0260

Relation of presence and severity of metabolic syndrome with left atrial mechanics in patients, a deformation imaging study

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Objective: We aimed to investigate left atrium (LA) function by speckle tracking echocardiography in women with metabolic syndrome (MetSyn) admitted in chest pain unit with normal chronic angiography and to show a possible relationship between the severity of MetSyn and LA function

Methods: we included 180 MetSyn patients without diabetes and 50 controls. The patients were classified into three groups based on the number of MetSyn criteria. The peak LA strain at the end of the ventricular systole (LAs-trols) as well as the LA strain with LA contraction (LAa-strain) was obtained. Correlation analysis performed to assess the association of LA strain parameters with the severity of MetSyn and logistic regression analysis performed to assess the relationship of low LA strain with MetSyn criteria. The peak LA strain at the end of the ventricular systole (LAs-trols) vs. 13.0±6.4, p<0.001) strain measurements were found to be significantly decreased in patients with MetSyn when compared to the control group. Moreover, both LAs and LAa were found to be significantly decreased with the increasing severity of the MetSyn. A multiple logistic regression analysis demonstrated that the presence of MetSyn [OR:0.34 (95% CI 0.04-0.89), p=0.032] and left ventricular ejection fraction [OR:1.23 (95% CI 1.02-1.77), p=0.03] were independent predictors of LAs strain.

Conclusion: MetSyn is associated with reduced LAs strain and LAa strain representing LA reservoir and pump function, respectively. Furthermore, LA mechanical function decreases even more with the increasing severity of the MetSyn.

0316

Assessment of left ventricular mass regression after implantation of a new generation of sutureless aortic bioprosthesis

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Background: The development of left ventricular (LV) concentric hypertrophy in the natural course of aortic stenosis is known as an independent prognostic factor of morbidity and mortality. The regression of LV mass after aortic valve replacement leads to an improvement of functional capacity and long-term outcome.

Objectives: To assess the degree of LV mass regression at one month after implantation of Edwards INTUITY.


Results: 72 patients, age = 77.4±6.6, BMI = 31.2±4.2,Euroscore II= 3.4±3.4, LVEF = 63.4±10.2%. Aortic valve area = 0.5±0.2 cm². Mean gradient = 56.7±19.3mmHg.Stroke volume = 49.9±11.6L/min,full sternotomy in all, associated CABG in 23 patients (33%). Cross clamping time = 48.7±22.3. 1/ In hospital mortality: 1.4%. 2/ Evolution of LV parameters: LVEF% remains stable (61.6±8.9 versus 61.8±7.5, p=0.08), IVSd (mm) and LVPWd (mm) significantly decreased ((13.5±2 vs 14.9±1, p<0.001) and (12.5±1.5 vs 15.3±1.4, p<0.001)). 3/ Evolution of LV mass index; LV mass index (mg/m²) significantly decreased at one month FU(124±26.7 vs 167±45.1, p<0.001) 4/ Evolution of mean gradient and iEOA: Mean gradient (mmHg): 12.3±7.10 vs 56.7±19.3, p< 0.001 iEOA(cm²/m²): 1.0±0.4 vs 0.5±0.2, p<0.001 5/ Incidence of PPR No moderate or severe paravalvular leakage was observed at discharge and at follow-up.

Conclusion: Edwards’s Intuity bioprosthesis provides favorable preliminary results and is associated with significant regression of LV mass during the first month after aortic valve replacement. Midterm results should be evaluated.

0323

Prognostic value of main pulmonary artery dilatation in pulmonary hypertension

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Purpose: Pulmonary artery (PA) dilatation is often seen in patients with pulmonary hypertension (PH). The objective of our study was to identify factors associated with PA dilatation and to assess its prognostic significance in group 1 and 4 PH patients.

Methods: We performed a longitudinal cohort study, including consecutive patients with group 1 and 4 PH hospitalized in our center. Patients underwent clinical and biological evaluation, transthoracic echocardiography (TTE), CT scan and right heart catheterization and were followed every 3 months.

Results: 70 patients were recruited (70% group 1, 30% group 4). Mean age was 67±15 years and 70% were in functional class NYHA III or IV. PA dilatation (>30mm on CT) was observed in 87% of patients. Mean PA diameter was 37.2±8.2mm and it was significantly larger in congenital heart disease patients: 46.2±8.6mm (p<0.01). In multiple regression analysis, duration of symptoms (p=0.01) and myocardial performance index (p=0.02) were correlated with PA diameter. During a mean follow up of 59±19 months, 18 patients died (26%) (16 from heart failure and 2 from sudden death). On univariate analysis, while NYHA class (HR 2.37, 1.18-4.75), low 6-minute walk distance (HR 0.99 per 50m, 0.98-0.99), low cardiac index (HR 0.25 per 1L/min/m², 0.09-0.71), right atrial pressure (HR 1.12 per 1 mmHg, 1.02-1.2), low TAPSE (HR 0.84 per 1mm, 0.76-0.93), right atrial area (HR 1.08 per 1cm², 1.03-1.02) and high BNP were associated with mortality, PA diameter was not (HR: 0.97 per 1mm, 0.91-1.04). On multivariate analysis low TAPSE and high BNP level were independent predictors of all-cause mortality (respectively HR 0.72, 0.52-0.98 and 3.0, 1.01-8.90).

Conclusion: PA dilatation is frequent in PH and is associated with the duration of symptoms and poor myocardial performance index. However, in group 1 and 4 PH patients, PA dilatation is not predictor of mortality.

0333

Variability of right ventricular strain derived from speckle-tracking analysis using two different software solutions

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Introduction: Speckle tracking imaging is a recent technique that can be achieved using either vendor dependent or vendor-independent software. Right ventricular (RV) strain is increasingly used as a prognostic tool in both left and right ventricular diseases. Only little is known regarding the variability of vendor-dependent and independent analysis using either vendor dependent or vendor-independent software. The aim of our study was to compare a vendor-dependent (Qlab 9.0, Philips Medical System, Andover, MA, USA) and - independent (Cardiac Performance Analysis, Tomtec Imaging Systems, Germany) software for RV analysis.

Methods and Results: We prospectively enrolled 90 consecutive patients with pulmonary hypertension (mean age 55.8±19years) and 26 control patients (mean age 33.9±13years) who underwent a comprehensive echocardiogram including a RV focused 4-chamber view optimised for speckle-tracking analysis. DICOM data sets were stored and analysed by 2 different cardiologists using Qlab and TomTec, blindly to the context and

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each other. In the whole population, mean RLS was $-17.3\%\pm 9$ and $-8.6\%\pm 7.2$ respectively using Qlab and Tomtec. Qlab and Tomtec intra-observer coefficients of variation (CV) were $-13.19\%$ and $-9.56\%$ and inter-observer CVs were $-22\%$ and $-13\%$ respectively. The concordance correlation coefficient was $0.55$, indicating poor agreement between the two methods. In the control population, Qlab CV was $-3.63\%$, whereas CV was $-17.8\%$ in RV disease patients.

Conclusion: Despite an acceptable level of variability for both techniques, Tomtec appears less variable. Variability of Qlab is excellent in control patients but is highly influenced by RV morphology. The agreement between the two software products is low and should lead in clinical practice to the follow-up of patients with the same software and advocates for the development of dedicated RV speckle-tracking software products.

0367

Significance of different ECG indices for left ventricular enlargement assessment: a cardiac MRI study

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Objectives: Numerous ECG indices have been developed to diagnose left ventricular (LV) hypertrophy but ECG indexes assessing LV enlargement are lacking. The aim of the present study was to address the capacity of different ECG parameters to predict LV enlargement in different conditions, including myocardial infarction (MI), using cardiac MRI (CMR).

Designs and methods: In a cohort of 501 patients with various clinical conditions, CMR and ECG were performed within a median period of 5 days. LV enlargement was defined by a LV end-diastolic volume indexed to body surface area (LVEDVI) $>$92mL/m².

Results: In the whole cohort, amplitudes of RaVL, SV3, SV1 and QRS duration correlated in univariate analysis with LVEDVI ($r=0.108$, 0.304, 0.161 and 0.256 respectively, p<0.01 for all). In multivariable analysis (adjusted for age, BMI, LV mass index, systolic blood pressure and gender), only QRS duration and SV3 remained associated with LVEDVI ($\beta=0.130$, p<0.001; $\beta=0.057$, p<0.001, respectively). Areas under ROC curves (AUC) demonstrate that SV3 had the best performance to predict LV enlargement ($AUC=0.701$, specificity 96.9%, sensitivity 19.1%, optimal threshold 2.2mV, see figure). In patients without MI (N=500), SV3 and QRS duration were independently correlated with LVEDVI ($\beta=0.051$, p<0.001; $\beta=0.273$, p<0.001, respectively). In patients with MI only SV3 remained independently correlated with LVEDVI ($\beta=0.051$, p<0.001). AUC for SV3 were lower in patients with MI than those without ($0.681$ vs. $0.708$), in men than in men ($0.673$ vs. $0.706$) and in patients with QRS duration $<$120ms than those without ($0.685$ vs. $0.787$). The optimal threshold of SV3 varies from 1.7 to 2.2mV according to different subgroups of patients.

Conclusion: Using the gold standard to assess LV volume, our results demonstrated that SV3 had a good specificity to detect LV enlargement.

0368

Importance of left ventricular remodeling and regional wall motion abnormalities in the occurrence of functional ischemic mitral regurgitation

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Introduction: Functional ischemic mitral regurgitation (IMR) is common in patients with ischemic left ventricular dysfunction after myocardial infarction, and significantly worsens prognosis. The aim of this study was to determine the relative importance of the global and regional left ventricular (LV) remodeling in the occurrence of IMR.

Methods: 81 patients (mean age = 61±11 years) admitted with acute myocardial infarction (AMI) were screened. Patients with atrial fibrillation and organic valvular diseases were excluded from the study. Echocardiography (two-dimensional and Doppler echocardiograms) was performed in the first week after admission. The 81 patients were divided in 2 groups: with IMR (group1 = 39 patients) and without IMR (group2 = 42 patients). LV volumes were calculated by apical biplane Simpson’s rule. The LV wall-motion score (WMS) index was obtained in a 17 segment model according to established methods. To identify the influence of regional wall-motion impairment for each individual LV segment, the mean WMS was calculated for each segment and compared between the 2 groups.

Results: The echocardiographic parameters that were associated with IMR were: LV dilatation and sphericity (p<0.0001), reduced ejection fraction (p<0.0001), inferior (p<0.001) and anterolateral (p=0.02) asynergy.

Conclusion: The results of this study indicate the importance of abnormalities of both LV geometry and regional wall motion in the pathogenesis of IMR after myocardial infarction. Clinically, these findings imply that myocardial salvage by early coronary revascularisation may improve outcome by preserving LV function and decreasing the incidence of IMR.

0511

Intraventricular delay and cardiac dysfunction in patients with myocardial infarction

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In the acute phase of myocardial infarction (AMI), ischemic phenomena may affect the strength and timing of myocardial contraction.

Purpose: To correlate intraventricular delays to systolic, diastolic and performance parameters of the left ventricle (LV) and to heart failure occurrence in AMI patients.