Abstracts

191 Impact of LV remodeling after acute myocardial infarction on systolic and diastolic performance
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Myocardial performance index (MPI) is clinically relevant measurement of global LV function with quantitative and prognostic significance in pts with coronary heart disease.

Aim: To evaluate the interaction between remodeling process and global LV function after AMI, we investigated a well known echocardiographic and Doppler indices of LV remodeling have an impact on MPI.

Methods: Using conventional echocardiographic Doppler methods, LV ejection fraction (LVEF), and diastolic volume (EDV), and systolic volume (ESV), wall motion score index (WMSI), maximal velocity of early diastolic filling (E/E'), early diastolic volume (EDV), and total atrial volume index (AATI) were calculated. MPI was defined as (1-E/E') x (1-EDV/ESV). LV remodeling was assessed by real-time contrast ECHO than TWA+ pts, but not standard EF measures assessed by repeated measurements analysis, there was no significant difference in MPI values between two groups. ESV values significantly decreased during three months in group II (p=0.027), but in group I ESV didn't change (p=0.261). After three months values of ESV was significantly higher in group I compared with II (119.13±29.49 vs 88.04, p=0.020) and WMSI (p=0.347, p=0.008) and E/E' (p=0.245, p=0.049). By repeated measurements analysis, there was no significant difference in MPI values between two groups. ESV values significantly decreased during three months in group II (p=0.027), but in group I ESV didn't change (p=0.261). After three months values of ESV was significantly higher in group I compared with II (119.13±29.59 vs 88.04, p=0.020).

Conclusions: MPI increased in group II after three months after AMI, but not in group I.

192 T-wave alternans determinants in patients after acute anterior myocardial infarction
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T-wave alternans (TWA) has been proposed as a potential marker of susceptibility to ventricular tachycardia/fibrillation in several groups of patients, equivalent to the study in subjects with IHD.

In the present study we examined 66 consecutive patients with first AMI of anterior, anteroseptal location. The mean age of 12 hours from symptom onset was 64 years. A 6 MHz device was used in LAD after procedure, treated according to current guidelines. Demographics, TN, CKMB, ECG, arrhythmias, ECHO and treatment data were collected. At 30-day follow-up, the presence of TWA was assessed by ECG (EcoTWA). TWA was defined as a low-amplitude alternating pattern of R waves that was present at any time after 12 hours from symptom onset. A 2x2x2 ANOVA model was used to test interactions among variables. The percentage of patients with TWA was 41% (27/66) at the 7th-14th day after the event. Images were acquired immediately after the administration of a bolus of Gadolinium (0.2 mmol/kg) using a FIESTA sequence. We considered three patterns according to the distribution of contrast in normal/remote myocardium, hypointense area, and mixed distribution.

Conclusions: Presence of TWA could be predicted by perfusion and contractile dysfunction indices and extend of myocardial necrosis but neither with ECG nor standard MPI indices. Short-term prognosis could be predicted by TWA, perfusion or contractility indices, however further follow-up will determine their additive effect.

193 Prediction of clinical outcomes with first-pass cardiac resonance imaging after a first acute myocardial infarction
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Aim: To test the capability of Contrast Cardiac Resonance First-Pass Imaging of predicting the occurrence of cardiac events after a first myocardial infarction treated with fibrinolysis.

Methods: 27 patients admitted on Coronary Care Unit because of a first myocardial infarction, treated with fibrinolysis. The first six hours and showing left ventricular dysfunction were selected. Transesophageal echocardiography performed on acute phase, and then at one, six and twelve months. Cardiac Resonance Imaging was done at the 7th-14th day after the event. Images were acquired immediately after the administration of a bolus of Gadolinium (0.2 mmol/kg) using a FIESTA sequence. We considered three patterns according to the distribution of contrast in normal/remote myocardium, hypointense area, and mixed distribution.

Results: The extent of ICC was related to CAC with high specificity. The extension of ICC is related to the severity of atherosclerosis. Based on our results, antiatherosclerotic therapy should be considered in case of ICC even before positive CUS result.

194 Comparison of low-dose dobutamine echocardiography with low-dose dipiridamol technetium-99m tetrophosmin scintigraphy in detection of myocardial viability after primary coronary angioplasty
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In recent years, diagnostic testing to evaluate the presence and extent of viable myocardium has become a more important component of the clinical evaluation of patients after acute myocardial infarction. The aim of the present study was to: compare low-dose dobutamin echocardiography and low-dose dipiridamol technetium-99m tetrophosmin scintigraphy in detection of myocardial viability after primary coronary angioplasty.

Results: There were no differences in gender, age, treatment, from symptoms to PCI and extent of coronary disease in TWA+ pts. After a maximum 6-24 hours levels of Tn I (48±16 vs. 32±6 ng/ml, p<0.05) and CKMB (35±22 vs. 226±183 UI, p<0.05), worsened wall motion score index (1.4±0.5 vs. 2.4±0.2, p<0.05) and perfusion index (1.43±0.24 vs. 1.77±0.28, p=0.05) assessed by real-time contrast ECHO than TWA- pts, but not standard EF measures assessed at baseline ECHO. All 30-day ECHO indices were significantly worse in TWA+ pts. EF was significantly more frequent in TWA+: pts. Moreover, despite 100% survival rates, all 30-day TWA+ pts had significantly more cardiac events (90% of patients with fibrosis) than TWA- pts. Mortality rates were comparable in both groups (27% vs. 24%, p=0.59). There was no difference between patients with AVC or MAC in the presence of different stages of CAC (p=NS).

Conclusions: ICC (MAC or AVC) is an independent predictor of CAC as a marker of atherosclerosis, although, the lack of ICC does not rule out atherosclerosis. ICC is related with high specificity. The extension of ICC is related to the severity of atherosclerosis. Based on our results, antiatherosclerotic therapy should be considered in case of ICC even before positive CUS result.
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Intensity of clinical symptoms and signs of congestive heart failure or low left ventricle ejection fraction can identify the patients of unfavourable prognosis after myocardial infarction?

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Introduction: Congestive heart failure (CHF) is undoubtedly predictor of adverse outcomes in patients after myocardial infarction (MI). However, groups of patients with mild and moderate CHF are not homogenous. It is possible that low left ventricle ejection fraction (EF) is more powerful predictor of poor prognosis in patients with CHF.

The purpose of the study was evaluation if low EF can identify patients with poor prognosis in the differentiated groups of patients with mild and moderate CHF according to ACC/AHA classification.

Material and methods: 122 consecutive patients (95 male, age ranged 34-75, mean 59±9) post MI in stage B or stage C according to ACC/AHA classification were studied. EF was determined in standard 2D echocardiography. Patients were divided into four groups: a) stage B and EF<40% (6 pts); b) stage B and EF>40% (52 pts), stage C and EF<40% (19 pts); stage C and EF>40% (35 pts). The patients were followed 30 months for the occurrence of the composite endpoint (MACE), acute coronary syndromes and cardiac deaths. In analysis we used chi2 test.

Results: see the table

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<th>MACE</th>
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<td>Stage B and EF&lt;40% vs Stage B and EF&gt;40%</td>
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<td>Stage B and EF&lt;40% vs Stage C and EF&lt;40%</td>
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<td>Stage B and EF&lt;40% vs Stage C and EF&lt;40%</td>
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Conclusions: 1. Only clinical condition is a predictor of occurrence of composite endpoint in patients after MI.
2. The prognosis of pts with EF<40% in stage B is better than patients in stage C and EF<40%.
3. EF does not change the prognosis in patients in the same clinical stadium

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Prognostic significance of left ventricular function in the early phase of a first myocardial infarction

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Aim: The objective of the study was to investigate the prognostic value of left ventricular function variables in acute myocardial infarction (MI), on severe heart failure (NYHA class III/IV), cardiac death and readmission.

Methods: Echocardiography (two-dimensional, pulsed Doppler of mitral inflow and color M-mode Doppler) was performed within 72 hours, before hospital discharge and six months after MI in 119 consecutive patients. Severely of patients (aged 64±12 years) were followed maximum 57 months (40±14 months) for symptoms of heart failure, readmission and cardiac death after hospital discharge.

Results: In the follow-up period, the incidence of severe heart failure was 47% (33 patients) with 16 rehospitalizations, readmission - 30% (21 patients) and cardiac death - 23% (16 patients). On Cox regression analysis higher late diastolic A-velocity of mitral filling was the most powerful predictor of readmission (p=0.002, RR 1.03, 95%CI [1.01-1.05]), severe heart failure (p=0.001, RR 1.03, 95%CI [1.02-1.05]). Lower fraction of shortening (p=0.02, RR 0.93, 95%CI [0.87-0.98]) and ejection fraction (p=0.005, RR 1.04, 95%CI [0.98-1.08]) were the second predictor of heart failure and readmission, respectively. Moderate and severe mitral regurgitation in acute phase of MI (14 patients, 20%) was the only independent predictor of cardiac death (p=0.01, RR 3.5, 95%CI [1.27-9.87]).

Conclusions: Higher late diastolic peak A-velocity, lower fraction of shortening and ejection fraction and more severe mitral regurgitation measured in acute phase of MI identified patients at risk of adverse events during 57 months of follow-up.

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Echocardiographic evaluation of the effects of glucose-insulin-potassium infusion in patients with ST-elevation myocardial infarction treated with thrombolytic therapy and intravenous beta blocker

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Background: The role of glucose-insulin-potassium (GIK) infusion in improving left ventricular (LV) systolic and diastolic function in patients with STEMI and GIK infusion at the time of MI is not well established. However, some studies showed the efficacy of GIK to improve regional myocardial perfusion and function mainly in segment to the recently infarcted area.

Methods: 62 consecutive pts with STEMI treated with thrombolytic therapy and intravenous beta blocker, mean age 56±10 years, n=20141) received GIK infusion (GIK group, N=39), or did not (CON group, N=23) within 12 hours from the symptom onset (mean 3.4±2.0h). GIK infusion consisted of 25% glucose, 50U soluble Insulin per liter and 100mlKCl per liter at an infusion rate of 10ml/kg/h, over 24h. Beta-blocker was initiated by repeated injections of metoprolol - up to 3 x 5mg over 60min, followed by oral metoprolol - up to 200mg daily. All other therapy was standard for AMI and same in both groups. The primary point of the study was the improvements of LV regional systolic function and global systolic function at early and late post-infarction periods of pts with ST-elevation myocardial infarction (STEMI) treated with thrombolytic therapy, intravenous beta blocker and GIK infusion.

The secondary end point was the reduction of the incidence of LV diastolic dysfunction in the same patients.

Results: The groups did not differ in age (GIK 56±11 vs. CON 55±9 years); in m/f ratio (GIK 29/11 vs. CON 17/8); and mean values of CK (GIK 1680±1288 vs. CON 1221±1629 U/L). In the GIK group WMSI was not significantly lower compared with the CON group (WMSI: 2.93±0.2 vs. 2.94±0.1; p=0.7456). In the GIK group WMSI was not significantly lower compared with CON group (WMSI: 2.93±0.2 vs. 2.94±0.1; p=0.938) and EF (50±4% vs. 47±7%; p=0.422) were not different between GIK and CON group after 6 months. Diastolic dysfunction was observed in 21/38 pts (58%) in GIK group and 19/35 pts (56%) in CON group, p=0.13, within 7 days of treatment.

Conclusions: Glucose-insulin-potassium infusion used as an adjunct to thrombolytic therapy and intravenous beta blocker in patients with STEMI did not improve LV regional systolic function and could not increase LV global systolic function in early and late post-infarction period. However, GIK infusion had good impact on diastolic dysfunction in early post-infarction period in the same patients.

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Mitral apparatus dysfunction and its influence on ischemic mitral regurgitation importance

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Ischemic mitral regurgitation (IMR) is an independent factor predisposing to unfavorable long-term outcome in patients with CAD. Mechanism of IMR induction is not yet completely clear due to complex anatomy of the mitral apparatus (MA). The function of MA and degree of IMR are assessed using many echocardiographic parameters and difficult statistical analysis.

Aim: to find relationship between stage of MA dysfunction and degree of IMR using advanced statistical analysis.

Methods: and included: Were 55 patients with IMR+II degree referred to PCI due to significant CAD Function of MA (geometry of LV using: left ventricle dimensions (LVEDD, LVEF), sperecity (SF) and separation of mitral leaflets (R1, R2), MC function using: ejection fraction of left ventricle (EFLV) and left atrium (EFLA), wall motion score-index (WMSI), preystolic reduction of mitral annulus (A1, A2)) was assessed echocardiographically one day before PCI. Clinical characters were included in the analysis (history of infarct - MI and stabilization of angina - SA). Mitral regurgitation was assessed by: volume (IM), regurgitent fraction (FR) and surface of IMR (S).

Results: There were no strong relationships between parameters of MA function and degree of IMR when linear correlation was used. In contrast, introduction of canonical regression to analysis allowed detection of significant correlation between variables, creation of two sets of variables and permitted for inclusion of such variables as stabilization of angina and history of infarct. Moreover, factor structure from high to low loading in each set showed which variables describing MA were crucial for IMR grading.

The overall canonical R=0.945 is fairly substantial and highly significant (p<0.001).

Conclusion: The significance of IMR more strongly depends on altered geometry of MA (R1 and SF), its function (A1 and A2) than simple LVEDD, EFLV, EFLA or history of infarct. Use of canonical correlation was important in creating a set of variables characterizing complexity of MA in demonstrating different influences of dysfunction and their magnitude on importance of IMR.