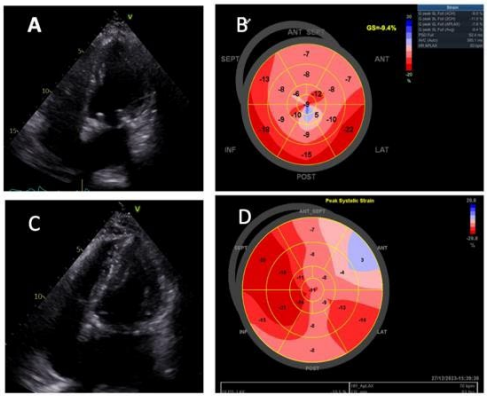
Conflict of interest: No

Patient 1



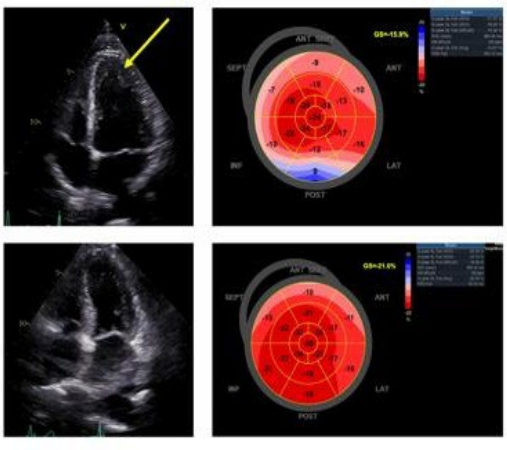
Upper pannel A/B: Heart and renal failure: LVEF 20%, LV Strain-5.7%; Kidney: eGFR 33, Venlafaxin 150mg
Lower pannel C/D: LVEF 49%, LV Strain -16.7%. Venlafaxin 75mg

Patient 2



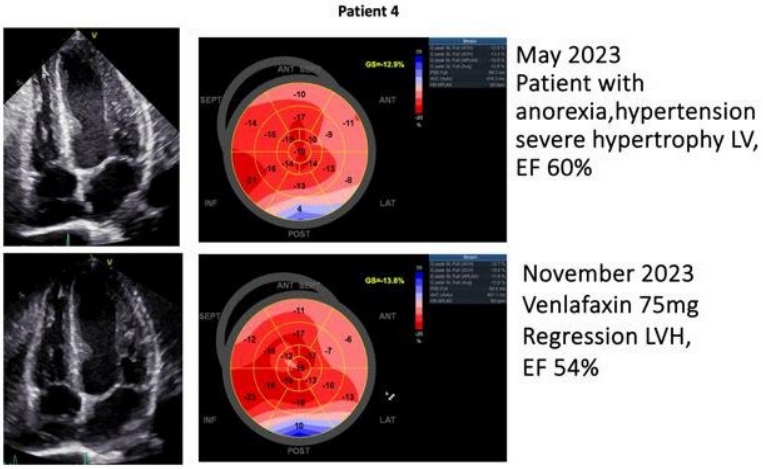
Upper pannel A/B: Dyspnea on exertion NYHA III, Venlafaxin 375mg, EF 42%, GLS -9.4%
Lower pannel C/D: Venlafaxin 150mg, EF 62%, GLS-12.4%

Patient 3



July 2021: arterial hypertension, apical wall thickening (arrow), abnormal longitudinal strain(-15.9%) with apical sparing

July 2022 regression of apical wall thickening,regression of LV size, improvement of abnormal longitudinal strain (-21%)



P28

INFORMED DECISION-MAKING TOOL FOR EMPOWERMENT OF DRUG TREATMENT ADHERENCE IN AMBULATORY PATIENTS WITH CHRONIC STABLE HEART FAILURE

Léa Iten*[1], Kevin Selby[2], Céline Delacoste[1], Sara Schukraft[1], Roger Hullin[1]

[1]CHUV , Cardiology, Lausanne, Switzerland, [2]CHUV, Center for Primary Care and Public Health, Lausanne, Switzerland

Introduction: Heart failure (HF) is a chronic disease with disabling symptoms. Evidence-based treatment slows HF progression, mitigates HF-related limitations, and improves outcomes. Adherence to HF drug prescription is often suboptimal. The aim of our study is the development and testing of a self-study informed decision-making tool intending to empower adherence.

Material and methods: The self-study informed decision-making tool and a statement-based semi-structured interview for its evaluation were developed. Using 7 statements, the interview assessed factors and facilitators encouraging willfull decision to adhere to HF drug treatment. Agreement with each statement was quantified using a score of 0 to 4 points. The tool was tested in a single-blinded prospective add-on study design in stable chronic HF patients presenting for routine ambulatory follow-up visit at a Swiss advanced quality care HF center.

Results: Each group included 40 participants with the same characteristics except a younger median age in the control group (56 vs. 61 years; p = 0.04). The overall median scores obtained from semi-structured interview were not different (22 vs 22; p = 0.65). Groups did not differ for "understanding that HF is a life-long disease" (3.5 vs. 4; p = 0.19) or agreement that "only life-long drug treatment provides benefit" (4 vs. 4; p = 0.22). Acceptance that "achievement of benefit asks for combination of HF drugs and their regular intake" was higher in the intervention group (4 vs. 3; p = 0.009; 4 vs. 3; p = 0.004; respectively). In the intervention group, understanding of HF disease improved (3 vs. 2; p = 0.03). However, there were more unanswered questions (1 vs. 3; p = 0.03). Readiness for informed decision making with respect to adherence was not different between groups (3 vs. 3.5; p = 0.28).

Conclusion: The informed decision-making tool improved understanding and acknowledgement. Readiness to empower adherence was not improved in the intervention group. Missing readiness for decision-making may base on unanswered question after self- study of the decision tool.

Conflict of interest: No

Figure 1 : Mean scores of each statement compared between the control and intervention group

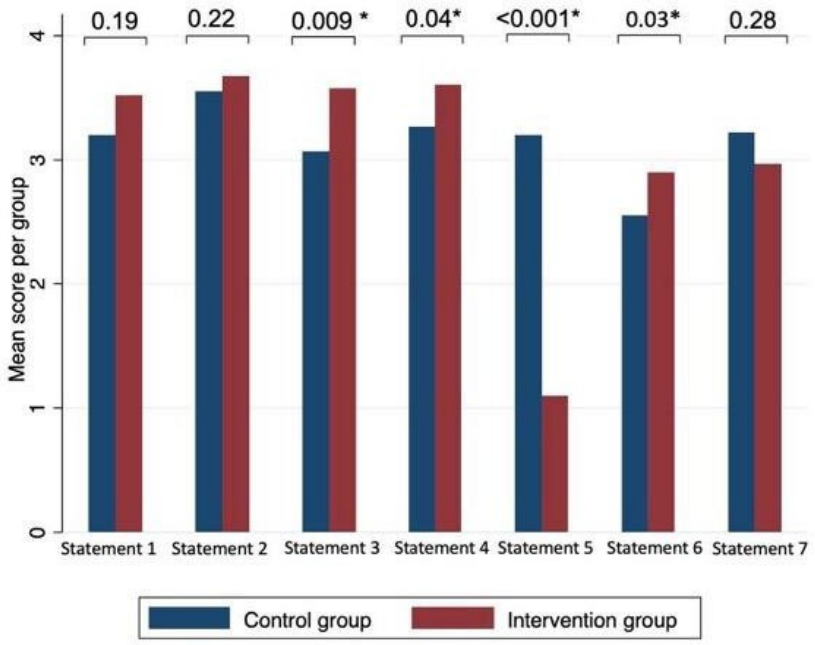


Figure 2 : Questionnaires

a) Interview protocol of the intervention group

Questionnaire

CHUV SDM-HF TRIAL

Last name, first name:	Native language: .....
Date of birth	Date and place: .....

You just saw a detailed presentation of all the medications that constitute your cardiac treatment prescribed by your doctor or your heart failure nurse, the reasons why they are prescribed to you and the side effects that may occur.

Choose the most appropriate number to your situation for each of the statements, which will allow us to assess your understanding of the disease:

0 : Not at all
1 : Rather no
2 : Rather yes
3 : Yes
4 : Totally

Questions	0	1	2	3	4	Comments
I suffer from a chronic illness that requires lifelong daily treatment.						
The medications I take are intended to act and ensure my well-being on the long term.						
The combination of the different treatments helps to slow down the disease progression.						
Daily medication is in agreement with my vision of the disease.						
Following this presentation, I have new questions that remain unanswered.						☐ Progression of the disease ☐ Treatment ☐ Lifestyle (physical activity, food)
This presentation allowed me to improve my understanding of my illness.						
This presentation helps me to take decisions to manage my disease.						

Thank you for your participation !

b) Interview protocol of the control group

Questionnaire

CHUV SDM-HF TRIAL

Last name, first name:	Native language : .....
Date of birth:	Date and place : .....

You take heart medications prescribed by your doctor or heart failure nurse every day.

Choose the most appropriate number to your situation for each of the statements, which will allow us to assess your understanding of the disease:

0 : Not at all
1 : Rather no
2 : Rather yes
3 : Yes
4 : Totally

Questions	0	1	2	3	4	Comments
I suffer from a chronic illness that requires lifelong daily treatment.						
The medications I take are intended to act on and ensure my well-being on the long term.						
The combination of the different treatments helps to slow down the disease progression.						
Daily medication is in agreement with my vision of the disease.						
I understand the different aspects of my heart disease.						☐ Reason for the occurence of the disease ☐ Natural evolution of the disease ☐ Treatment (drugs, devices, lifestyle) ☐ Red flags (weight gain, shortness of the breath, edema, dizziness)
I would like more information about my heart disease.						☐ Progression of the disease ☐ Treatment ☐ Lifestyle (physical activity, food) ☐ Others _____
With my current knowledge, I feel capable of making a decision with my doctor regarding my treatment.						☐ I would like to explore the following aspects in more detail: _____ ☐ I think it is up to my doctor to make the decision

Thank you for your participation !

P29

COEXISTENCE OF CARDIAC SARCOIDOSIS AND GENETIC CARDIOMYOPATHIES – A CONUNDRUM

Valentina Rossi[1], Matteo Palazzini[2], Alessio Gasperetti[3], Corinna Brunckhorst[1], Robert Manka[1], Felix C. Tanner[1], Argelia Medeiros-Domingo[4], Martin Grübler[5], Enrico Ammirati[2], Ardan Saguner*[1]

[1]University Hospital of Zürich, Cardiology, Zürich, Switzerland, [2]ASST Great Metropolitan Niguarda, Cardiology, Milano, Italy, [3]Johns Hopkins University, Cardiology, Baltimore, United States, [4]Swiss DNAlysis, Dübendorf, Switzerland, [5]Wiener Neustadt, Cardiology, Wiener Neustadt, Austria

Introduction: Cardiac sarcoidosis (CS) is a chronic inflammatory disease characterized histologically by the formation of non-caseating granuloma in the myocardium of unknown etiology. Genetic arrhythmogenic cardiomyopathy (ACM) is an important differential diagnosis of CS. Few data are available about the coexistence of CS in patients with pathogenic genetic variants.

Material and methods: Multicentric study including patients from four high-volume referral centres for heart failure and ACM in Switzerland, Italy, and Austria. Patients with both a biopsy-proven diagnosis of sarcoidosis with cardiac involvement also harboring a pathogenic/likely-pathogenic (P/LP) variant for cardiomyopathy- associated genes were 1:1 matched for age, gender and genetic variant with patients with genetic ACM without CS (Gen-only). Clinical and imaging data (echocardiography (TTE), cardiac magnetic resonance (CMR) and positron-emission tomography (^{18F}FDG-PET/CT) were collected.

Results: Each group included 5 patients (Gen+CS: age 48 ± 11 years, Gen-only: age 52 ± 13.7 years, n = 3 (60%) female in both groups). For each group, the following genes with P/LP variants were found: *PKP2*: n = 2(40%), *DSG2*: n = 1(20%), *DSP*: n = 1(20%), *TTN*: n = 1(20%). In patients with Gen+CS, atrio-ventricular block I° (80% vs 20%, p = 0.05) and paroxysmal atrial fibrillation (80% vs 0%, p = 0.004) were more frequent, and both median NT-proBNP levels (1346ng/l, IQR:103-4276 vs. 214ng/l, IQR:131-326, p = 0.046), and high-sensitive C-reactive protein levels were higher (3.1g/dl, IQR:1.1-24.2 vs. 0.7g/dl, IQR:0.3-0.95, p = 0.016). On imaging, Gen+CS patients were more likely to have septal involvement (60% vs 0%, p = 0.021), as highlighted by positive late-gadolinium enhancement on CMR, metabolic activity on PET, or focal wall motion anomalies on TTE.

Conclusion: CS and genetic ACM can coexist. Hence, detection of a P/LP genetic variant associated with ACM should not lead to exclusion of CS, which more frequently presents with atrio-ventricular block, septal involvement, heart failure, and metabolic activity on imaging. On the contrary, CS can be associated with genetic variants in cardiomyopathy-associated genes.

Conflict of interest: No

P30

IMPACT OF FEMALE SEX ON OUTCOMES IN A MULTIETHNIC COHORT OF ACUTE HEART FAILURE PATIENTS TREATED ACCORDING TO THE ESC GUIDELINES

Tamila Abdurashidova*[1 2], Sara Schukraft[1], Matthias Kirsch[2], Pierre Monney[1], Roger Hullin[1]

[1]Lausanne University Hospital, Cardiology, Lausanne, Switzerland, [2]Lausanne University Hospital, Cardiac Surgery, Lausanne, Switzerland

Introduction: The ESC guidelines established in Switzerland and Kyrgyzstan provide the opportunity to study the impact of sex on outcomes in a multiethnic cohort of acute heart failure (AHF) patients.

Material and methods: This observational study included 1513 consecutive patients with hospitalization for acute heart failure in tertiary hospitals in Western Europe (Lausanne, Switzerland) and Central Asia (Bishkek, Kyrgyzstan). Patients admitted for AHF due to myocardial ischemia, pulmonary embolism or severe valvulopathy were excluded. The primary endpoint was one-year all-cause mortality (ACM).

Results: 46.4% of study patients were females. Females were older (82 vs. 76 years, p <0.001) with higher prevalence of heart failure with preserved ejection fraction (53 vs. 30%, p <0.001). In females, arterial hypertension (85 vs. 77%, p <0.001) and atrial fibrillation/flutter (59 vs. 53%, p = 0.026) were more frequent; less prevalent were diabetes mellitus (30 vs. 36%, p = 0.009), dyslipidemia (45 vs. 54%, p = 0.001), and COPD (17 vs. 28%, p <0.001). Females had a lower discharge prescription rate of ACE inhibitors (38 vs. 44%, p = 0.04), MR antagonists (27 vs. 39%, p <0.001), statins (53 vs. 65%, p <0.001), or oral antidiabetic agents (12 vs. 16%, p = 0.009) while betablockers were equally applied (65 vs. 69%, p = 0.05). ICD implantation was less frequent in females (1 vs. 5%, p <0.001). Compared to males, one-year ACM in females was lower in Lausanne (28 vs. 33%, p = 0.048) while not different in Bishkek (19 vs. 23%, p = 0.3). In multivariable analysis, female sex was associated with lower mortality in AHF patients hospitalized in Lausanne (HR 0.62, 95%CI 0.49-0.78, p <0.001), but not in Bishkek (HR 0.77, 95%CI 0.48- 1.23) after adjusting for variables associated in univariate analysis.

Conclusion: Female sex was associated with lower one-year ACM in Western European but not in Central Asian patients based on the same ESC guideline-directed treatment of AHF.

Conflict of interest: No

P31

HEMI-RECTUS ABDOMINIS SLEEVE FOR HM3 DRIVELINE INFECTION: A NOVEL APPROACH TO MANAGEMENT

Anna Nowacka*[1], Ion Lucian[1], Ziyad Gunga[1], Valentina Rancatti[2], Zied Ltaief[3], Patrick Yerly[4], Roger Hullin[4], Matthias Kirsch[1]

[1]CHUV, Cardiac surgery, Lausanne, Switzerland, [2]CHUV, Anesthesiology, Lausanne, Switzerland, [3]CHUV, Intensive Care, Lausanne, Switzerland, [4]CHUV, Cardiology, Lausanne, Switzerland

Introduction: Mechanical circulatory support through ventricular assist devices (VAD) has significantly enhanced the quality of life and survival rates for individuals experiencing end-stage heart failure. However, infectious complications pose major challenges to this therapeutic approach. Among these challenges, driveline (DL) exit site infections emerge as a noteworthy cause of adverse events in VAD patients, correlating with diminished survival rates. While various infection prevention techniques have been documented, we introduce our unique method for managing DL infections.

Material and methods: During implantation, we employ the "double tunnel" technique for laying the DL. The DL emerges from the posterior aspect of the right rectus abdominis muscle, enveloping its lateral border and traversing through subcutaneous tissue towards the cutaneous exit site. Our procedural focus is on establishing a soft tissue barrier to impede intrathoracic spread. An incision is made along the DL from the cutaneous exit site, followed by meticulous removal of infected tissue and thorough wound irrigation. The velour sheath of the DL is delicately peeled off and retrieved, with careful attention to avoid any damage to the silicon component.

The right rectus abdominis muscle is longitudinally split over a 5cm length, with its lateral half distally transected and wrapped clockwise around the DL at the fascial transition site. Closure of the wound is achieved using separate stitches around a Redon suction catheter.

Results: Three patients with chronic DL infections benefited from our approach, experiencing rapid recovery post-procedure, marked by the resolution of disabling discharges necessitating daily dressings and hospital stays.

Conclusion: DL infections persist as a significant concern for VAD-supported patients, particularly affecting high-risk individuals and those undergoing destination therapy. Addressing this complication holds the potential to enhance patients' quality of life under mechanical circulatory support while simultaneously reducing healthcare costs.

Conflict of interest: No

POSTER WALK: VALVULAR HEART DISEASE

P32

PRE-INTERVENTIONAL RENAL ARTERY CALCIFICATION AND SURVIVAL AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION

Neria E. Winkler*[1], Josephine Galantay[1], Monika Hebeisen[1 2], Thierry G. Donati[1], Julia Stehli[1], Albert Markus Kasel[1], Hatem Alkadhi[3], Thi Dan Linh Nguyen-Kim[3], Felix C. Tanner[1]

[1]Department of Cardiology, University Heart Center, University Hospital Zurich and University of Zurich, Zurich, Switzerland, [2]Department of Biostatistics, Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich, Switzerland, [3]Diagnostic and Interventional Radiology, University Hospital Zurich, University of Zurich, Zurich, Switzerland

Introduction: The prognostic significance of renal artery calcification (RAC) is unknown in patients with severe aortic stenosis (AS) eligible for transcatheter aortic valve implantation (TAVI). RAC can be assessed by computed tomography (CT) performed during pre-interventional planning for TAVI. This study aimed at investigating the utility of RAC for predicting survival after TAVI.

Material and methods: In this longitudinal cohort study, RAC volume was measured by CT in 268 consecutive patients with severe AS undergoing TAVI. Association of RAC with mortality was assessed using Cox regression analysis. RAC was evaluated as a binary parameter and in a supplementary analysis as a logarithmically transformed continuous variable.

Results: Over a median follow-up time of 9.6 years, 237 (88.4%) patients died, with 174 (73.4%) deaths attributable to a cardiovascular cause. RAC was highly prevalent (N = 150 (86.2%)) among patients suffering cardiovascular death. Competing risk cumulative incidence curves revealed a higher occurrence of cardiovascular death in patients with RAC (P-value = 0.008), while this was not the case for non-cardiovascular death (P-value = 0.71) (Figure 1). RAC was independently associated with cardiovascular death (HR 1.61 [95% CI: 1.01 – 2.57]; P = 0.047) after adjustment for age, sex, cardiovascular risk factors, impaired renal function, and aortic valve calcification (Figure 2). The presence or absence of RAC rather than its volume was important in all the analyses.

Conclusion: RAC is a strong and independent predictor of cardiovascular death in patients with severe AS undergoing TAVI. Given its favorable properties for event prediction, RAC may be considered valuable for prognostic assessment of TAVI patients.

Conflict of interest: No

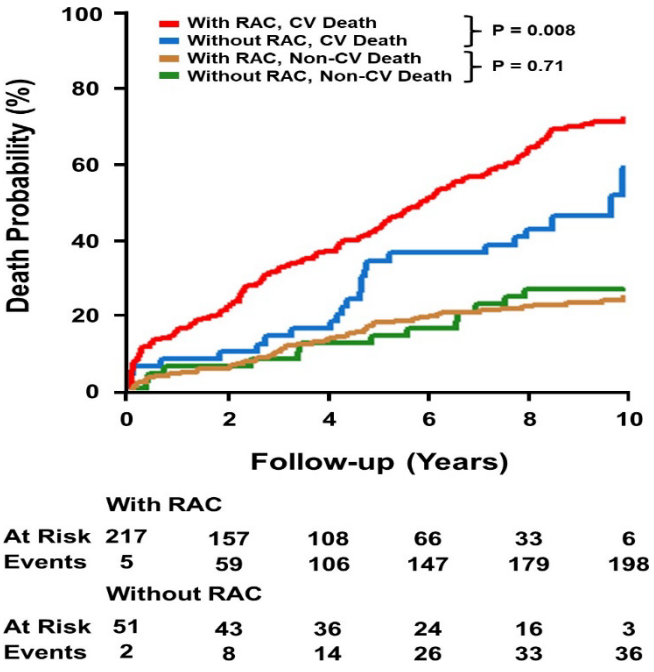


Figure 1: Cumulative Incidence Curves for Competing Risk Analysis

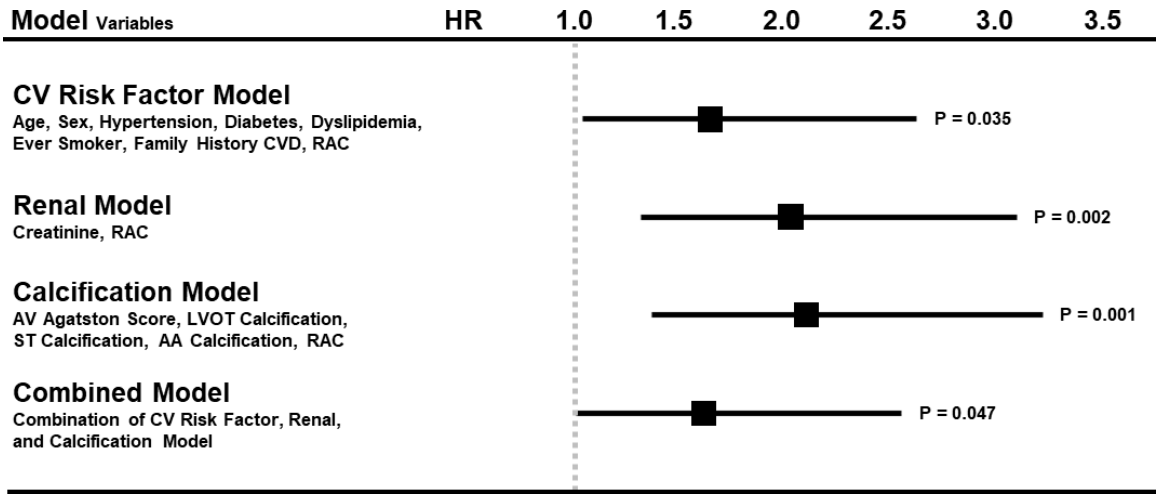


Figure 2: RAC Hazard Ratio for Cardiovascular Mortality in Cox Regression Models

P33

PERFORMANCE OF 3D VENA CONTRACTA AREA BY TEE FOR THE DIAGNOSIS OF SEVERE MITRAL REGURGITATION IN PATIENTS WITH LOCALIZED AND DIFFUSE MITRAL VALVE PROLAPSE

Söylemez Nadin*[1], Georgios Tzimas[2], Denise Auberson[2], Panagiotis Antiochos[2], Dimitri Arangalage[2], Tobias Rutz[1 2], Sarah Hugelshofer[2], Pierre Monney[1 2]

[1]UNIL – Université de Lausanne, Faculté de Biologie et Médecine, Lausanne, Switzerland, [2]Lausanne University Hospital, Cardiology, Lausanne, Switzerland

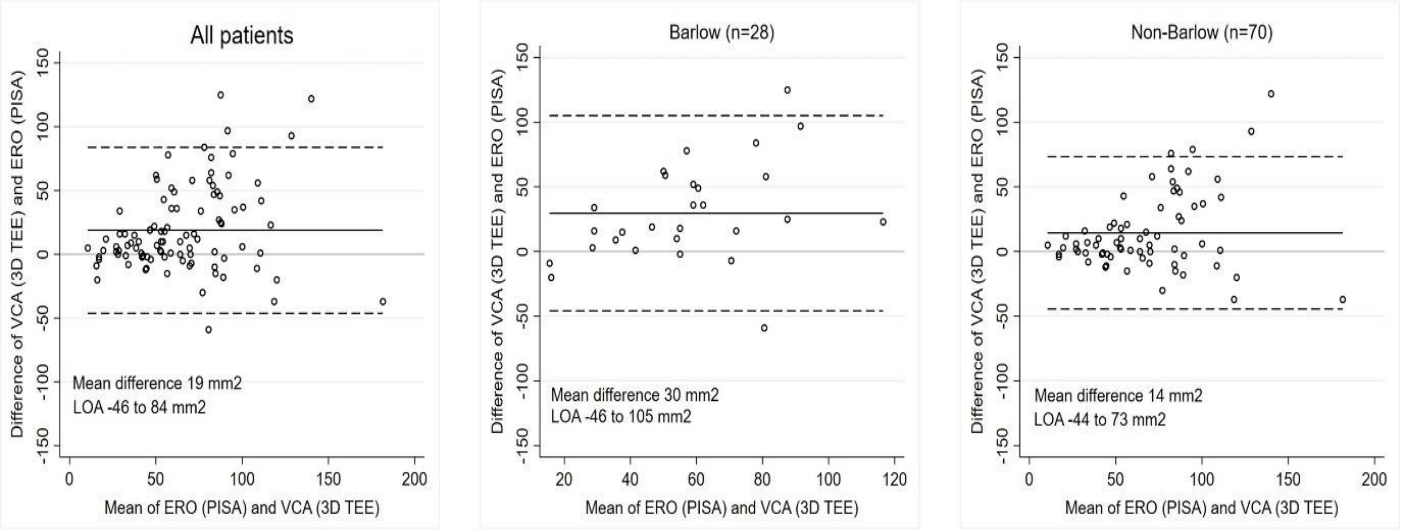
Introduction: Mitral valve prolapse (MVP) is heterogenous, ranging from a localized disease to a diffuse bi- leaflet involvement in Barlow myxoid degeneration. Mitral regurgitation (MR) may be localized or diffuse, holosystolic or end-systolic, depending on the valve morphology. We aimed to compare the diagnostic accuracy of a 3D-TEE approach with measurement of the vena contracta area (3D-VCA) in patients with localized and diffuse MVP.

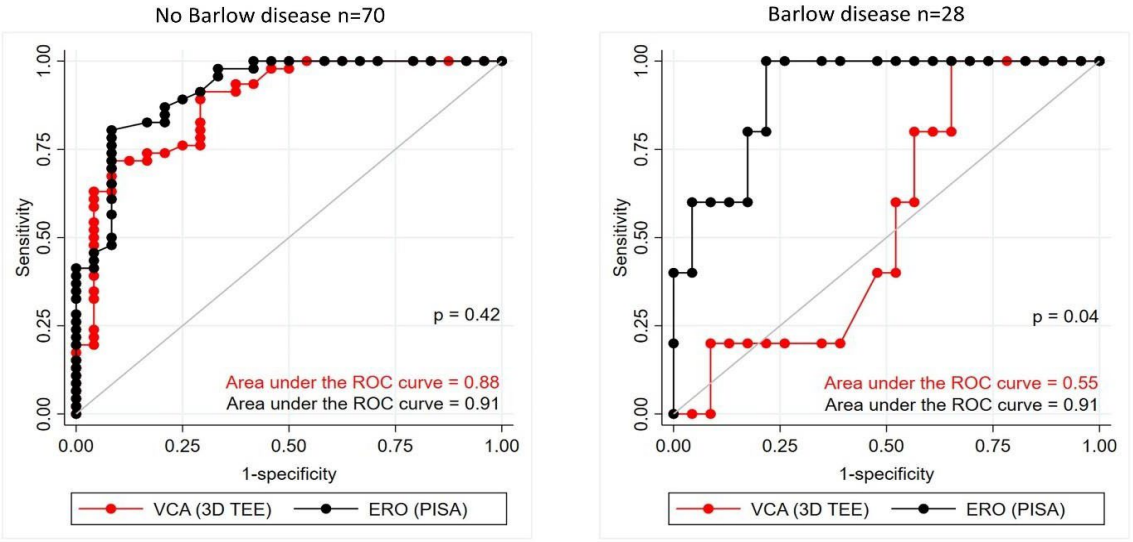
Material and methods: Consecutive patients with MVP assessed with 3D-TEE for moderate to severe MR were included. MR severity was considered present when the majority of the criteria of the ESC multiparametric model fell within the severity range. 3D-VCA was acquired in multibeat mode during breathhold and 3D-VCA was measured at end-systole. The diagnostic accuracy of 3D- VCA and ERO by conventional 2D-PISA were compared using ROC analysis in patients with diffuse (6 prolapsing scallops) vs localized prolapse.

Results: Ninety-eight patients were included. Mean age was 65±16 y, 73% were men, 23% had atrial fibrillation and 52% had severe MR. Diffuse bi-leaflet prolapse was present in 28 (28%, Barlow). In the group of localized prolapse (n = 70, non-Barlow), 86% had a single scallop prolapse. Flail leaflet (11% vs 77%, p <0.001) and severe MR (21% vs 64%, p <0.001) were less frequent in Barlow. 3D-VCA correlated with ERO in non-Barlow (r = 0.83, p <0.001) but not in Barlow (r = 0.35, p = 0.22). On average, 3D-VCA overestimated ERO by 0.14 cm^2 in non-Barlow and by 0.3cm^2 in Barlow (Figure 1). Diagnostic accuracy of 3D-VCA and ERO was comparable in non-Barlow (AUC 0.88 vs 0.91, p = 0.42), but 3D-VCA performed poorly in Barlow (AUC 0.55 vs 0.91, p = 0.04) (Figure 2).

Conclusion: 3D-VCA measured in end-systole consistently overestimated ERO. While its diagnostic performance was comparable to ERO in the case of localized prolapse, it demonstrated low performance in the context of Barlow's disease.

Conflict of interest: No





P34

ACCURACY OF THE INDIVIDUAL ECHOCARDIOGRAPHIC PARAMETERS FOR THE DIAGNOSIS OF SEVERE MITRAL REGURGITATION

Söylemez Nadin*[1], Denise Auberson[2], Dimitri Arangalage[2], Georgios Tzimas[2], Panagiotis Antiochos[2], Tobias Rutz[1 2], Sarah Hugelshofer[2], Pierre Monney[1 2]

[1]UNIL – Université de Lausanne, Faculté de Biologie et Médecine, Lausanne, Switzerland, [2]Lausanne University Hospital, Cardiology, Lausanne, Switzerland

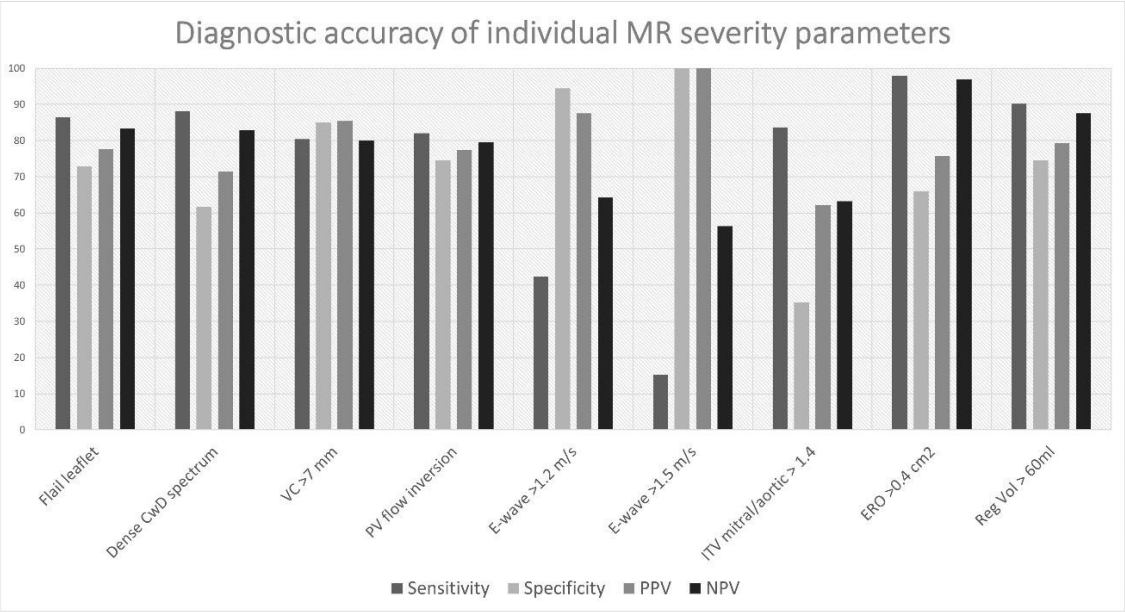
Introduction: Mitral valve prolapse (MVP) is a heterogenous disease and the precise assessment of mitral regurgitation (MR) severity may be challenging. We aimed to assess the diagnostic value of the individual severity criteria of the multiparametric model recommended by the current guidelines in a cohort of primary MR.

Material and methods: Consecutive patients with MVP assessed with TEE for moderate to severe MR were included. Severe MR was considered present when the majority (>50%) of the criteria of the multiparametric model fell within the severity range. For each individual parameter, both sensitivity and specificity were assessed.

Results: A hundred consecutive patients were included. Mean age was 65±16 y and 73% were men. Atrial fibrillation was present in 23% and 28% were in NYHA class 3 or 4. Left ventricular (LV) diastolic volume index was 68 ml/m^2 [60-83], LV ejection fraction 64% [60-68] and left atrial (LA) volume index 56 ml/m^2 [42-71]. Severe MR was identified in 52 (52%) patients. Eight criteria were assessed, and all 8 criteria could be assessed in 73% of the patients; only 2% had <5 criteria assessed. The individual parameters (Figure) with the highest sensitivity and overall diagnostic accuracy were effective regurgitant orifice (ERO)>0.4 cm^2 (Se 98%/Sp 66%), regurgitant volume >60ml (Se 90%/Sp 75%) and vena contracta >7mm (Se 78%/Sp 83%). Conversely, E-wave dominant mitral inflow was the parameter with the highest specificity but the lowest sensitivity (Se 42%/Sp 98% for E-wave >1.2 m/s). Mitral-to-aortic VTI ratio had the lowest diagnostic accuracy as stand-alone parameter (Se 86%/Sp 37%).

Conclusion: For MR severity assessment, quantitative Doppler parameters including ERO, regurgitant volume and vena contacta width exhibit the highest diagnostic accuracy as stand-alone parameters. E-wave dominant mitral inflow >1.2 m/s was highly specific of severe MR.

Conflict of interest: No



P35

EXPLORING THE OPTIMAL SIDE FOR TRANSCATHETER AORTIC VALVE IMPLANTATION USING THE TRANSCAROTID VASCULAR ACCESS: A PILOT STUDY

Adil Salihu[1], David Rotzinger[2], Guillaume Fahrni[2], Anna Nowacka[3], Filip Dulguerov[3], Panagiotis Antiochos[1], Stephane Fournier[1], Olivier Muller[1], Matthias Kirsch[3], Henri Lu*[1]

[1]Lausanne University Hospital, Cardiology, Lausanne, Switzerland, [2]Lausanne University Hospital, Radiology, Lausanne, Switzerland, [3]Lausanne University Hospital, Cardiac Surgery, Lausanne, Switzerland

Introduction: The transcarotid (TC) vascular access for transcatheter aortic valve implantation (TAVI) has become the primary alternative in cases where the gold-standard transfemoral access is unsuitable. The use of both left and right common carotid arteries (CCAs) for TC-TAVI has been described, but the optimal side is subject to debate. We conducted this pilot study to compare the level of vessel tortuosity and plaque burden from either the left CCA to the aortic annulus (AA), or the right CCA to the AA, considering them as surrogates for procedural complexity.

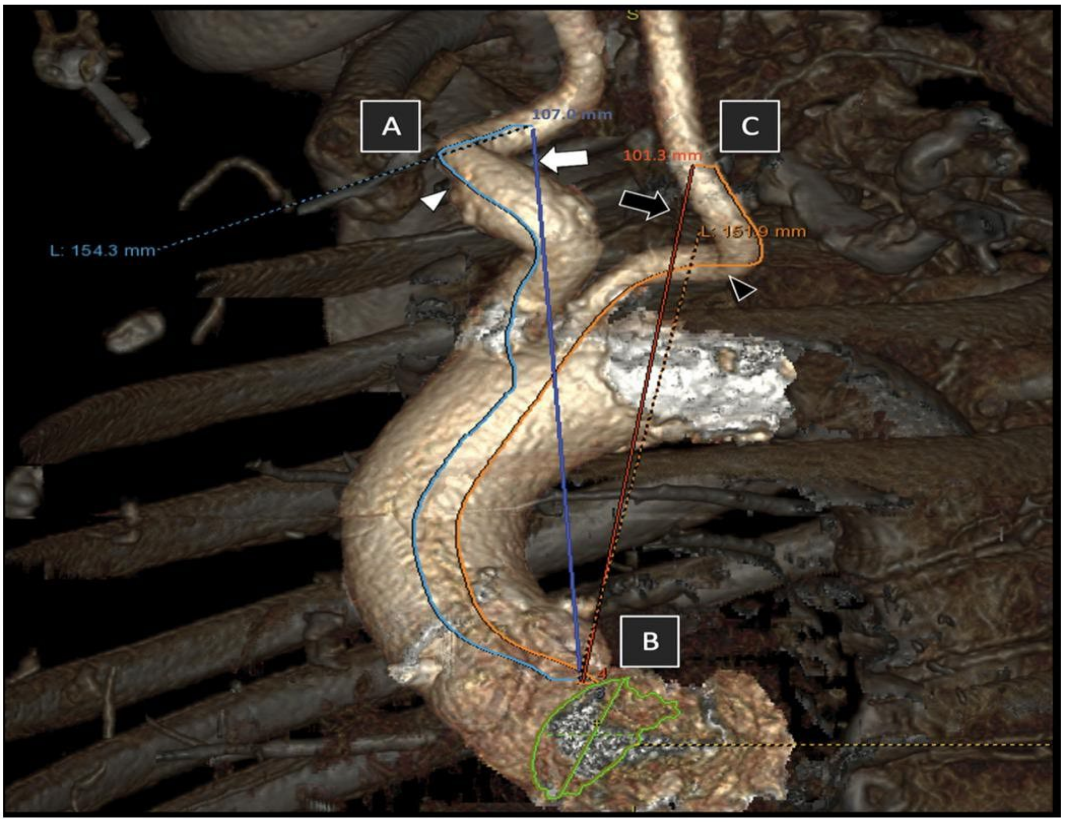
Material and methods: All patients who underwent TC-TAVI between 2018 and 2021 in our institution were included. Using three- dimensional reconstruction, pre-TAVI neck and chest computed tomography angiography exams were reviewed to assess the tortuosity index (TI) between the theoretical puncture site on each CCA (Figure, points A and C) and the AA (Figure, point B). The TI is calculated as the ratio of actual length of the arterial segment (determined from curvilinear reconstructions) divided by the shortest distance between the two points. Other outcomes included the sum of angles metric, the mean number of angles and plaque burden, between each CCA and the AA.

Results: Overall, 46 patients were included. No significant difference regarding the mean TIs between the left and right sides (respectively 1.20 and 1.19, p = 0.82), the mean sum of angles (396° and 384°, p = 0.27), mean number of angles (2.47 and 2.59, p = 0.25) and arterial plaque burden (arterial plaque found in 30% of left CCAs and 45% of right CCAs, p = 0.19) was found (Table).

Conclusion: We found no convincing data favoring the use of one particular access side over the other one. The choice of the CCA side in TC-TAVI should to be made on a case-by-case basis, in a multidisciplinary fashion, and may also depend on the operators' experience.

Conflict of interest: Yes – Henri Lu received research funding from the Gottfried und Julia Bangerter-Rhyner Foundation, the SICPA Foundation and the Société Académique Vaudoise.

Figure. 3D reconstruction of the aortic annulus, aortic arch, right and left common carotid arteries



Point A: theorical surgical puncture site on the right CCA, located 2 cm distal to the brachiocephalic trunk bifurcation. Point C: same level as point A, located on the left CCA. Point B: located on the aortic annulus (green circle). Centerlines (right CCA: light blue line, left CCA: orange line) and direct lines (dark blue and red lines) are drawn between, respectively, Point A and Point B, and Point C and Point B. CCA = common carotid artery.

Table. Patients' computed tomography angiography characteristics, according to the side of common carotid artery

	Left CCA (n = 46)	Right CCA (n = 46)	P value
Minimum diameter, millimeter	6.57 ± 1.00	6.74 ± 0.97	0.92
Maximum diameter, millimeter	7.29 ± 0.96	7.55 ± 1.14	0.79
Tortuosity index	1.20 ± 0.11	1.18 ± 0.11	0.82
Total number of angles	114	121	
Number of angles per patient	2.46 ± 0.55	2.58 ± 0.62	0.25
Sum of angles per patient, degrees	396 ± 57	384 ± 59	0.27
Severe angulation	0	0	
Moderate angulation	1 (0.9)	2 (1.7)	1
Mild angulation	113 (99.1)	119 (98.3)	
Plaque burden			
None	32 (69.6)	25 (54.3)	0.19
Non-calcified	3 (6.5)	6 (13.0)	
Mixt	7 (15.2)	7 (15.2)	
Calcified	4 (8.7)	8 (17.4)	

Results are expressed as n (%) or as means ± standard deviation. CCA = common carotid artery.

P36

AORTIC GRAFT INFECTION AFTER SURGERY FOR ACUTE AORTIC SYNDROME

Mathias Van Hemelrijck*[1], Juri Sromicki[1], Petar Risteski[1], Igor Tudorache[1], Achim Häussler[1], Barbara Hasse[2], Héctor Rodríguez Cetina Biefer[1 3], Omer Dzemali[1 3]

[1]University Hospital of Zürich, Cardiac Surgery, Zürich, Switzerland, [2]University Hospital of Zürich, Infectious Diseases and Hospital Epidemiology, Zürich, Switzerland, [3]Triemli Hospital, Cardiac Surgery, Zürich, Switzerland

Introduction: Aortic graft infection (AGI) has mortality rates of up to 20%. This study aims to describe incidental rates and predisposal characteristics of AGI-patients after surgical repair for acute aortic syndrome.

Material and methods: Retrospective analysis from a single-center cohort of patients using the MAGIC criteria for diagnosis of AGI. Early infection occurred <4 months after surgery, whereas late infections occurred >4 months

Results: We identified 611 patients from 01/2010-12/2020. Of these, 6% (37) were had AGI during a median follow-up of 2.5 years (0.25 – 5.7). Overall, late infections were predominant at 72.9% (27/37). There were no statistically significant differences in baseline characteristics. There were more male AGI-patients, 81.1% (30/37) vs. 67.6% (388/574), and they were older, 65.8 (56.2-69.9) vs. 64.5 (55- 73.5) years. Comorbidities that were more likely found in AGI-patients were coronary or peripheral artery disease (10.8% (4/37) vs. 8.9% (51/574); 8.1% (3/37) vs. 5.2% (30/574)) and connective tissue disorders (2.7% (1/37) vs. 1.6% (9/574)). DeBakey Type I was more commonly found in AGI-patients (78.4% (29/37) vs. 65.2% (374/574)), and these received more composite graft replacement: bio 24.3% (9/37) vs. 17.6% (101/574); mechanical 21.6% (8/37) vs. 16.7% (96/574); and total aortic arch replacement: 16.2% (6/37) vs. 7.8% (45/574). Surgery-, CPB- and aortic-cross-clamp times were longer in AGI-patients: 337min vs 332min, p = 0.675; 198min vs 192min, p = 0.818; and 117min vs 104min, p = 0.959. Re-thoracotomy due to bleeding was more commonly performed in AGI-group (27% (10/37) vs 20.6% (118/574), p = 0.403). Staphylococci were the most common microorganism in 27% (10/37).

Conclusion: Incidence of AGI was 6%. Longer operation times and re-thoracotomy might be potential risk factors contributing to AGI's development. Our analysis suggests that patients with a higher burden of comorbidities and those requiring complex repairs may be at a greater risk of developing AGI. Further investigations are warranted to validate these findings.

Conflict of interest: No

P38

THROMBOASPIRATION OF A LEFT-SIDED BIOPROSTHETIC VALVE THROMBOSIS BY A MINI-INVASIVE ACCESS: A NOVEL PROCEDURE TO ALLEVIATE THE RISK OF THROMBOLYSIS AND REDO-SURGERY

Ziyad Gunga*[1], Matthias Kirsch[1], Eric Eeckout[1]

[1]chuv, lausanne, cardiac surgery, Lausanne, Switzerland

Introduction: Left-sided bioprosthetic valve thrombosis (LSBVT) represents a serious, albeit often underestimated, complication associated with diverse factors such as inadequate postoperative antithrombotic therapy, prothrombotic conditions, ventricular dysfunction, and atrial fibrillation. Current treatment options, including oral anticoagulation, thrombolysis, and traditional surgical interventions, are invasive and can carry substantial morbidity. To address this challenge, this study introduces a novel minimally-invasive approach to treating LSBVT, aiming to provide a safer and more effective alternative, particularly for high-risk patients.

Material and methods: A 54-year-old male, who had undergone mitral valve replacement, developed LSBVT. Despite remaining asymptomatic, the patient rejected traditional on-pump cardiac surgery. The proposed minimally-invasive procedure involved aortic access, cerebral embolic protection using the Sentinel system, and thrombus aspiration facilitated by an Occlutech® sheath connected to an extracorporeal pediatric circuit. Careful monitoring of hemodynamic stability, guided by transesophageal- echocardiography (TEE) and fluoroscopic control, ensured the procedure's safety.

Results: The minimally-invasive procedure was successfully performed, with immediate extubation and confirmation of thrombus removal via echocardiography. The patient showed no signs of relapse during the four-month follow-up, demonstrating a smooth post-operative course. The innovative approach effectively addressed the thrombus's characteristics, including its size, hypermobility, and resistance to anticoagulation, showcasing its potential efficacy and safety.

Conclusion: Preliminary results indicate that the minimally-invasive approach is highly effective in treating LSBVT, offering advantages such as shorter hospital stays, reduced recovery times, and fewer postoperative complications compared to traditional interventions. While further clinical trials are essential to confirm its efficacy and safety, these initial findings suggest a significant breakthrough in LSBVT treatment, providing hope to patients previously considered unsuitable for invasive interventions. The approach represents a promising avenue for improving outcomes in LSBVT management.

Conflict of interest: No

POSTER WALK: CONGENITAL & PAEDIATRIC CARDIOLOGY

P39

PREGNANCY OUTCOME IN A CONTEMPORARY COHORT OF WOMEN WITH CONGENITAL OR ACQUIRED HEART DISEASE: A SINGLE CENTRE EXPERIENCE

Alice Proto*[1], Fabienne Schwitz[2], Jarmila Zdanowicz[1], Luigi Raio[1], Mathias Possner[2]

[1], Inselspital, Bern University Hospital, University of Bern, Department of Obstetrics and Gynaecology, Bern, Switzerland, [2]Inselspital , Bern University Hospital, University of Bern, Department of Cardiology, Bern, Switzerland

Introduction: Existing literature suggests a relationship between maternal heart disease and pregnancy-associated complications. The aim of the present study was to investigate pregnancy outcomes in a contemporary cohort of women with known heart disease.

Material and methods: This is a retrospective, single-centre, observational study. All consecutive women with singleton pregnancies and congenital or acquired heart disease who delivered between January 2020 and December 2023 were included. All women received multidisciplinary care in both the cardiology and obstetrics departments. Pregestational baseline characteristics and obstetric data were extracted from the patients' charts. Adverse pregnancy outcome was defined as a composite of the following complications: preterm birth (<37 weeks of gestation), small for gestational age (SGA) / intrauterine growth restriction (IUGR), hypertensive pregnancy disorders and gestational diabetes.

Table 1 Cardiac patient characteristics (n = 62)

	n (%)
Anatomy	
Left-sided lesion	21 (33.9)
Right-sided lesion	11(17.7)
Shunt lesion	11 (17.7)
Complex congenital heart disease	3 (4.8)
Connective tissue disorder	6 (9.6)
Non-congenital / non-rheumatic heart disease	10 (16.1)
Hemodynamics prior to pregnancy	
Moderate/severe left-sided obstructive lesion	3 (4.8)
Moderate/severe left-sided regurgitant lesion	3 (4.8)
Moderate/severe right-sided obstructive lesion	1 (1.6)
Moderate/severe right-sided regurgitant lesion	5 (8.0)
Moderate/severe systemic ventricular dysfunction	0 (0)
Pulmonary hypertension	0 (0)
Mechanical valve	2 (3.2)
Cardiovascular risk factors prior to pregnancy	
Hypertension	4 (6.5)
Diabetes	1 (1.6)
Current smoking	6 (9.7)

Table 2 Adverse pregnancy outcomes (n = 62)*

	n (%)
Premature birth	7 (11.3)
Small for gestational age/intrauterine growth restriction	7 (11.3)
Intrauterine fetal death	0 (0)
Hypertensive pregnancy disorders	2 (3.2)
Gestational diabetes	9 (14.5)

*more than one event occurred in 6/62 (9.7%) pregnancies

Results: Fifty-nine women with 62 consecutive pregnancies were included. Mean maternal age at the time of delivery was 33.1±5 years. Twenty-five (40.3%) were primiparous. Fifty-two (88.1%) patients had congenital/hereditary heart disease, while seven (11.9%) patients had acquired heart disease. Cardiac patient characteristics are reported in *Table 1*. Altered cardiac hemodynamics was present in 9/62 (14.5%) pregnancies. A composite of adverse pregnancy events occurred in 18 (29%) pregnancies. Detailed outcomes are reported in *Table 2*. Rates of adverse events were highest in the pregnancies of women with non- congenital/non-rheumatic heart disease (4/10, 40%) and left-sided lesions (8/21, 38%), respectively.

Conclusion: In the present contemporary cohort of women with heart disease, adverse outcomes occurred in nearly one-third (29%) of pregnancies, especially in the pregnancies of patients with non- congenital/non-rheumatic heart disease and left-sided lesions. Most of them were placenta-related complications. Larger cohorts are needed to better characterize associations between pregestational hemodynamic parameters and placental function.

Conflict of interest: No

P40

4D FLOW MRI POSTOPERATIVE EVALUATION OF EPIAORTIC VESSELS IN PATIENTS WITH SURGICAL CORRECTION OF COMPLEX AORTIC COARCTATION WITH EXTRA ANATOMIC BYPASS

Martina Rizzo*[1], Angelo Monteleone[2], Pierluigi Festa[2], Chiara Marrone[2], Duccio Federici[2], Ettore Remoli[2], Matteo Cameli[3], Gianfranco Montesi[1], Vitali Pak[2], Lamia Ait-Ali[2]

[1]Santa Maria alle Scotte Hospital, Cardiac Surgery Unit, Siena, [2]Fondazione Toscana G. Monasterio Massa, Italy, Massa, [3]University of Siena, Department of Medical Biotechnologies, siena

Introduction: Aortic coarctation (AoCoa) is a common anomaly, involving 4%-8% of congenital heart defects. Anatomic bypass of AoCoa (AoCoa-Bypass) is a valid surgical option in complex AoCoa. 4D Flow MRI is a promising emerging non-invasive diagnostic tool to analyze blood flow in congenital heart disease. Our study aims to analyze aortic and epiaortic blood flow in patients in follow-up for aortic coarctation surgically corrected with an extra-anatomic bypass.

Material and methods: Patients with AoCoa-Bypass evaluated with CMR were retrospectively included in the study. CMR examination was performed on a 3-T scanner. A 4-dimensional (4D) flow CMR sequence was performed covering the aorta and the epiaortic vessels. Flow volumes were analyzed in graft conduit, ascending aorta, and descending aorta. Systolic and diastolic peak velocity blood flow (PVBF), sectional wall shear stress (WSS), and reversed flow was measured in left and right subclavian artery (RCA, LSA), left and right carotid artery (LCA, RCA) of Coa patients and control group.

Results: Population study includes 5 with AoCoa (mean age 28; age range 17-44,), and a control group of 15 subjects with no cardiac diseases (mean age 29; age range 21-29). Flow in the conduit graft accounts for 42 ±15% of Asc Ao flow. The percentage of epicardial vessel Blood Flow/Asc aorta was not different between the 2 groups, P = 0.4. Moreover, the regurgitant flow in LSA in the two groups was not significantly different, p = 0.9, whereas it was slightly higher in RSA in the AoCoa group but non- statistically different, p = 0.1. LSA, RSA, LCA, and RCA PVBF and sectional WSS were not significantly different.

Conclusion: From our preliminary data, AoCoa repair with AoCoaBypass does not significantly impacts on blood vessels flows and velocities of epiaortic vessels. Larger studies are necessary to confirm our data and investigate this impact under exercise in this population.

Conflict of interest: No

P41

HEMODYNAMIC CHARACTERISTICS OF NECK CANNULAE FOR NEONATAL ECMO

Maris Bartkevics*[1], Lorenzo Ferrari[2], Hansjörg Jenni[1], Clarence Pingpoh[1], Matthias Siepe[1], Dominik Obrist[2], Alexander Kadner[1]

[1]Inselspital, Department 0f Cardiac Surgery, Bern, Switzerland, [2]ARTORG Center, Bern, Switzerland

Introduction: The study aimed to evaluate the hemodynamic performance of arterial and venous neck cannulae in a pulsatile neonatal extracorporeal membrane oxygenation (ECMO) mock circuit.

Material and methods: Our model consists of two separate flow circuits: an ECMO and a neonatal Mock circuit. Together, they simulate neonatal cardiac physiology with pulsatility and vascular resistance. The system is primed with a glycerol-based solution mimicking blood rheological properties. The circuit was set to a total flow of 1L/min, with mean pressure in the aortic chamber of 45 mmHg. Two Medtronic DLP arterial (A: 8Fr, 10Fr) and three venous cannulae (V: 12Fr, 14Fr, 16Fr) were evaluated in six combinations.

Results: The maximum ECMO flow can be doubled by upsizing the arterial cannula. The maximum pressure drop of 8Fr arterial cannula was 181±3 mmHg for a flow of 0.6L/min. By choosing the 10Fr arterial cannula, the maximal flow reaches 1.2 L/min with a pressure drop of 116±1 mmHg. The maximum pressure loss of the venous cannula was -144±3 mmHg. Right atrial pressures decreased on average by 0.6±0.2 mmHg per combination with every 0.2L/min increase of ECMO flow. Energy equivalent pressure (EEP) decreased from 289±3 mmHg for the smallest combination to 162±2 mmHg for the largest combination. M – number decreased from 4.6 to 4.2 for 8Fr and 10Fr arterial cannula accordingly.

Conclusion: The size of the arterial cannula has no impact on the pressure loss of the venous cannula. Best hemodynamic performance can be achieved by upsizing the arterial cannula and mostly independently of the venous cannula size.

Conflict of interest: No

P43

T1 MAPPING IN PATIENTS WITH A SYSTEMIC RIGHT VENTRICLE: A MULTICENTRIC STUDY

Odile Burdet*[1], Barbara E.U. Burkhardt[2], Kerstin Wustmann[3], Jean-Paul Vallée[4], Judith Bouchardy[1], Matthias Greutmann[5], Markus Schwerzmann[6], Daniel Tobler[7], Juerg Schwitter[1], Tobias Rutz[1] on behalf of SERVE Study group

[1]Lausanne University Hospital, Lausanne, Switzerland, [2]Universität Kinderspital Zürich, Zürich, Switzerland, [3]Deutsches Herzzentrum München – German Heartcenter Munich, München, Germany, [4]Hôpitaux Universitaires de Genève (HUG), Genève, Switzerland, [5]University Hospital of Zürich, Zürich, Switzerland, [6]University of Ottawa Heart Institute, Ottawa, Canada, [7]Universitätsspital Basel, Basel, Switzerland

Introduction: Patients with systemic right ventricles (sRV) are at risk of developing interstitial fibrosis which can be evaluated by the cardiac magnetic resonance (CMR) T1mapping technique (T1). The SERVE study evaluates the effect of phosphodiesterase-5 inhibitor (PDE-5i) tadalafil in patients with sRV. This study compares the evolution of T1mapping parameters between a placebo and a treatment group.

Material and methods: Patients with transposition of the great arteries (TGA) and sRV from the SERVE study were included. A CMR exam was performed on a 1.5T scanner at baseline and at 1 and 3 years of follow-up. For each CMR exam, native and post-contrast T1 times, as well as the extracellular volume (ECV) based on hematocrit measured the same day, were calculated for the sRV. Two-way-repeated measurements ANOVA were used to compare placebo and treatment groups over follow-up. T1 and ECV values from both groups were combined and compared with functional CMR parameters like RV ejection fraction (RVEF) and RV end-diastolic volume indexed (RVEDVi).

Results: T1 and ECV values tend to be higher in treatment group compared to placebo, at baseline, as well as at follow-up 1 and 2. No significant influence of tadalafil on T1 and ECV values during follow-up were demonstrated (Table 1). When dividing patients into groups determined by values equal or higher vs. values lower than the calculated median value of native T1, the former showed a trend toward lower sRV ejection fraction and larger end-diastolic volumes than the latter (Table 2)

Conclusion: Treatment with tadalafil did not influence T1 parameters in our cohort of patients with sRV over 3- year-follow-up. Higher T1 and ECV values tend to be associated with worse functional sRV parameters, however, it could be coincidental findings. Larger studies with longer follow-ups are needed to better elucidate the relationship between T1 parameters and sRV function parameters.

Conflict of interest: No

Table 1	Units	Group	CMR **Baseline**	CMR **follow-up 1 year**	CMR **follow-up 3 years**	**p-value**
RV functional parameters						
End-diastolic volume indexed	mL/m^2	Placebo	110 (73-244) (n=40)	108 (76-205) (N=37)	113 (71-223) (n=31)	0.259
	mL/m^2	Treatment	125 ± 5 (n=38)	130 ± 5 (n=34)	125 (88-243) (n=32)	
Ejection fraction	%	Placebo	46 ± 1 (n=40)	48 (29-57) (n=37)	48 (31-55) (n=31)	0.701
	%	Treatment	44 ± 1 (n=38)	44 ± 1 (n=34)	44 ± 1.4 (n=32)	
RV Basal						
Mean T1	ms	Placebo	1010 (854-1251) (n=31)	1027 ± 9 (n=27)	1019 ± 6 (n=28)	0.163
	ms	Treatment	1022 ± 8 (n=29)	1026 ± 7 (n=28)	1042 ± 8 (n=27)	
Mean ECV		Placebo	0.290 ± 0.008 (n=26)	0.309 (0.233-0.622) (n=25)	0.291 ± 0.005 (n=25)	0.106
		Treatment	0.300 ± 0.009 (n=25)	0.334 (0.255-0.650) (n=23)	0.310 ± 0.008 (n=22)	
Mid-ventricular						
Mean T1	ms	Placebo	1029 (917-1293) (n=30)	1024 (775-1120) (n=32)	1037 (755-1102) (n=30)	0.457
	ms	Treatment	1030 ± 10 (n=30)	1034 (892-1076) (n=30)	1038 (773-1165) (n=31)	
Mean ECV		Placebo	0.311 ± 0.007 (n=26)	0.307 (0.239-0.623) (n=28)	0.304 ± 0.007 (n=28)	0.530
		Treatment	0.295 (0.254-0.381) (n=24)	0.332 (0.264-0.647) (n=22)	0.311 ± 0.010 (n=25)	

Table 2			
RV median **basal** T1 at Baseline	**≥ 1019 ms**	**< 1019 ms**	**p-value**
RV Ejection fraction at baseline	45 ± 9 (n=31)	46 ± 5 (n=29)	0.481
RV Ejection fraction at 3-year follow-up	43 ± 9 (n=24)	46 ± 5 (n=29)	0.234
RV End-diastolic volume indexed at baseline	123 ± 31 (n=31)	115 ± 25 (n=29)	0.271
End-diastolic volume indexed at 3-year follow-up	135 ± 35 (n=24)	118 ± 25 (n=29)	0.040
RV median **mid-ventricular** T1 at Baseline	**≥1030 ms**	**< 1030 ms**	**p-value**
RV Ejection fraction at baseline	44 ± 8 (n=30)	47 ± 6 (n=31)	0.203
RV Ejection fraction at 3-year follow-up	44 ± 8 (n=26)	46 ± 6 (n=28)	0.326
RV End-diastolic volume indexed at baseline	119 ± 27 (n=30)	123 ± 35 (n=31)	0.561
RV End-diastolic volume indexed at 3-year follow-up	127 ± 33 (n=26)	123 ± 26 (n=28)	0.606

P44

T1 MAPPING ANALYSIS: COMPARISON OF TWO COMMERCIAL SOFTWARE PACKAGES

Odile Burdet*[1], Barbara E.U. Burkhardt[2], Emanuela R. Valsangiacomo Büchel[2], Jean-Paul Vallée[3], Judith Bouchardy[1], Matthias Greutmann[4], Markus Schwerzmann[5], Daniel Tobler[6], Juerg Schwitter[1], Tobias Rutz[1] on behalf of SERVE study group

[1]Lausanne University Hospital, Lausanne, Switzerland, [2]Universität Kinderspital Zürich, Zürich, Switzerland, [3]Hôpitaux Universitaires de Genève (HUG), Genève, Switzerland, [4]University Hospital of Zürich, Zürich, Switzerland, [5]University of Ottawa Heart Institute, Ottawa, Canada, [6]Universitätsspital Basel, Basel, Switzerland

Introduction: Cardiovascular magnetic resonance (CMR) with T1 mapping, has become an essential modality for characterizing myocardial tissue and non-invasive quantification of structural alterations like fibrosis. T1 mapping necessitate specialized post-processing and image analysis software. Different software are used which are not completely standardized. The aim was to compare two software in measuring T1 and the extracellular volume (ECV) in patients with systemic right ventricle (sRV).

Material and methods: Patients with transposition of the great arteries (TGA) and a systemic right ventricle (sRV) from the SERVE study, which compared a phosphodiesterase-5 inhibitor (PDE-5i) vs. a placebo, were included. On a 1.5T CMR scanner, an ECG-triggered modified Look-Locker inversion recovery (MOLLI) sequence (scheme 3(3)3(3)5) was acquired on short-axis basal and mid-ventricular slices. For each CMR exam, the native and post-contrast T1 as well as the ECV were calculated for 6 segments of the RV, 4 segments of the LV, for the whole RV and the whole LV with two different software. ECV was determined with measured hematocrit obtained the same day as the CMR exam as well as with the calculated synthetic hematocrit. Mean T1 and ECV of all segments were compared between both software for RV and LV.

Results: T1 and ECV values are systematically lower when measured with software A compared to software B for the RV (Table 1). For the LV most parameters showed the same observation although the difference was not always significant (Table 1). Bland-Altman plots illustrate the systematic difference between both software (Figure).

Conclusion: Mean total T1 and ECV values differed systematically between both software, possibly explained by different analyses algorithms. Such differences must be considered when analyzing CMR derived T1 mapping parameters. The software used for post-processing analysis should be routinely mentioned. Our results underline the need for standardization of analyzes of T1 mapping techniques.

Conflict of interest: No

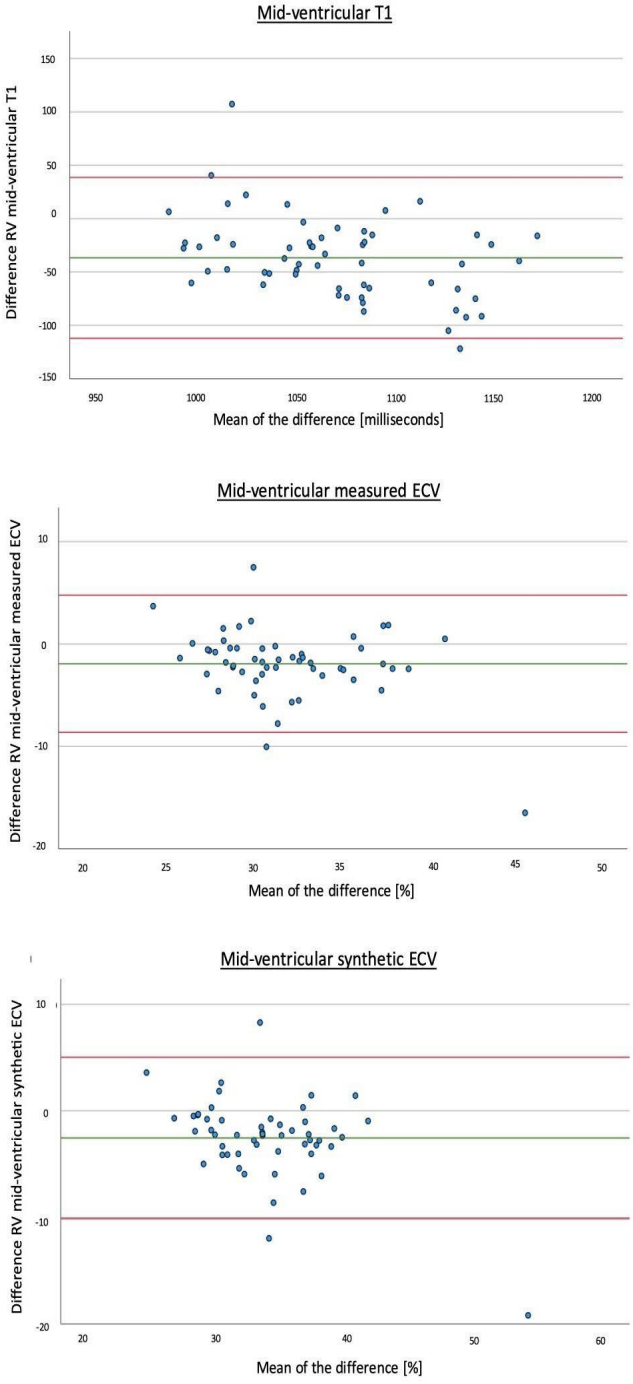


Table 1		Software A	Software B	Bias [CI 95%]	p-value
RV Basal					
Mean T1	*ms*	1016 ± 5	1046 ± 7	-31.9	<0.001
		(n = 61)	(n = 61)	[-94.9-31.0]	
Mean synthetic		0.284 (0.218-0.476)	0.296 (0.217-0.444)	-0.012	<0.001
hematocrit ECV		(n = 58)	(n = 58)	[-0.07-0.05]	
Mean measured		0.316 ± 0.006	0.329 ± 0.007	-0.013	0.010
hematocrit ECV		(n = 57)	(n = 57)	[-0.082-0.056	
RV mid-ventricular					
Mean T1	*ms*	1051 ± 6	1088 ± 8	-36.7	<0.001
		(n = 58)	(n = 58)	[-112.1-38.7]	
Mean synthetic		0.297 (0.248-0.412)	0.321 (0.220-0.539)	-0.019	<0.001
hematocrit ECV		(n = 54)	(n = 54)	[-0.086-0.048]	
Mean measured		0.324 (0.263-0.447)	0.346 (0.227-0.639)	-0.025	<0.001
hematocrit ECV		(n = 53)	(n = 53)	[-0.101-0.050]	
LV Basal					
Mean T1	*ms*	1137 ± 12	1178 ± 13	-41.2	<0.001
		(n = 57)	(n = 57)	[-183.1-100.8]	
Mean synthetic		0.255 (0.170-0.400)	0.380 ± 0.008	-0.123	<0.001
hematocrit ECV		(n = 50)	(n = 50)	[-0.247-0.000]	
Mean measured		0.398 ± 0.007	0.407 ± 0.009	-0.008	0.273
hematocrit ECV		(n = 49)	(n = 49)	[-0.110-0.094]	
LV mid-ventricular					
Mean T1	*ms*	1162 ± 15	1193 ± 17	-30.8	0.057
		(n = 52)	(n = 52)	[-254.6-193.0]	
Mean synthetic		0.399 (0.271-0.478)	0.403 (0.268-0.835)	-0.037	0.005
hematocrit ECV		(n = 45)	(n = 45)	[-0.237-0.163]	
ECV measured		0.415 (0.292-0.492)	0.392 (0.287-0.696)	0.000	0.583
hematocrit mean		(n = 44)	(n = 44)	[-0.142-0.143]	
total					

P45

LARGE PATENT DUCTUS ARTERIOSUS FIRST DIAGNOSED DURING PREGNANCY: HAEMODYNAMIC CHALLENGES AND DILEMMA OF TIMELY INTERVENTION

Francesca Bonassin Tempesta*[1], Laura Anna Leo[2], Michèle Stahel[3], Verena Bossung[3], Franziska Krähenmann[3], Corinna Von Deschwanden[4], Alexander Gotschy[1], Heiko Schneider[1], Oliver Kretschmar[5], Matthias Greutmann[1]

[1]University Hospital Zurich, Cardiology, University Heart Center, Zurich, Switzerland, [2]Istituto

Cardiocentro Ticino, Cardiology, Lugano, Switzerland, [3]University Hospital Zurich, Department of Obstetrics, Zurich, [4]University Hospital Zurich, Institute of Anaesthesiology, Zurich, [5]University Children's Hospital Zurich , Pediatric Cardiology, Zürich, Switzerland

Introduction: Incidental diagnosis of large patent ductus arteriosus (PDA) is unusual during pregnancy and more frequently seen in patients with migration background. Pregnant women with haemodynamically significant PDA have an increased risk of cardiovascular complications.

Results: A 27 year old pregnant (G1P0) woman, who recently moved from Southeast Asia to Switzerland, was found to have a left parasternal thrill and 5/6 continuous murmur. She was referred to our tertiary centre at 18/0 gestational weeks (GW). She was asymptomatic (NYHA I) and there were neither clinical signs of heart failure nor of Eisenmenger physiology (no differential cyanosis). Her NTproBNP was normal. Transthoracic echocardiography (TTE) and non-contrast MRI confirmed a large, haemodynamically significant PDA (6x8mm, Qp:Qs 2.6:1) with severe left ventricular (LV) dilation and moderate secondary mitral valve regurgitation (figure 1 a/b). According to CW Doppler across the PDA severe pulmonary hypertension was unlikely (figure 1c/d). Her case was reviewed by a multidisciplinary team and it was decided to see her 4-weekly and to plan elective c-section in the cardiovascular operation room at 37/0 GW. Percutaneous PDA closure and / or earlier delivery were kept as bail-out strategy. She remained asymptomatic with stable serial echocardiographic findings, but was admitted at 35/3 GW for progressive cholestasis and skin rash. She underwent

c-section at 37/0 with epidural anaesthesia and Phenylephedrin / Ephedrin application. Postpartum period was uneventful. She was discharged at 5 days with her new-born (birth weight 3110g, length 46cm). Elective, percutaneous PDA closure was successfully performed after 3 months with a 14/12mm Lifetech PDA Occluder (figure 2). Postprocedural TTE and MRI showed decreased LV size and mitral regurgitation.

Conclusion: Management of pregnancies in women with haemodynamically significant PDAs is challenging and requires a multidisciplinary approach at a tertiary centre with expertise in congenital heart disease to reduce feto-maternal morbidity and mortality.

Conflict of interest: No

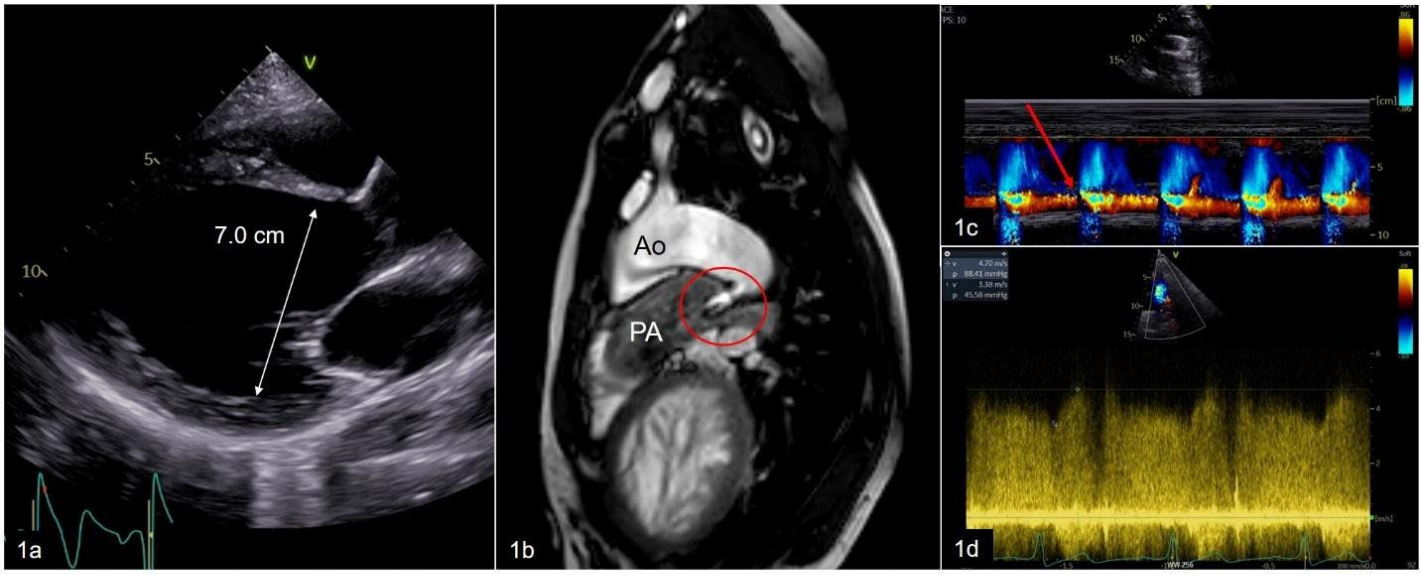


Figure 1a: TTE showing significant LV dilation (white arrow = LVEDD); 1b: Cardiac MRI with a large PDA (red circle; Ao = aortic arch, PA = pulmonary artery); 1c: Color M-mode across the PDA with continuous left-to-right shunt (red arrow); 1d: CW-Doppler with high peak velocity and high pressure gradient between aorta and pulmonary artery.

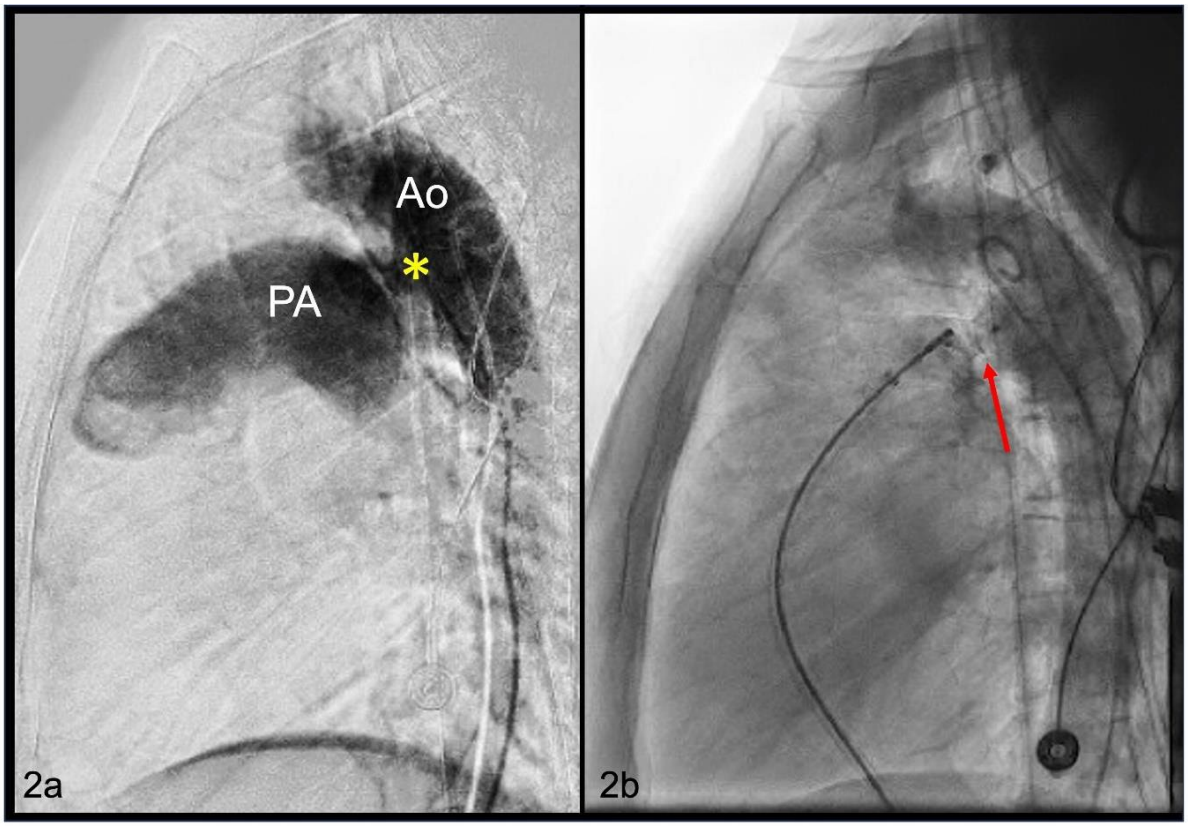


Figure 2: Cardiac catheterization showing the large PDA (asterisk) with left-to-right shunt between aorta (Ao) and pulmonary artery (PA, fig. 2a); percutaneous PDA closure with 14/12mm Lifetech PDA Occluder (red arrow, fig. 2b)

P46

CARDIAC ARREST IN AN ATHLETE TEENAGER CAUSED BY AN ANOMALOUS ORIGIN OF THE LEFT CORONARY ARTERY FROM THE PULMONARY ARTERY (ALCAPA) – HOW TO PREPARE FOR SURGICAL CORRECTION AND WHAT TO EXPECT IN THE EARLY POSTOPERATIVE PERIOD

Cristiana Voicu[1 2], Pache-Wannaz Laure*[1], Milan Prsa[1], Amir-Reza Hosseinpour[3], Nicole Sekarski[1]

[1]Lausanne University Hospital, Pediatric Cardiology, Women-Mother-Child Department, Lausanne, Switzerland, [2]"Marie Curie" Emergency Children's Hospital, Pediatric Cardiology, Bucharest, Romania, [3]Lausanne University Hospital , Cardiac surgey, Lausanne, Switzerland

Introduction: Anomalous origin of the left coronary artery (LCA) from the pulmonary artery, ALCAPA, is an extremely rare congenital heart disease found in approximately 1 out of 300,000 live births. Considered the most common type of anomalous origin of the coronary arteries, survival rate after the first year of life is estimated at 10-15% of patients with ALCAPA syndrome, due to extensive collateral circulation.

Material and methods: We report a case of a 15-year-old girl who underwent a resuscitated cardiac arrest during a sportive competition. The anamnesis found an athlete (gymnastics) and otherwise healthy patient who described rare episodes of chest pain during effort which were not medically investigated. Echocardiography revealed mild left ventricle dysfunction and an important collateral circulation. Right coronary artery dilatation with a proximal aneurysm was noticed, along with a diastolic flow towards the pulmonary artery which raised the suspicion of an ALCAPA. Computed tomography confirmed the diagnosis (Figure 1).

Results: Our patient was referred to cardiac surgery, but because of the high risk of ventricular arrhythmias by the time of the correction, she received a wearable defibrillator (LifeVest). The surgical technique consisted of reimplantation of the LCA directly in the aortic root. Weaning- off the cardio-pulmonary bypass was performed uneventfully. The postoperative evolution was marked by arrhythmic events well-tolerated and resolved with medication.

Conclusion: Regarding the high rate of mortality in infancy and early childhood, ALCAPA syndrome is rarely reported in teenagers. Although we can explain the late first medical presentation by the extensive collateral circulation which ensures the vascularisation of the LCA territory, it is atypical to diagnose this pathology in a patient who practiced years of high-performance sport. Early surgical correction is an undebatable indication, but the management of the case in pre- and postoperative time remains a challenge considering the few data published thus far.

Conflict of interest: No

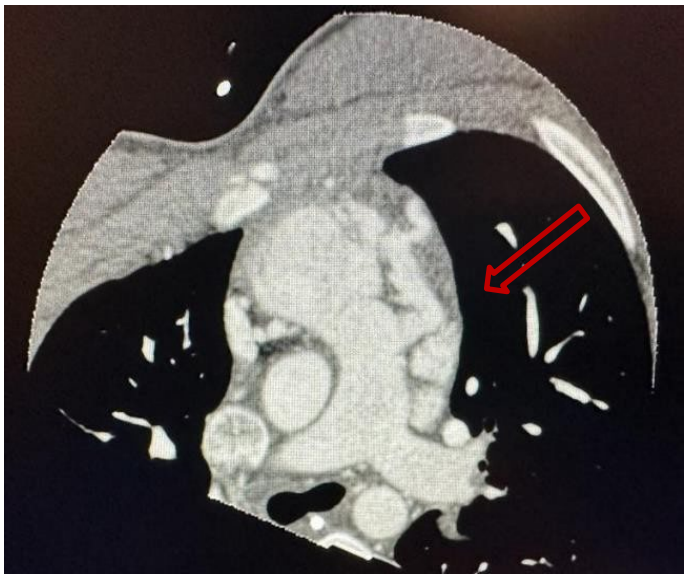


Figure 1

POSTER WALK: PREVENTION & REHABILITATION

P47

POLYGENIC SCORES INCREASE THE YIELD OF FH GENOTYPING AT THE EXTREMES, A SCORE USING 12-SNPS CAPTURES THE MAJORITY OF INFORMATION CONTENT

Kevin Dobretz*[1], Georg Ehret[1]

[1]Hôpitaux Universitaires de Genève (HUG), Médecine – Cardiologie, Genève, Switzerland

Introduction: Familial hypercholesterolemia (FH) is a common monogenic disease characterized by high LDL cholesterol levels, elevating cardiovascular risk. FH is genetically diverse, with about one-third of cases lacking identifiable monogenic variants. We aim to enhance sequencing efficiency for FH by utilizing a polygenic LDL score derived from UK Biobank data. Our hypothesis is that assessing the polygenic effect on LDL levels can aid in prioritizing individuals for sequencing, particularly in the clinically plausible FH range (LDL concentration: 4-6.4 mmol/L). We will validate findings in a Swiss cohort.

Material and methods: Exome sequencing data from 469K participants were analyzed for FH and protective variants in LDLR, APOB, PCSK9, APOE, LDLRAP1, and ANGPTL3. Protective variants included PCSK9 and APOB loss of function and homozygous ANGPTL3 loss of function. Polygenic risk scores were calculated using two sets of variants (12 and 1,721) from GWAS data. Linear models assessed polygenic effects on LDL. FH cases were mapped against polygenic scores.

Results: 1,246 FH variant carriers were identified, with LDLR and APOB variants predominating. Protective variant carriers totaled 1,723. Linear models favored the larger polygenic score (1,721 variants). FH prevalence in top 25% LDL was 2.8%. The 12-variant score showed a 2.8 times higher FH prevalence in the bottom 25% vs. the top 25%. For the 1,721-variant score, this ratio was 3.2. Adjusting LDL with polygenic scores improved FH genotyping success rates.

Conclusion: FH prevalence was one in 376 participants. While the 1,721-variant score slightly improved LDL explanation, its performance resembled the 12-variant score. Additional variants did not significantly enhance the performance of the polygenic LDL score. FH sequencing yield improved, especially in individuals in the extreme quartile, demonstrating the potential for more efficient FH screening due to consideration of the polygenic score. Using only 12 SNPs for polygenic assessment appears practical.

Conflict of interest: No

P48

FAVOURABLE LIFESTYLE CHANGES 1 YEAR AFTER ACUTE MYOCARDIAL INFARCTION

Jan Loosli*[1], Marco Roffi[2], Florian A. Wenzl[3], Juan F. Iglesias[2], Fabienne Foster-Witassek[1], Hans Rickli[4], Dragana Radovanovic[1] on behalf of the AMIS Plus investigators

[1]AMIS Plus Data Center, Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich, Switzerland, [2]Geneva University Hospitals, Geneva, Switzerland, [3]University of Zurich, Center for Molecular Cardiology, Zurich, Switzerland, [4]Klinik für Kardiologie, Kantonsspital St.Gallen, St. Gallen, Switzerland

Introduction: We aimed to evaluate the proportion of acute myocardial infarction (AMI) patients who favourably changed their lifestyle 1 year after AMI.

Material and methods: Patients with ST-elevation myocardial infarction (STEMI) and non-STEMI (NSTEMI) enrolled in the AMIS Plus registry between 2012 and 2022 with at least 1 year of follow-up were included. Self- reported lifestyle changes were stratified according to AMI type, sex, and age. Favourable lifestyle changes were defined as smoking cessation, weight reduction (for overweight patients), dietary changes, increased physical activity and stress reduction.

Results: From 7906 patients, 7234 (91.5%) were followed-up via telephone interview. Of these, 5627 (77.8%) were male, 1607 (22.2%) female, 4664 (64.5%) presented with STEMI, and 2570 (35.5%) with NSTEMI. At the median follow-up of 397 days after the event (interquartile range: 371 to 465), 861 (50.9%) patients had quit smoking, 1297 (35.0%) lost weight, 2567 (44.8%) had implemented nutritional changes, 2415 (41.2%) had increased their physical activity, and 1729 (30.5%) had reduced their stress. STEMI patients were more likely to stop smoking (53.0% vs. 45.1%, p = 0.005), change their diet (46.4% vs. 41.6%, p <0.001), increase physical activity (43.5% vs. 36.8%, p <0.001), and/or reduce stress (31.4% vs. 28.7%, p = 0.04) compared to NSTEMI patients. Male sex was associated with smoking cessation [52.5% vs. 44.4%; p = 0.008; age-adjusted odds ratio (OR), 0.78; 95% confidence interval (CI), 0.61-0.99; p = 0.043], dietary change (47.8% vs. 33.7%; p <0.001; age-adjusted OR, 0.67; 95% CI, 0.58-0.77; p <0.001), and increased physical activity (43.5% vs. 32.9%; p <0.001; age-adjusted OR, 0.77; 95% CI, 0.67-0.88; p <0.001), but not stress reduction (30.9% vs. 28.9%; p <0.001; age-adjusted OR, 1.09; 95% CI, 0.94-1.26; p = 0.25).

Conclusion: A substantial proportion of patients with AMI in Switzerland reported favourable lifestyle changes within 1 year after the index event. STEMI and male patients were more likely to report multiple favourable lifestyle changes within the first year after AMI.

Conflict of interest: No

P49

INCREMENTAL VALUE OF A CUFF-LESS BLOOD MEASUREMENT DEVICE COMPARED TO CLINIC BLOOD PRESSURE MEASUREMENT

Annina Vischer[1], Hotz Leana[1], Derendinger Felicia[1], Philipp Krisai[2], Socrates Thenral[1], Schumacher Christina[1], Michael Mayr[1], Thilo Burkard*[1 2]

[1]University Hospital Basel, Medical Outpatient Department and Hypertension Clinic, ESH Hypertension Centre of Excellence, Basel, [2]University Hospital Basel, Department of Cardiology, Basel

Introduction: Cuffless, pulse-transit-time based 24hour blood pressure measurement (BPM) lacks clinical validation based on recent protocols, tends to higher values than cuff-based BPM and exhibits a lower ability to track 24-hour BP changes. Due to these limitations this study aims to evaluate if there is an advantage of cuffless BPM over clinic BPM (CBP).

Material and methods: 166 participants were enrolled for simultaneously performed cuffless (TestBP, Somnotouch NIBP) and cuff-based (RefBP, Spacelabs or Mobil-o-graph) 24hBPM. CBP was defined as mean of 3 cuff-based BPM: two BP measured sequentially at both arms after 5 min of rest and first Ref-BPM, used additionally as calibration for TestBP. We compared TestBP and CBP to mean awake RefBP including calculation of test characteristics for the diagnosis of elevated BP using ROC analysis to identify ideal cut-off values for TestBP. Gold standard for the detection of elevated BP was mean awake RefBP (≥135/85 mmHg).

Results: Mean awake systolic and diastolic RefBP were 134±15 mmHg and 83±10 mmHg, respectively. Mean differences between TestBP and RefBP were 6±13/5±8 mmHg for systolic/diastolic values, respectively, whereas for CBP 7±13/5±7 mmHg. There was a linear relationship between TestBP/CBP and RefBP (Figure, panels A-D). In ROC analysis CBP and TestBP showed an AUC for the diagnosis of hypertension of 0.845/0.873 and 0.862/0.877 for systolic/diastolic values, respectively. Best cut-off for hypertension was at 137/88 mmHg for mean awake TestBP values. Misclassifications compared to RefBP with these (ASV), previously published (TS) cut-offs for TestBP and usual cut-offs for CBP are shown in the figure (panels E-F).

Conclusion: We found a low incremental value of the TestBP device in relation to CBP, with comparable AUCs and correlation coefficients when compared to gold standard cuff-based 24hBPM. With the application of the adapted awake BP cut-off of 137/88 mmHg for cuff-less BPM, masked hypertension misclassification can be reduced.

Conflict of interest: No

Figure

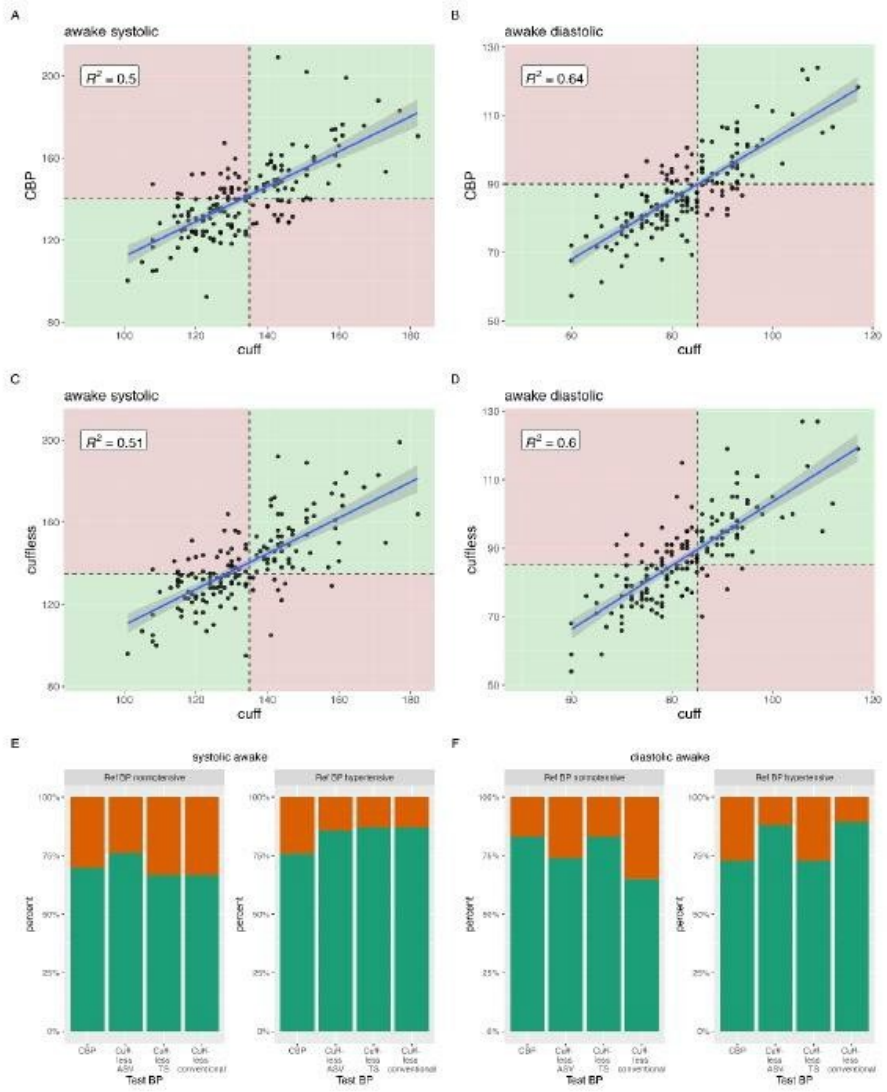


Figure 1 A-D: Scatter plot of clinic blood pressure (CBP) and cuffless TestBP vs mean 24 awake systolic and diastolic RefBP including blue regression line and R^2. Green indicates correct classification, lilac misclassification. E-F: Misclassifications by the TestBP using conventional cut-off values, adapted cut-off value of (137/87 mmHg (ASV) and 135/91 mmHg (TS)) and CBP with cut off 140/90 mmHg. Green indicates correct classification, orange misclassification. ASV refers to current ROC analysis, TS refers to previously published ROC analysis of initial VAST study cohort. CBP-clinic blood pressure

P50

BLOOD PRESSURE RESPONSE DURING EXERCISE TESTING IN INDIVIDUALS WITH AND WITHOUT HYPERTENSION: THE VALUE OF THE RECOVERY PHASE

Céline Ghidoni[1], Jan Gerrit van der Stouwe*[2], Laura Würzburger[1], Patrick Wiech[1], Georg Moser[1], Valentina Rossi[1], Christian Schmied[1], Stefano Caselli[3], David Niederseer[4]

[1]University Hospital Zurich, University Heart Center, Zurich, Switzerland, [2]University Hospital Basel, Cardiology, Basel, Switzerland, [3]Hirslanden Klinik im Park, Herzgefaesszentrum im Park, Zurich, Switzerland, [4]Medicine Campus Davos, Hochgebirgsklinik, Davos, Switzerland

Introduction: Hypertension and exercise testing are important for cardiovascular risk assessment. However, exact descriptions of blood pressure (BP) in patients with a hypertensive response during exercise (HRE), are lacking. This retrospective cohort study aimed to analyze BP and heart rate during exercise testing and the recovery phase in patients with a HRE.

Material and methods: 800 patients aged 17 – 90 years were recruited from the cardiology center of Zurich with a HRE during a standardized bicycle ergometry test with ramp protocols. Systolic and diastolic BP and heart rate were meticulously measured at rest, during various stages until maximal exercise and recovery. Furthermore, data on age, sex, cardiac disease history, and medication prescription was collected.

Results: Of the 800 patients included in this study 497 (63%) were diagnosed with hypertension. Patients with hypertension were older (62 vs. 52 years), more often male (69 vs. 57%), had a higher prevalence of coronary artery disease (52 vs. 23%), and were more often of antihypertensive medication. Using analysis of covariance, we found a significant faster systolic (β [95% CI] – 8.0 [4.9 – 11.1]) and diastolic (2.4 [0.4 – 4.4]) BP recovery 3 minutes after maximal exercise in patients without hypertension in univariable models. These results remained robust in fully adjusted models taking into account age, sex, body mass index, cardiovascular disease, and antihypertensive treatment for systolic (5.3 [1.2 – 9.4]) and diastolic BP (4.5 [1.9 – 7.0]). Furthermore, patients with hypertension displayed higher

systolic BP during maximal exercise in univariable (3.8 [0.1 – 7.5]) and fully adjusted (5.5 [1.1 – 10.0]) models. There was no difference in maximum diastolic BP between groups.

Conclusion: In this large cohort study, there was a faster systolic and diastolic BP recovery and lower maximal systolic BP in patients without hypertension, even when considering antihypertensive medication. Overall, this study provides new insights into cardiovascular health during recovery phase.

Conflict of interest: No

P51

EFFECT OF A 2-4 WEEK HOME-BASED PREHABILITATION INTERVENTION ON OBJECTIVELY MEASURED PREOPERATIVE PHYSICAL ACTIVITY IN PATIENTS UNDERGOING ELECTIVE MAJOR CARDIAC AND NONCARDIAC SURGERY. DATA FROM A RANDOMIZED CONTROLLED TRIAL

Thomas Vetsch*[1 2], Dominique Engel[1], Christian Beilstein[1], Patrick Wuethrich[1], Prisca Eser[2], Matthias Wilhelm[2]

[1]Inselspital Bern, Department of Anaesthesiology and Pain Medicine, Bern, Switzerland, [2]Inselspital Bern, Centre for Rehabilitation & Sports Medicine, Bern, Switzerland

Introduction: Low functional capacity in patients undergoing major elective surgery is associated with postoperative complications. Prehabilitation aims to increase functional capacity by increasing preoperative physical activity. Low functional capacity in patients eligible for major surgery is associated with high age and comorbid burden. In this population, center-based prehabilitation is not feasible. Therefore, we developed a multimodal home-based prehabilitation intervention. We hypothesize that home-based prehabilitation leads to an increase in physical activity in patients undergoing major cardiac and non-cardiac surgery.

Material and methods: We included patients aged over 65 with a proven low functional capacity measured by cardiopulmonary exercise testing. The intervention group received the prehabilitation intervention 2-4 weeks before surgery. As part of the intervention, patients were prescribed a walking regimen according to physical activity guidelines. All patients were provided a wrist-worn tri-axial accelerometer at the baseline visit. Physical activity was estimated by calculating the average Euclidean Norm Minus One (ENMO, milligravity [mg]) per day. Baseline characteristics were tested by Wilcoxon rank-sum test and a linear model for the primary outcome was performed to adjust for confounders.

Results: 37 patients scheduled for cardiac and 62 for non-cardiac surgery were included (Table 1). Mean group difference in daily physical activity levels in non-cardiac surgery patients was 3.01 mg (p = 0.03, 95% CI 0.3, 5.6). Mean group difference in daily physical activity levels in cardiac surgery patients was 0.27 mg (p = 0.95, 95% CI -4.1, 5.0) (Figure 1). Patients undergoing cardiac surgery had higher overall activity levels compared to non-cardiac also when adjusted for age.

Conclusion: Home-based prehabilitation increases preoperative physical activity levels in patients undergoing major non-cardiac surgery but not in patients undergoing major cardiac surgery. Higher activity levels in cardiac surgery patients may be explained by previous exercise-based rehabilitation and physical activity recommendations at routine cardiac follow-up visits.

Conflict of interest: No

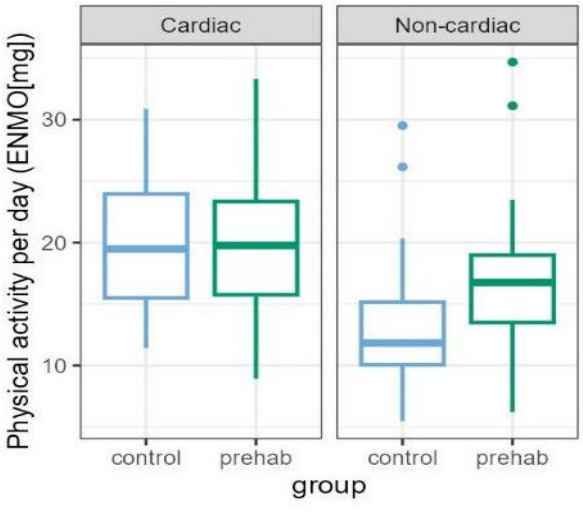


Figure 1

Baseline characteristics assessed at preoperative visit, median (iqr)

	Cardiac		Non-cardiac*	
	Control (n=18)	Prehab (n=19)	Control (n=31)	Prehab (n=31)
Age (years)	73 (69,76)	73 (72, 76)	75 (72, 80)	77 (72, 80)
$VO2_{VT1}$ (ml/min/kg)	10.6 (10.2, 12.5)	11.3 (9.9, 13.2)	10.7 (9.7, 13.1)	10.7 (9.0, 12.1)
VE/VCO2 slope	39.0 (36.2, 41.7)	39.8 (35.8, 45.4)	42.1 (32.3, 47.0)	37.2 (35.0, 42.0)
METS	4.4 (3.9, 5.4)	4.0 (3.4, 4.9)	4.0 (3.6, 4.6)	3.9 (3.2, 4.7)

$VO2_{VT1}$: Oxygen uptake at the first ventilatory threshold, VE/VCO2: Minute ventilation to carbon dioxide production, METS: Metabolic equivalent of task

*age tested between surgical groups (p=0.031)

Table 1

P52

EVALUATING 24-H, DAYTIME AND NIGHT-TIME BLOOD PRESSURE MONITORING: A COMPARATIVE STUDY OF A CUFFLESS MONITOR AND STANDARD 24-H AMBULATORY BLOOD PRESSURE MONITOR

Tiago Paggi de Almeida[1], David Perruchoud[1], Jérémy Alexandre[1], Pascale Vermare[1], Josep Sola[1], Jay Shah[1], Marques Luisa[2], Cyril Pellaton*[2]

[1]AKTIIA, Neuchâtel, Switzerland, [2]Réseau Hospitalier Neuchâtelois (RHNe), Neuchâtel, Switzerland

Introduction: The performance of cuffless blood pressure (BP) devices compared to their cuff-based counterparts is subject of intense debated. In this study, BP readings from a continuous cuffless BP monitor were compared against those from a standard 24-h ambulatory BP monitor (ABPM).

Material and methods: The study enrolled 63 subjects (NCT04548986, 53.1±7.2 years, 21.2% female, arm circumference 29.0±2.5 cm) participating in a 12-week cardiac rehabilitation (CR) program (RHNe – Réseau Hospitalier Neuchâtelois, Switzerland). Comparisons encompassed 24-h, daytime (9am–9pm), and night-time (11pm–7am) systolic and diastolic BP (SBP, DBP) using a 7-day average BP measurement from a cuffless monitor (Aktiia SA, Switzerland) overlapping with a 1-day average from the ABPM (Dyasis 3, Novacor, France), both recorded at the start and end of the CR program. Two sessions were analyzed: session 1 compared the first day's ABPM data with the first week's Aktiia data; session 2 compared the last day's ABPM data with the last week's Aktiia data. Only sessions with at least 20 daytime and 7 night-time valid measurements from both monitoring modalities were included in this analysis.

Results: 51 subjects fulfilled the requirements of data availability (Figure 1, 44 in session 1, 35 in session 2). No significant differences were found between Aktiia and ABPM monitors in 24-h and daytime SBP readings (24-hour: mean±SD [95% CI] 2.6±12.3 [-0.2, 5.4] mmHg, correlation r = 0.57, P = 0.06; daytime: 1.2±12.4 [-1.6, 4.0] mmHg, r = 0.60, P = 0.38). Night-time SBP readings showed more pronounced differences (12.5±14.4 [9.3, 15.8] mmHg, r = 0.39, P<0.001). DBP readings were within clinical acceptance for 24-h and daytime (24-hour: -2.9±7.9 [-4.7, -1.1] mmHg, r = 0.63, P = 0.002; daytime: -3.1±8.2 [-5.0, -1.3] mmHg, r = 0.64, P = 0.001), with notable night-time differences (4.1±8.5 [2.2, 6.0] mmHg, r = 0.57, P<0.001).

Conclusion: The results suggest the Aktiia monitor yields equivalent 24-h and daytime performance compared to ABPM. Further research is underway to investigate nocturnal measurements.

Conflict of interest: No

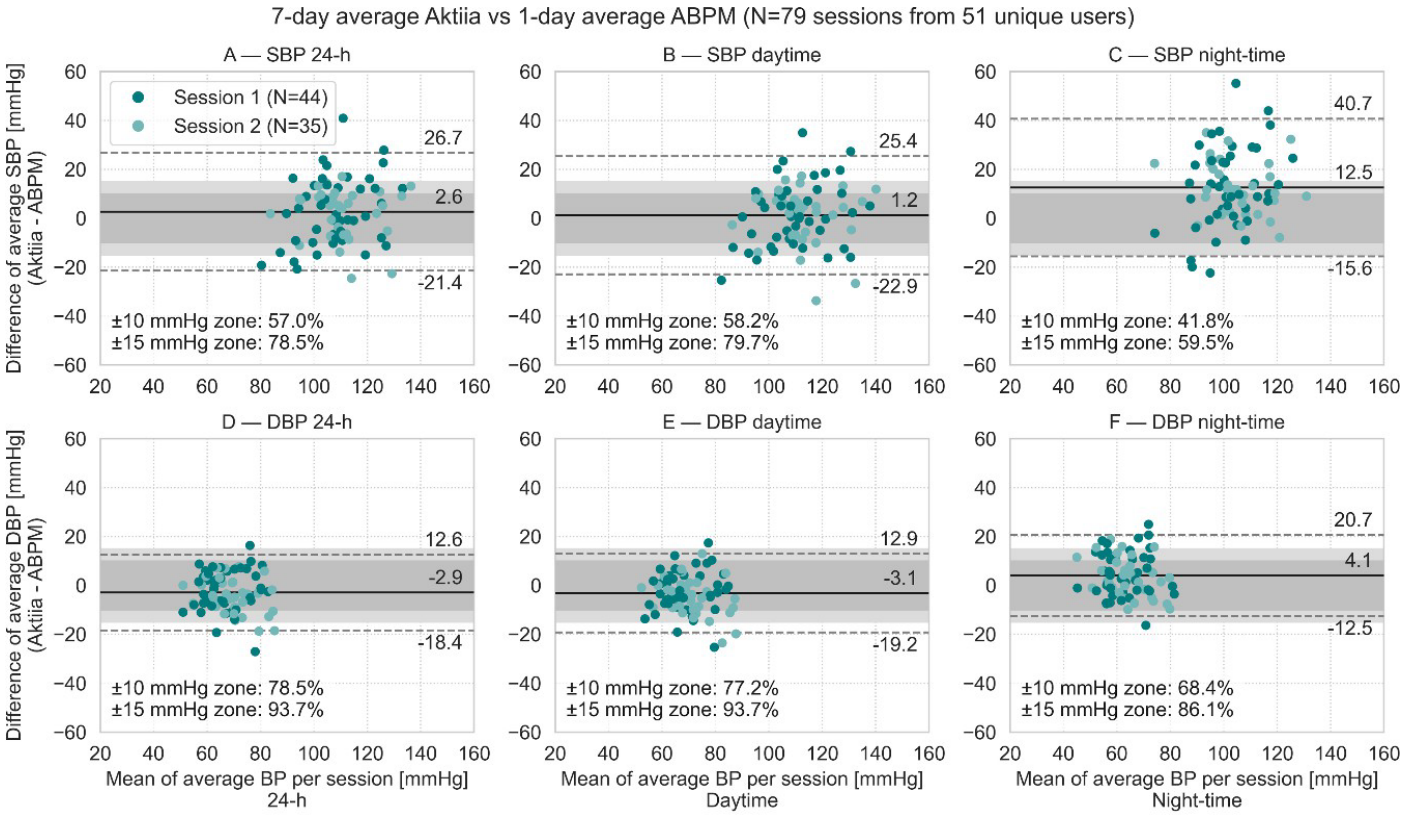


Figure 1. Bland-Altman plots comparing BP measurements performed by Aktiia monitor (7-day average) and ABPM (1-day average) for 24-h, daytime and night-time. Regions of interest within ±10 mmHg and ±15 mmHg are highlighted in dark grey and light grey, respectively. The percentage of agreement for each region is shown on the bottom left of the Bland-Altman plots. The solid black line denotes the average mean of differences, while the dotted lines denote the limits of agreement (±1.96σ).

POSTER WALK: ABLATION

P53

SCAR TISSUE CHARACTERIZATION TO PREDICT ARRHYTHMIA RECURRENCE IN PATIENTS UNDERGOING VENTRICULAR TACHYCARDIA ABLATION: CARDIAC COMPUTED TOMOGRAPHY COMPARED WITH CARDIAC MAGNETIC RESONANCE

Oskar Galuszka*[1], Samuel Baldinger[1], Thomas Kueffer[1], Antonio Madaffari[1], Gregor Thalmann[1], Martina Boscolo[1], Christoph Gräni[1], Hildegard Tanner[1], Laurent Roten[1], Tobias Reichlin[1]

[1]Inselspital University Hospital Bern, Department of Cardiology, Bern, Switzerland

Introduction: Cardiac computed tomography (CCT) and late gadolinum enhancement cardiac magnetic resonance (LGE-CMR) are most commonly implemented modalities for scar evaluation in patients undergoing ventricular tachycardia (VT) ablation. The aim of the present study was to compare the performance of both imaging modalities for scar tissue characterization in ischemic (ICM) and non-ischemic (NICM) patients undergoing VT ablation.

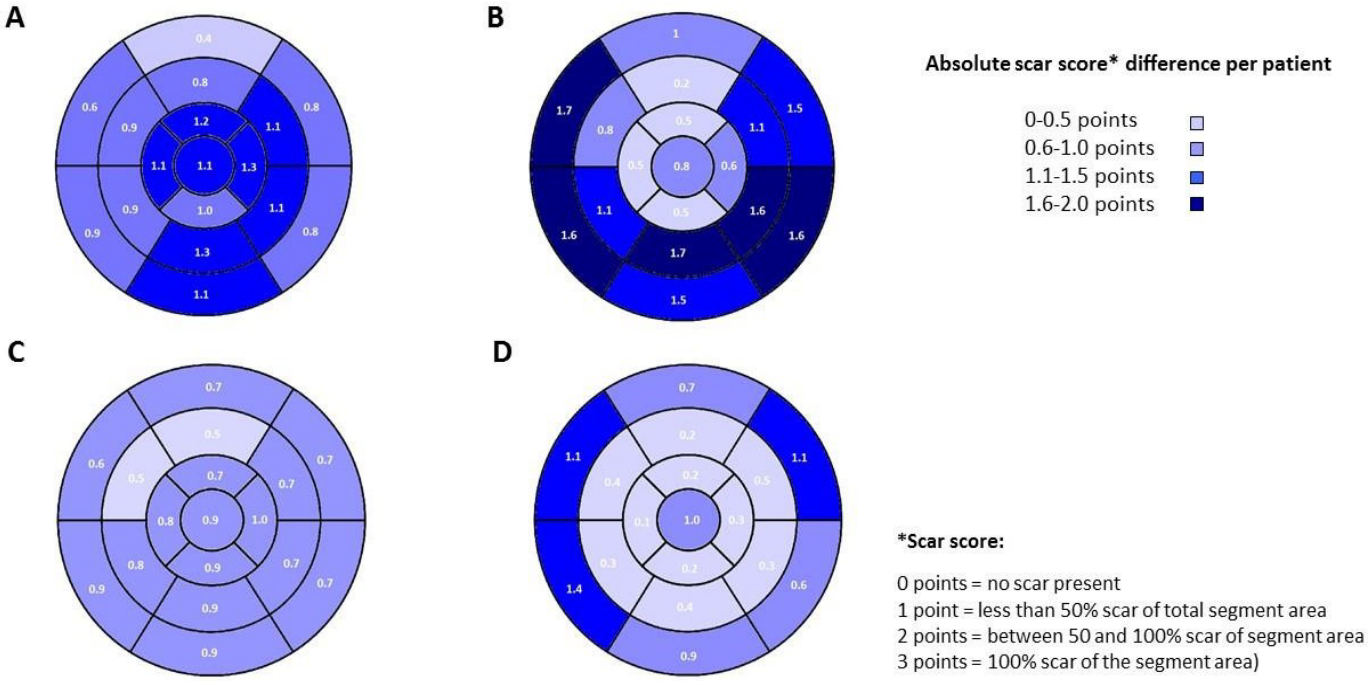
Material and methods: In a retrospective analysis, consecutive patients undergoing both MDCT and LGE-CMR before scheduled VT ablation were included. The presence and extent of scar was assessed by means of each imaging modality using dedicated softwares (MUSIC and ADAS). To compare scar distribution and agreement between the two modalities, a scar classification scheme was used for all 17 AHA segments: 0 points (no scar present), 1 point (scar <50% of total segment area), 2 points (50%<scar<100% of segment area) or 3 points (scar present in 100% of the segment area).

Results: 36 patients (67±10 years; 97% male; LVEF 39±10%; 72% ischemic) undergoing CCT and LGE-CMR before scheduled VT ablation were included. In ICM group, mean detected scar burden was higher than in NICM group on LGE-CMR (total volume: 62.3±32.9g vs. 32.8±9.5g, p <0.001), using wall thinning model (WT) (mean scar area 69.0±45.6 cm^2 vs. 23.4±23.6cm^2, p = 0.005) as well as late iodine uptake (LI) (dense scar area: 39.2±28.1 cm^2 vs. 11.0±6.3 cm^2 , p = 0.005). The absolute score difference per segment and patient between CCT and LGE-CMR was calculated and summed for all patients divided by the number of patients. Differences were more pronounced for NICM compared to ICM and LGE-CMR showed better concordance to LI than WT in both NICMP and ICM (Figure).

Conclusion: In patients undergoing VT ablation, both LGE-CMR and CCT are valuable for scar tissue characterization. Late iodine uptake on MDCT showed a high concordance with LGE-CMR in both NICM and ICM.

Conflict of interest: No

Figure. Absolute difference in scar score between LGE-CMR and **wall thinning** (A,B) and **late iodine** (C,D) on a 17-segment AHA model in **ischemic** (A andC) and **non-ischemic** (B and D) cardiomyopathy.



P54

IMPACT OF 3D-ELECTRO-ANATOMICAL MAPPING ON PROCEDURAL CHARACTERISTICS AND OUTCOMES IN PULSED-FIELD ABLATION FOR ATRIAL FIBRILLATION

Patrick Badertscher*[1], Corinne Isenegger[1], Serban Teodor[1], Philipp Krisai[1], Sven Knecht[1], David Spreen[1], Stefan Osswald[1], Christian Sticherling[1], Michael Kühne[1]

[1]Universitätsspital Basel, Basel, Switzerland

Introduction: While the utilization of dedicated 3D-electro-anatomical mapping (EAM) systems for catheter ablation is crucial using radiofrequency, its potential benefits in pulsed-field ablation (PFA) remain uncertain.

Material and methods: Our aim was to compare the procedural characteristics and outcomes of patients undergoing PFA for pulmonary vein isolation (PVI) with and without the use of a 3D-EAM system. We prospectively enrolled patients undergoing their first PVI at a tertiary referral center. In patients undergoing PVI with mapping, a multipolar mapping catheter (Octaray, Biosense Webster) was used to create voltage maps during sinus rhythm pre- and post-ablation.

Results: A total of 197 consecutive patients were included (age 65 [interquartile range (IQR) 58 – 72] years; left ventricular ejection fraction (LVEF) 58 [IQR 52 – 63]%; indexed left atrial volume 40 [IQR 35 – 44] mL/m^2). Among these, 127 patients (64%) underwent PVI with mapping and 70 patients (36%) with no mapping. Baseline characteristics were similar between the groups. The median procedure duration, left atrial dwell time and the fluoroscopic time for the mapping vs. the non-mapping group were 55 [IQR 45 – 67] min vs. 28 [IQR 23 – 35] min (p <0.001), 38 [IQR 30 – 49] min vs. 15 [IQR 11 – 21] min (p <0.001), 11 [IQR 9 – 14] min vs. 8 [IQR 7 – 11] min (p <0.001), respectively. There were two complications in the mapping group (one stroke, one temporary ST elevation) and none were observed in the non-mapping group, p = 0.303. The recurrence rate of atrial arrythmias during a median follow-up of 267 [IQR 164 – 419] days was 14% in the mapping group and 12% in the non- mapping group, p = 0.728.

Conclusion: The use of mapping was associated with a significant increase in procedural characteristics, while AF-recurrence was not significantly different. The role of mapping for PFA-PVI is unclear.

Conflict of interest: No

P55

COMPARISON OF A NOVEL TEMPERATURE CONTROLLED DIAMOND TIP AND A POWER CONTROLLED GOLD TIP CATHETER FOR IRRIGATED ABLATION OF CAVOTRICUSPID ISTHMUS-DEPENDENT ATRIAL FLUTTER

Eric Auf der Maur*[1], Thomas Kueffer[1], Nikola Kozhuharov[1], Antonio Madaffari[1], Helge Servatius[1], Andreas Haeberlin[1], Fabian Noti[1], Hildegard Tanner[1], Laurent Roten[1], Tobias Reichlin[1]

[1]Inselspital, Cardiology, Bern, Switzerland

Introduction: Radiofrequency (RF) ablation of the cavotricuspid isthmus (CTI) has become a recommended treatment option for CTI dependent atrial flutter (AFL). A novel irrigated diamond tip catheter using a temperature controlled RF ablation system was recently introduced. We aimed to compare the procedural efficacy and one year outcome of the temperature controlled catheter with an established irrigated gold tip catheter using a power controlled ablation system.

Material and methods: Consecutive patients undergoing ablation of CTI dependent AFL using a standard power controlled gold tip catheter (AlCath Flutter Flux G eXtra, Biotronik) or a novel temperature controlled diamond tip catheter (DiamondTemp, Medtronic) were enrolled. Patients were followed up using 7-day ECG after 3, 6 and 12 months. The primary endpoint was acute efficacy (total RF time and total procedure time). The secondary endpoint was recurrence of CTI dependent AFL.

Results: A total of 38 patients undergoing temperature controlled ablation were enrolled and compared to 283 patients undergoing power controlled ablation. Both total RF time (median 192 sec (IQR 138-311 sec) vs 643 sec (IQR 386-1079 sec), p <0.001) as well as total procedure time (median 45 min (IQR 34-57 min) vs 52 min (IQR 39-70 min), p = 0.01) were shorter with temperature controlled ablation. At 1 year of follow-up, recurrence of CTI dependent AFL occurred in 2 patients (5.4%) in the temperature controlled group and 10 patients (4.2%) in the power controlled group (p = 0.63).

Conclusion: The use of a temperature controlled system for ablation of typical AFL resulted in increased procedural efficiency with shorter RF and procedure times compared to power controlled ablation. Outcomes after 1 year were equally favourable in both groups with low rates of atrial flutter recurrences.

Conflict of interest: No

P56

CATHETER ABLATION OF ATRIAL FLUTTER IN THE YOUNG: INSIGHTS FROM AN INTERNATIONAL MULTI-CENTER REGISTRY

Josip Katic*[1], Patrick Badertscher[1], Diego Mannhart[1], Ivan Zeljkovic[2], Peter Ammann[3], Tobias Reichlin[4], Sven Knecht[1], Philipp Krisai[1], Michael Kühne[1], Christian Sticherling[1]

[1]Universitätsspital Basel, Basel, Switzerland, [2]Sisters of Charity Hospital, Zagreb, Croatia,

[3]Kantonsspital St.Gallen, St. Gallen, Switzerland, *[4]Inselspital, Bern, Switzerland*

Introduction: Catheter ablation (CA) of typical atrial flutter (AFL) has been proposed as a first-line treatment. It is unknown whether young patients differ from older patients with AFL.

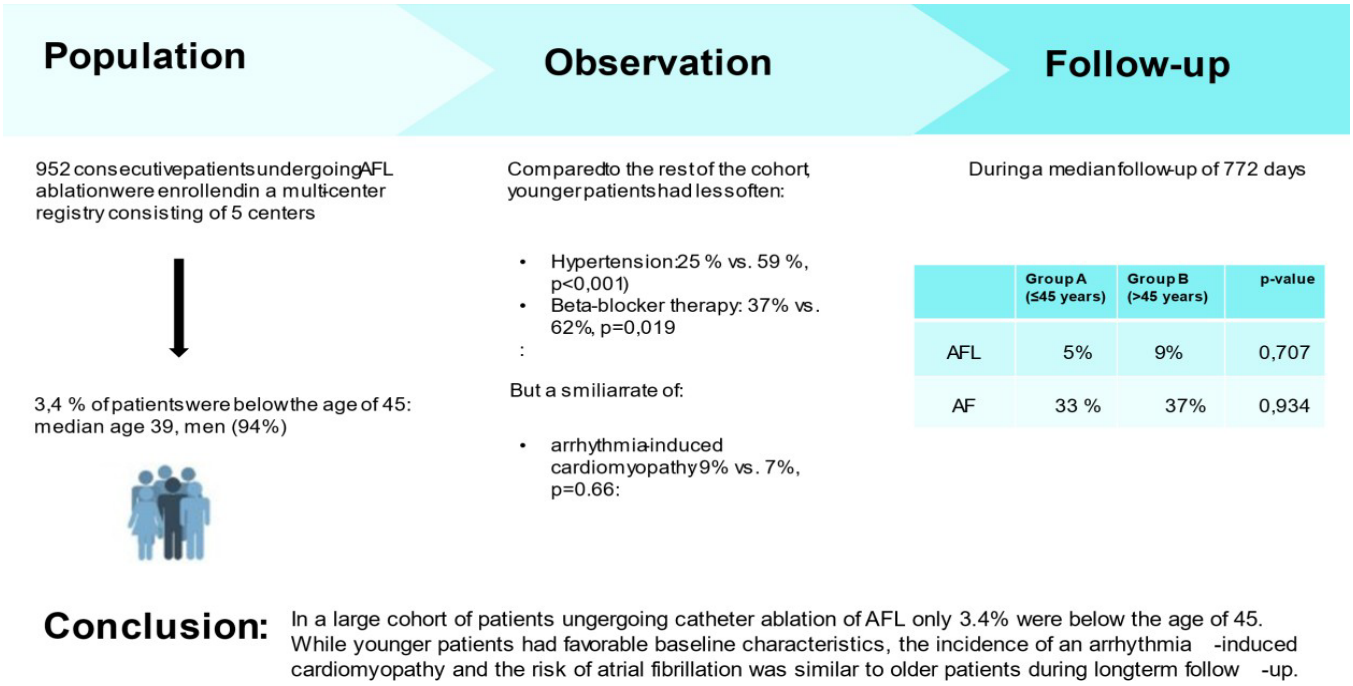
Material and methods: Aim of the study was to compare baseline characteristics, procedural data, and long-term follow-up of patients undergoing CA of AFL between two pre-defined age groups. Consecutive patients undergoing AFL ablation were enrolled in a multi-center registry consisting of 5 centers in 2 countries between February 2017 and July 2023. Two age groups were defined: Group A (≤45 years) and group B (>45 years).

Results: A total of 952 patients undergoing AFL ablation were included. The incidence of young patients undergoing CA for AFL (group A) was 3.4% with a median age of 39 years old. When compared to the rest of the cohort (n = 920, group B, median age: 69 yrs) younger patients were almost exlusively men (94% vs. 80%, p = .0.158), showed a lower incidence of arterial hypertension (p <0,001), were less often on beta-blocker therapy (37% vs 62%, p = 0,019), and had a significantly lower CHA2DS2-VASc score (0 [IQR 0-1] vs 2 [IQR 1-3] ; p <0,001). The incidence of an arrhythmia induced cardiomyopathy (AiCM) was 9% in group A and 7% in group B, p = 0,667. Procedure time, fluoroscopy times and complication rates were similar between both groups. During a median follow-up of 772 days AFL recurrence rates were similar between both groups (5% vs. 9%, p = 0.707) and atrial fibrillation(AF) occured in 33% in group A and in 37% in group B (p = 0.934).

Conclusion: In a large cohort of patients undergoing CA of AFL only 3.4% were below the age of 45. While younger patients had favorable baseline characteristics, the incidence of an

AiCM and the risk of AF was similar to older patients during long-term follow-up.

Conflict of interest: No



P57

INVESTIGATING PLASMA PROTEOMIC PATTERNS AND EXERCISE INDUCED ALTERATIONS IN ARRHYTHMOGENIC CARDIOMYOPATHY

Deniz Akdis*[1,2], Verena Wilzeck[1], Ge Tan[3], Sarah Costa[1], Gasperetti Alessio[4], Christian Matter[1], Corinna Brunckhorst[1], Cezmi Akdis[3], Ardan Saguner[1], Duru Firat[1]

[1]University Heart Center Zurich, University Hospital Zurich, Switzerland, [2]GZO, Zurich Regional Health Center, Wetzikon, Switzerland, Wetzikon, Switzerland, [3]Swiss Institute for Allergy and Asthma Research, Davos, Switzerland, [4]Johns Hopkins Hospital, Baltimore, Maryland, USA

Introduction: Arrhythmogenic cardiomyopathy (ACM) is an inherited heart muscle disease characterized by progressive fibrofatty replacement of the myocardium and ventricular arrhythmias. This study aimed to investigate characteristic proteomic patterns in plasma of ACM patients, and correlate them with exercise and outcome, to assess if soluble molecules may serve as specific biomarkers and whether mechanical stress induced by physical exercise may alter proteomic patterns.

Material and methods: In 38 ACM patients clinical data and major cardiovascular events were collected. 360 proteins were analyzed in plasma of 38 patients and 24 healthy controls using proximity extension assay technology with qPCR readout (Olink®). In 11 patients and 11 controls a standardized exercise test was performed and protein levels pre and post exercise were evaluated. Validation of key proteins was performed with Enzyme-linked Immunosorbent Assays (ELISA) in 24 patients and 16 controls.

Results: 23 patients (61%) experienced a major adverse cardiovascular event during follow-up. A comparative analysis between ACM patients with and without a MACE and controls demonstrated the upregulation of several proteins associated with immune response, angiogenesis, fibrosis and adipogenesis. After exercise 14 proteins were upregulated in ACM (Figure 1.), of those EFEMP1 was specifically upregulated in ACM at rest and also after exercise compared to controls. The absolute values obtained via ELISA confirmed the sustained elevation of EFEMP1 in ACM.

Conclusion: Our study reveals distinctive plasma proteomic profiles in ACM patients compared to controls at rest and after exercise, potentially shedding light on molecular mechanisms linked to arrhythmogenicity and physical stress. EFEMP1 emerges as a potential ACM biomarker in risk stratification to enable a more personalized disease treatment.

Conflict of interest: No

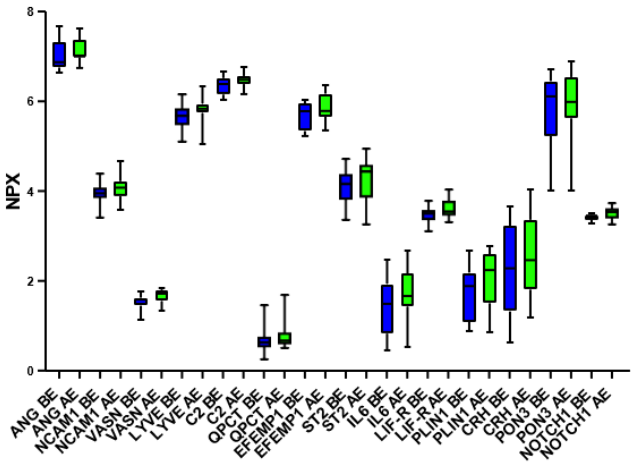


Figure 1: Upregulated proteins in ACM after exercise n = 11 using proximity extension assays Olink® technology. BE = before exercise, AE = after exercise, NPX = Normalized Protein eXpression, in Log2 scale, calculated from Ct values(

P58

MACHINE LEARNING FOR OUTCOME PREDICTION OF ATRIAL FIBRILLATION RECURRENCE AFTER CATHETER ABLATION

Sven Knecht*[1 1], Cyriac Joshy[1], Badertscher Patrick[1], Krisai Philipp[1], Schlageter Vincent[1], Spreen David[1], Osswald Stefan[1], Kühne Michael[1], Sticherling Christian[1]

[1]Universitätsspital Basel, Basel, Switzerland

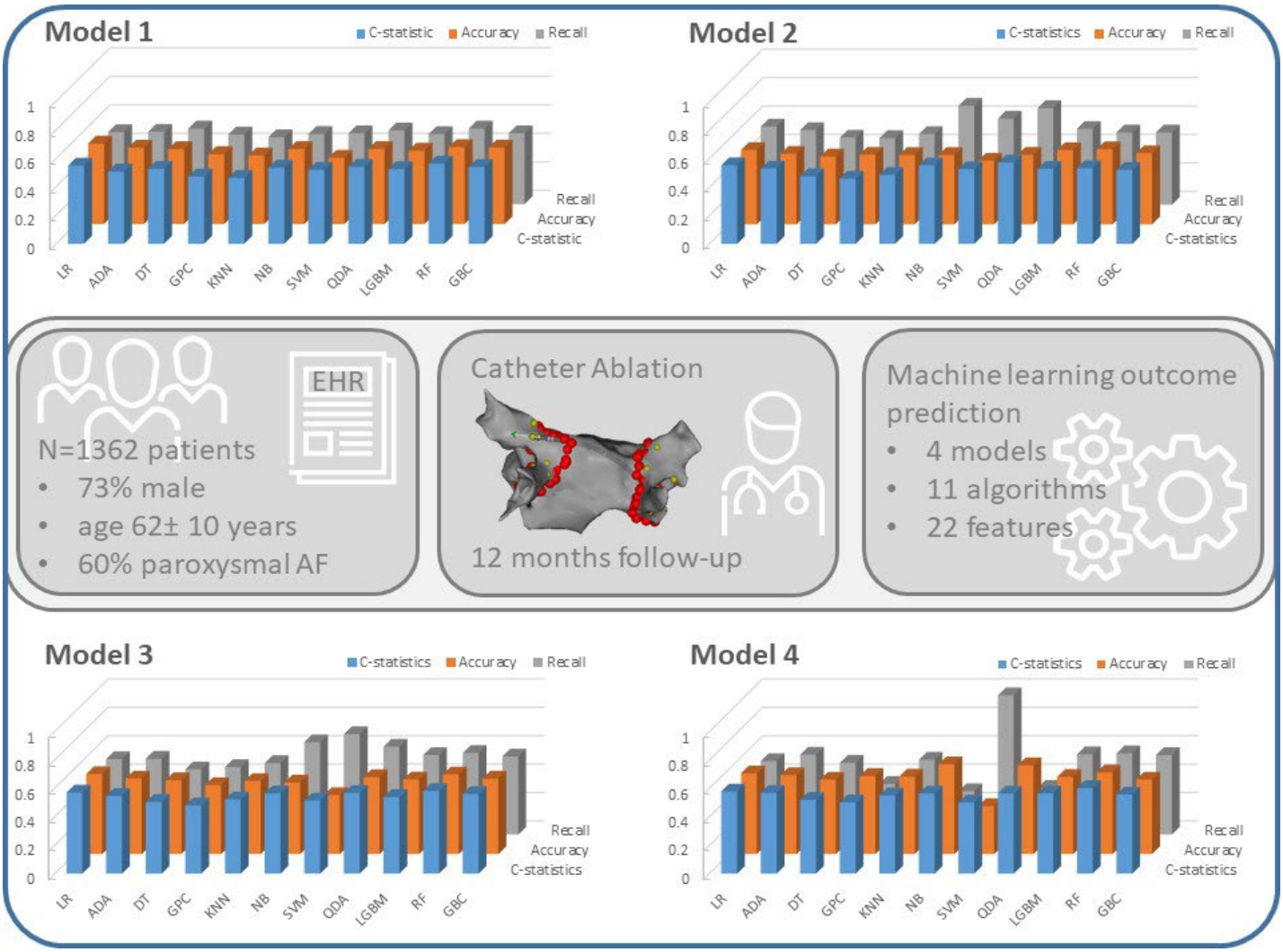
Introduction: Outcome prediction after catheter ablation for atrial fibrillation (AF) based on electronic health records (EHR) using machine learning (ML) is not yet established. The aim of the study was to assess the value of ML methods to predict the risk of AF recurrence after catheter ablation based on easily accessible EHR.

Material and methods: Four different analyses with increasing complexity using 22 features and ten ML algorithms were performed: model 1 (age, sex, height, weight, AF-type, coronary artery disease, myocardial infarction, stroke, heart failure, hypertension, current smoker, diabetes, renal insufficiency), model 2: model 1 plus additional AF-history features (duration of AF, atrial flutter, previous cardioversions, failed antiarrhythmic drugs), model 3: model 2 plus left ventricular ejection fraction and LA diameter, model 4: model 3 plus biomarkers (CRP, creatinine, NTproBNP). To evaluate the performance, we report C-statistics, accuracy, and recall. C- statistics of five risk scores for AF recurrence (APPLE, DR-FLASH, BASE-AF2, ATLAS, CHA2DS2-Vasc) and a logistic regression were calculated for comparison.

Results: Of the 1362 patients, 996 (73%) were male, mean age was 62±10 years and 60% presented with paroxysmal AF. Recurrence of AF during 1-year follow-up was observed in 458 patients (34%). The results are summarized in the Figure. Briefly, the C-statistics were modest with a maximal value of 0.602 for the random forest (RF) classifier. The performance of the logistic regression was comparable with a C-statistics of 0.607 (95% CI 0.573-0.641) and lower for the risk scores with the APPLE score showing the best results (C-statistics 0.572).

Conclusion: Outcome prediction of AF recurrence after catheter ablation with easily accessible EHR data remains challenging and cannot be improved simply by applying ML methods. Whether more comprehensive feature selection or combination with deep neural network-based feature extraction might improve the result needs further investigation.

Conflict of interest: No



Results for the four different models.

P59

BIOMARKERS TO PREDICT IMPROVEMENT OF LEFT VENTRICULAR EJECTION FRACTION AFTER ATRIAL FIBRILLATION ABLATION

Serban Teodor*[1], Elisa Hennings[1], Ivo Strebel[1], Jeanne du Fay de Lavallaz[1], Philipp Krisai[1], Rebecca Arnet[1], Stefan Osswald[1], Christian Sticherling[1], Michael Kühne[1], Patrick Badertscher[1]

[1]Universitätsspital Basel, Cardiology, Basel, Switzerland

Introduction: Atrial fibrillation (AF) and heart failure (HF) frequently coexist. We aimed to evaluate the value of biomarkers, alone and in conjunction with the Antwerp score to predict left ventricular ejection fraction (LVEF) recovery after catheter ablation (CA) in patients with AF and HF.

Material and methods: Patients undergoing CA for AF with depressed LVEF (<50%) were included. Plasma levels of 13 biomarkers were measured immediately prior to CA. Patients were categorized into "responders" and "non-responders" in similar fashion to the Antwerp score derivation and validation cohorts. The predictive power of the biomarkers alone and combined in outcome prediction, as well as improvement of the Antwerp score was then evaluated.

Results: 208 patients with depressed LVEF were included (median age 63 years, 19% female, median LAVI 42 ml/m^2, median LVEF 43%). At a median follow-up time of 30 months [IQR 20-34], 161 (77%) were responders and 47 (23%) were non- responders. Of 13 biomarkers, four (ANG2, GDF15, FGF23 and MyBPC3) were significantly different between responders and non-responders (p ≤0.001) and predicted the endpoint with an AUC of 0.72 (95%CI 0.64-0.81) overall, 0.69 (95%CI 0.59- 0.78) in HFmrEF and 0.88 (95%CI 0.77-0.98) in HFrEF. Only ANG2 and GDF15 remained significantly associated with LVEF recovery after adjustment for age, sex, and the Antwerp score, and significantly improved the accuracy of the Antwerp score predictions (p <0.001), while the AUC of the Antwerp score in the outcome prediction improved from 0.75 (95% CI 0.67-0.83) to 0.78 (95% CI 0.70-0.86)

Conclusion: A biomarker panel using ANG2, GDF15, FGF23 and MyBPC3 performs similarly for prediction of LVEF recovery after CA in AF compared to the Antwerp score. The biomarkers ANG2 and GDF15 slightly improve the predictive value of the Antwerp score.

Conflict of interest: No

P60

HIGH-DENSITY MAPPING OF HIS-VENTRICULAR INTERVALS: IMPACT OF MEASUREMENT LOCATION AND SEX-SPECIFIC DIFFERENCES

Serban Teodor*[1], Sven Knecht[1], Josip Katic[1], Philipp Krisai[1], Stefan Osswald[1], Christian Sticherling[1], Michael Kühne[1], Patrick Badertscher[1]

[1]Universitätsspital Basel, Basel, Switzerland

Introduction: The His-ventricle (HV) interval measurement is useful in risk stratification in patients with syncope. We aimed to investigate the impact of the measurement location on HV interval as assessed using a high- density mapping catheter.

Material and methods: Consecutive patients undergoing catheter ablation for atrial fibrillation were evaluated using a multipolar high-density mapping catheter in conjunction with a 3D-electroanatomical mapping system. HV interval measurements were obtained in sinus rhythm in three positions: proximal – HV_{prox}, distal – HV_{dis} and at the right bundle branch– HV_{RB}). Differences in male and female patients were evaluated.

Results: 67 patients were included (mean age 64±10, 33% women). The median HV measurements at HV_{prox}, HV_{dis} and HV_{RB} were 51±10 ms, 46±10ms and 37±10ms, respectively (p <0.001). The difference in HV measurements between HV_{prox} and HV_{dis} were 6.3±6.3 ms and between HV_{dis} and HV_{RB} 7.2±7.8 ms. The HV-measurements were significantly shorter in women compared to men: HV_{prox} (48±9 ms vs 53±10 ms, p = 0.03), HV_{dis} (42±8 ms vs 48±10 ms, p = 0.005) and HV_{RB} (33±8 vs 40±10 ms, p = 0.002). An HV interval ≥55ms was identified in 19 patients (28%), 8 patients (12%) and 3 patients (4%) when measuring at the HVprox, HVdis and HVRB position, respectively. An HV interval ≥70 ms was identified in two patients (3%) only at the HVprox. The conduction velocity from the HV_{prox}, to the HV_{dis} was 1.8±1 m/s and from the HV_{dis} to the HV_{RB} 1.4±1 m/s. While the distal conduction velocities were significantly slower than the proximal conduction velocities in men (1.4±0.6 m/s vs 1.8 ±1 m/s, p = 0.03), they were similar in women (1.5±0.8 m/s vs 1.6±0.9 m/s, p = 0.85).

Conclusion: A defective catheter placement when measuring the HV interval may lead to underdiagnosis of infrahisian conduction disorders. We found several differences between men and women in the His- Ventricle conduction characteristics.

Conflict of interest: No

POSTER WALK – POSTER WALK: CLINICAL CASES

P61

SUBCLINICAL LEAFLET THROMBOSIS IN OZAKI PROCEDURE

Nerea Lopez*[1], Marisa Jaconi[2], Christoph Huber[1], Zeinab Dehghani[2], Philippe Reymond[1], Alexandre Porcello[3], Gregory Khatchatourov[4], Mathieu van Steenberghe[1, 4]

[1]Clinique Cecil, Cardiovascular Surgery, Lausanne, Switzerland, [2]Hôpitaux Universitaires de Geneve, Cardiovascular Surgery, Genève, Switzerland, [3]Clinique Cecil, Lausanne, Switzerland, [4]Clinique Cecil, [5]Hôpitaux Universitaires de Geneve

Introduction: Aortic valve reconstruction with autologous glutaraldehyde fixed pericardium represents an alternative to conventional prosthesis for heart valve replacement allowing excellent hemodynamic outcome. In recent literature, midterm term clinical and echocardiographic results are promising. Common reported complications are endocarditis or aortic insufficiency (AI).

Material and methods: We report two cases of Subclinical Leaflet Thrombosis (SLT) at 12 and 23 months of follow-up in our serie of 120 Ozaki. In addition, to enlight on this phenomen in this procedure, histological analysis of a neovalve leaflet of a patient reoperated at 3 months for AI is reported.

Results: The three patients were operated for aortic stenosis. At 12 for the first and 23 months for the second patient, echocardiographic controls showed increase of aortic transvalvular gradient, thickening and restrictive mobility of one leaflet. A Ct scan confirmed SLT diagnosis. Anticoagulation therapy was started and later echocardiography control showed hemodynamic and mobility improvement of the neovalve. For the third patient, a severe AI was diagnosed at 3 months. He was reoperated. Peroperative findings showed partial rupture of one leaflet suture line. The valve was histologically assessed for endothelialization (CD31 immunostaining), biocompatibility (CD3/CD68 immunostaining) and calcifications (vonKossa). The fashioned valve showed lack of calcifications, some inflammatory reaction and partial endothelialization.

Discussion: Subclinical leaflet thrombosis is well documented for biological xenogeneic prosthesis. To our knwoledge this is the first report of SLT in Ozaki procedure. At three months, the glutaraldehyde fixed pericardium showed partial endothelialization. Glutaraldehyde is known for cytotoxicity for colonizing cells. Numerous studies showed poor endothelialization can be responsible for thrombosis creating favorable condition for endocarditis or leaflets degeneration.

Conclusion: SLT can occurs in Ozaki procedures and can be related to poor endothelialization. Anticoagulation should be recommended postoperatively for the first three months. Finally, alternative to cytotoxic glutaraldehyde should be envisaged for better pericardium recellularization.

Conflict of interest: No

P62

A CARDIAC PRESENTATION OF BLUE RUBBER BLEB NEVUS SYNDROME

Giulia Scopetani*[1], Joyti Anafack[1], Anna Nowacka[1], Matthias Kirsch[1]

[1]CHUV, Cardiac Surgery, Lausanne

Introduction: Blue rubber bleb nevus syndrome (BRBNS) is a rare condition, who is characterized by numerous venous malformations in the skin and viscera, particularly in the gastrointestinal tract. The exact etiology of this syndrome is unknown, but on a molecular level, the elevated expression of c-kit has been demonstrated. Cardiac involvement is not described in the literature.

Material and methods: We report a case of a 56-year-old patient, know for BRBNS, with multiple venous malformations, mainly in the head and neck. She has been followed for years for intracardiacs and pericardial masses on the rise. She was admitted to our center to drain a pericardial effusion in augmentation. At the opening of the pericardium we drain 500 ml of serous liquid. We observed several epicardial vein malformations like '' Blue Rubber Bleb Naevus '' along the right ventricle infundibulum and several adventitial lesions on the ascending aorta. At exploration, we discover a pediculated mass on the auricle of the left atrium. The pedicle is clamps, ligatured with a Prolene 4.0, then the mass is excised and sent for pathological and genetic examinations.

Results: The procedure was performed on a patient with the BRBNS that does not respond to treatment with Siverolimus, considered as the first-line therapy. The intracardiac masses did not cause obstruction and we left them on site. The pericardial mass was the cause of the reactive pericardial effusion.

Conclusion: We herein report an extremely rare case of the combination of blue rubber bleb nevus syndrome with cardiac involvement. With our intervention we have avoided an urgent intervention for cardiac tamponade, but the pericardial effusion will continue to form if the patient will remain unresponsive to the only treatment known for this rare syndrome.

Conflict of interest: No

P63

MULTIPLE ARTERIAL REVASCULARIZATION: K-GRAFT TECHNIQUE

Alexandre Pelouze*[1], Sebastien Colombier[1], Dominique Delay[1]

[1]Hospital Du Valais, Cardiac Surgery , Sion, Switzerland

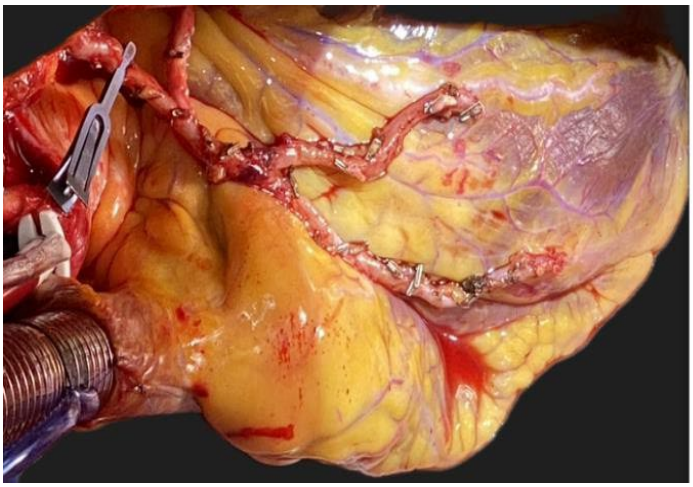
Introduction: In addition to patient-related factors, the outcome following CABG is related to the long-term patency of grafts and therefore is maximized with the use of arterial grafts.[1,2] Bilateral Internal Mammary Artery (BIMA) grafts provide better patency rates than vein grafts, particularly for the left coronary artery system[3]. Indeed, arterial graft allows better flow characteristics, adaptability to myocardial oxygen demand variation and atherosclerosis resistance.[4] Y or T configurations are frequently used and supply distal branches adequately; however significant diagonal or marginal branches are sometimes off the route of the LIMA to LAD (too lateral) and at the same time inappropriate for sequential grafting with the limb of the Y or T graft. Complex composite configurations (K, π, double-Y, loop and sling)[5] may be use in this case. They provide additional possibility in performing multiple arterial grafting.

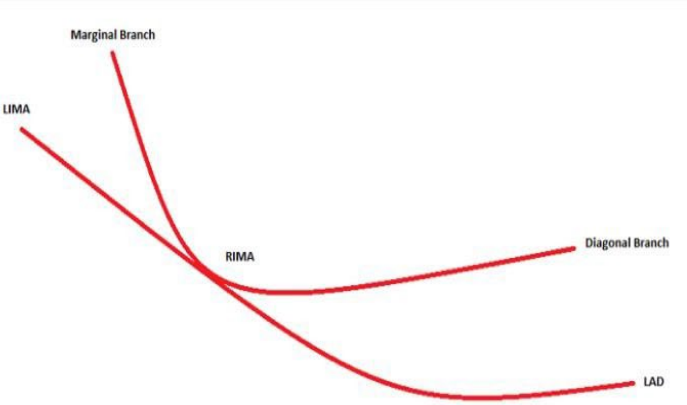
Material and methods: We present the case of a 70 years old patient known for multivessel coronary artery disease with preserved left ventricular ejection fraction. After skeletonized BIMA harvesting, CPB was initiated and heart arrested. Both ends of the free RIMA were anastomosed end to side to marginal and diagonal arteries using 8-0 monofilament running sutures. LIMA was then used for revascularization of the LAD. Finally, wide open side to side LIMA to RIMA anastomosis was performed with determination of the dedicated site after proper positioning of the grafts and cardiac chambers filling.

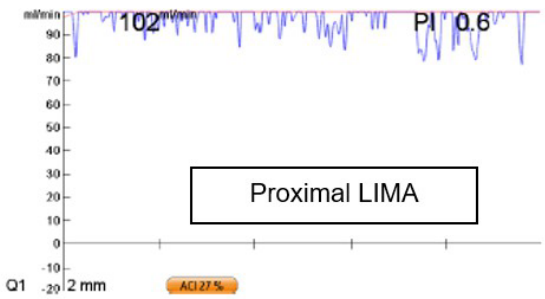
Results: TTFM was used to assess blow flow in the composite graft with excellent result and harmonious flow distribution. Post-operative course was uneventful and patient discharged home at day 7.

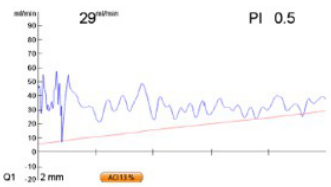
Conclusion: K graft is a convenient technique to access more lateral and distal branches using BIMA. It allows to use only end to side type of anastomosis on the coronary and a large wide open side to side anastomosis between the arterial grafts.

Conflict of interest: No

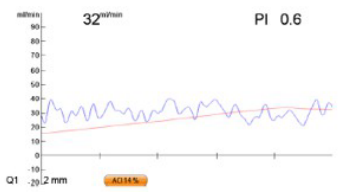




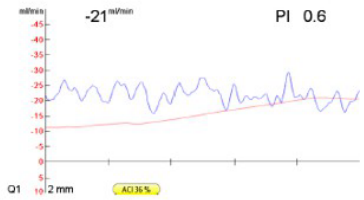




Distal LIMA



RIMA to Diagonal



RIMA to Marginal

P64

SUDDEN CARDIAC ARREST IN A PATIENT WITH ARRHYTHMIC MITRAL VALVE PROLAPSE AND MITRAL ANNULAR DISJUNCTION

Elia von Felten*[1], Tanner Felix C.[2], Manka Robert[2], Saguner Ardan M.[2]

[1]University Hospital of Zürich, Institute of Intensive Care Medicine, Zürich, Switzerland, [2]University Hospital of Zürich, Department of Cardiology, Zürich, Switzerland

Introduction: Mitral valve prolapse (MVP) is the most prevalent valve abnormality in western countries, but, in general, it does not impact survival. However, arrhythmogenic MVP is a rare cause of sudden cardiac arrest (SCA). Although mitral annulus disjunction (MAD) is associated with malignant arrhythmias, limited evidence exists for risk stratification and preventing SCA in patients with MVP.

Case: A 53-year-old male with a family history of SCA and mitral valve disease was admitted after out-of-hospital resuscitation. Ventricular fibrillation was the initial rhythm and return of spontaneous circulation occurred after twelve minutes of cardiopulmonary resuscitation and delivery of five defibrillation shocks. The patient had an 18-year medical history of bileaflet MVP with minimal insufficiency. Besides escitalopram and methadone, the patient was treated with rivaroxaban after an episode of atrial fibrillation four years ago. Then, a resting ECG showed T-wave inversions in II, III, and aVF and a premature ventricular contraction originating from the posterior mitral annulus. Upon admission, ECG remained unchanged compared to that of four years ago and showed normal QT interval. Coronary angiography showed unobstructed coronary arteries and ventriculography a mildly impaired left ventricular function. Echocardiography demonstrated meso- to telesystolic prolapse of both mitral leaflets, MAD of the posterior leaflet, minimal telesystolic mitral regurgitation, and myocardial curling in the lateral and inferior segments. Cardiac magnetic resonance imaging (CMR) confirmed MAD of 10mm with midmyocardial and subendocardial late gadolinium enhancement (LGE). After extubation, one day after admission, the patient showed no neurological abnormalities apart from delirium. During telemetry monitoring in the subsequent days, he exhibited recurrent ventricular premature contractions and non-sustained ventricular tachycardias. An implantable cardioverter-defibrillator was implanted for secondary prevention.

Conclusion: MVP accompanied by MAD is a potential cause of SCA. Family history of SCA, typical ECG changes, MAD extent and LGE patterns may aid in risk stratification.

Conflict of interest: No

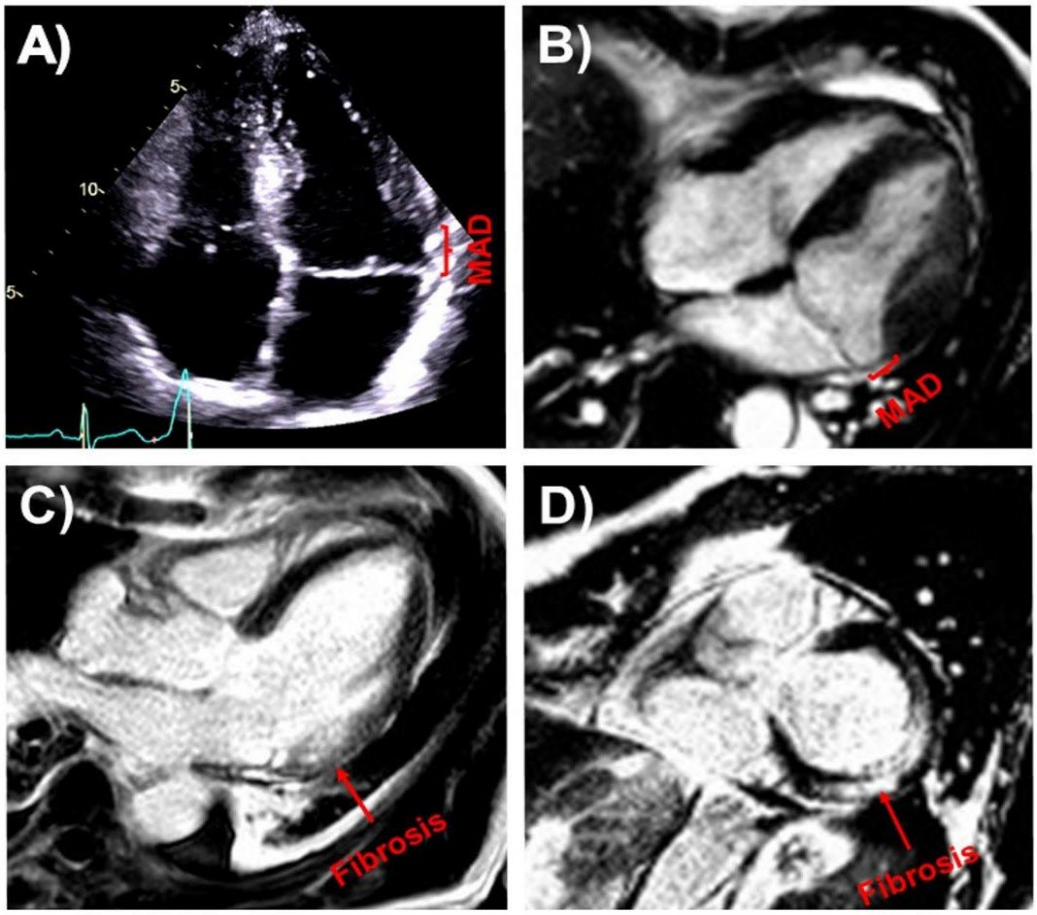


Figure 1: Visualization of mitral annular disjunction by TTE and CMR along with corresponding midmyocardial to subendocardial fibrosis in the presented patient:
A) TTE four-chamber view (systolic).
B) CMR Cine four-chamber view (systolic)
C) CMR three-chamber view of a late gadolinium enhancement sequence (diastolic).
D) CMR short-axis view of a late gadolinium enhancement sequence (diastolic).

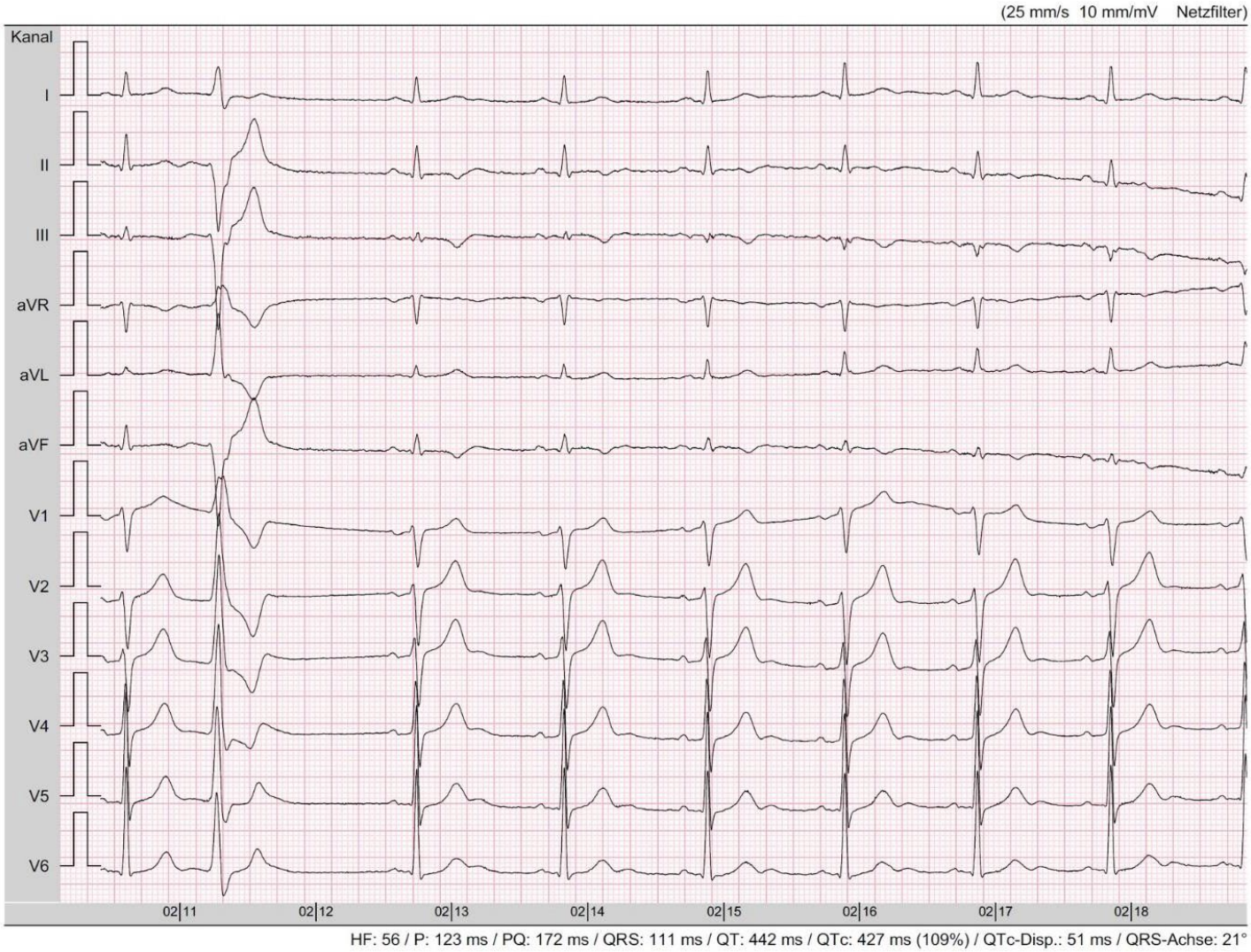


Figure 2 – Resting ECG four years prior to sudden cardiac arrest: Besides a sinus rhythm, a normal axis with narrow QRS complexes and normal QT-interval, T-wave inversions in II, III, AVF and a premature ventricular contraction with a compensatory pause originating from the posterior mitral annulus can be noted.

P65

CARDIAC SEA ANEMONE: BENIGN BUT MORBID. TWO CASES OF CARDIAC PAPILLARY FIBROELASTOMAS

Alexandre Pelouze*[1], Sebastien Colombier[1], Dominique Delay[1]
[1]*Hospital Du Valais, Sion, Switzerland*

Introduction: Cardiac papillary fibroelastomas (CPFs) are extremely rare primary cardiac tumors [1]. They arise mostly from the normal endocardium probably originating on sites of minor endothelial damage on valvular surfaces. Preferably growing on the aortic valve they have also been described on the mitral, tricuspid and pulmonic valves, inside the heart chambers or ascending aorta endothelium.

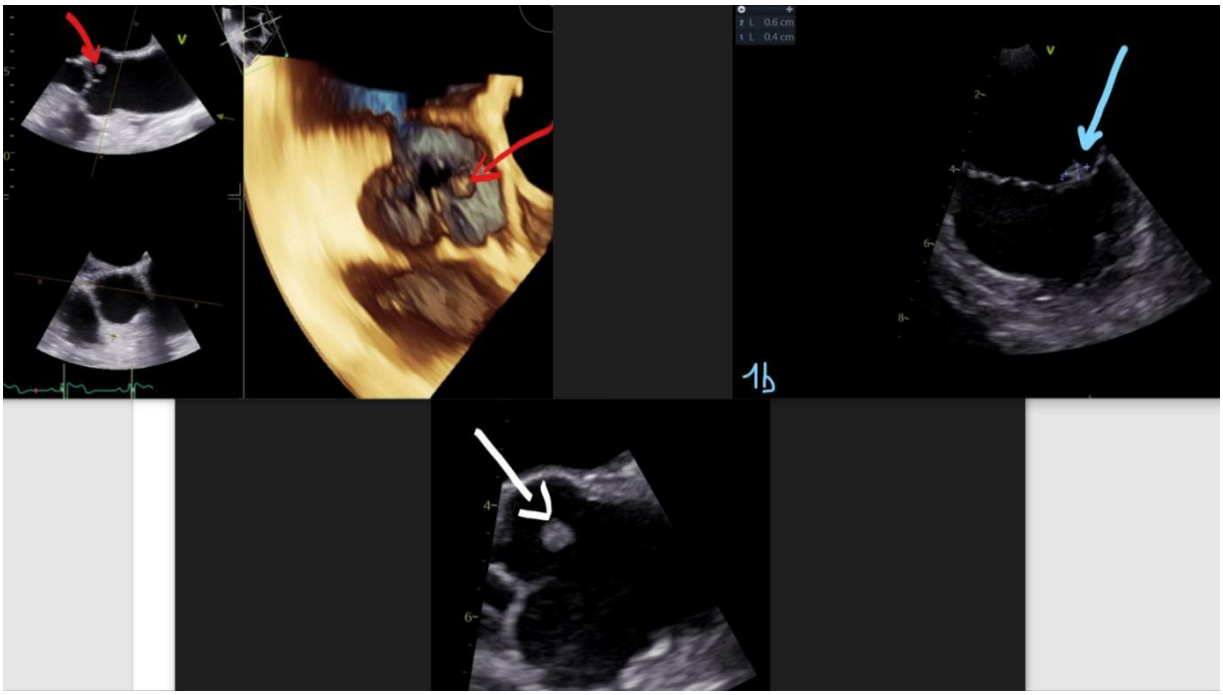
CPFs are usually small (<20 mm), mostly single, mobile with a stalk. Although small, they carry a high embolic risk being responsible for transient ischemic attacks, strokes, myocardial infarctions and even sudden deaths. In most cases, they are discovered after an embolic even and surgically removed.

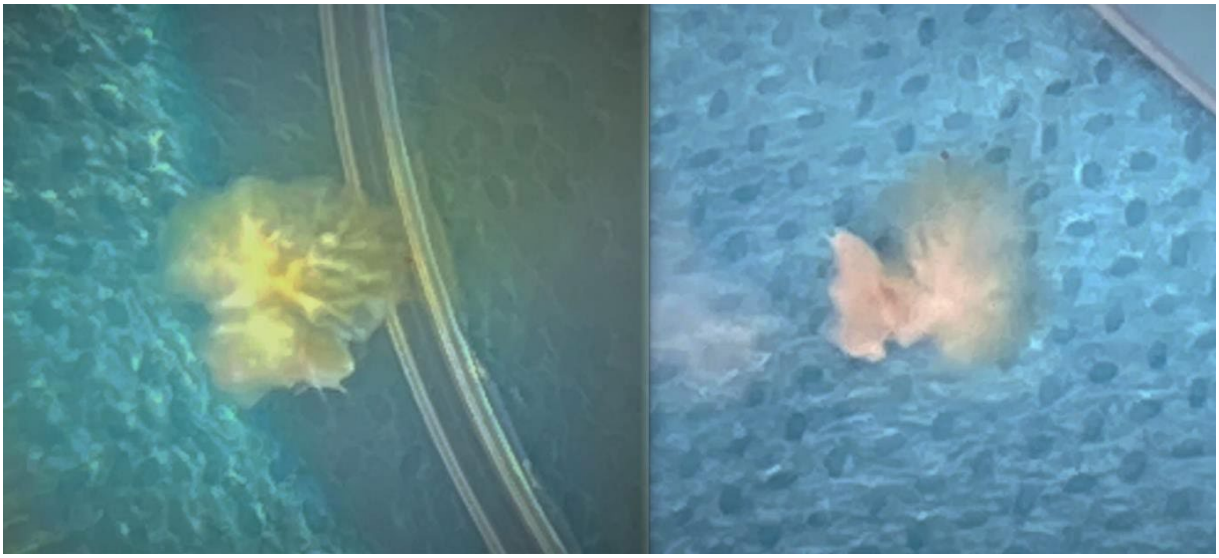
Material and methods: We present two patients with incidental findings of intracardiac mass suspicious for CPF. The first patient presented for TTE after syncope and a 6x7mm mass was found on the non-coronary aortic valve leaflet 13 mm away from the left coronary ostium (Fig 1a). The second patient presented with new onset of dyspnea and atrial flutter. TEE was performed to look for intracardiac thrombus before electric cardioversion. A 5x5 mm mass was found on the posterior mitral valve leaflet. (Fig 1b). Size, shape and mobility of the masses were highly suspect for CPF.

Results: After complete preoperative workup, both patients were operated with complete resection of the mass. Pathological confirmation of the diagnosis was achieved in both cases. Peroperative diagnosis was highly suspected after placement of the resected tumors in a saline cup according to their appearances suggesting a sea anemone (Fig 2).

Conclusion: These two cases illustrate the fact that even in absence of former guidelines, in case of high suspicion of CPF on TEE, surgery should be considered before the occurrence of potentially severe embolic events, considering that CPF excision is a safe procedure.

Conflict of interest: No





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