171 Dissociation between regional rotation and regional strain in the ischemic left ventricle

T. Helle-Valle, T. Edvardsen, H.-J. Smith

Background: Global LV rotation measured by MRI has proven to be a sensitive marker of global ventricular function. Recently, 2-D speckle tracking echocardiography has been proposed as a bedside method for quantification of regional LV rotation. The aim of this study was to investigate the distribution of regional rotation in the ischemic ventricle and to define the relationship between rotation and regional strains.

Methods: In 11 healthy individuals and 13 patients with previous anterior myocardial infarctions, LV apical short-axis recordings were obtained by conventional echocardiography. Combined circumferential strain (strainC) and rotation were measured in the anterior (ischemic), septal (adjacent), lateral (adjacent) and posterior (remote) segments by 2-D speckle tracking echocardiography. Rotation was assessed from apical view.

Results: In healthy individuals, regional strainC and rotation was homogenous in all segments (32.3±3.1% and 9.7±2.4°, respectively). In patients, however, strainC was significantly reduced in ischemic and both adjacent segments (p<0.0001), while rotation was reduced only in the lateral segment (p<0.001). StrainC in the septal and lateral segment were equally reduced in patients, 12.9±8.6% and 9.7±2.4°, respectively, while rotation was significantly reduced in ischemic and both adjacent segments (p<0.0001), while rotation was reduced only in the lateral segment (p<0.001). StrainC in the septal and lateral segment was equally reduced in patients, 12.9±8.6% and 9.7±2.4°, respectively. In contrast, rotation in the septal segment (direction of global apical rotation) was almost twice rotation in the lateral segment (p<0.005).

Conclusions: In the infarcted ventricle there was substantial rotational dispersion between adjacent segments of equal strain, probably due to tethering effects from non-ischemic segments. These observations indicate that regional rotation may have limited ability to localize segmental dysfunction.

172 Diagnostic value of ultrasound-based strain imaging to coronary angiography in patient with suspected coronary artery disease


Background: Strain imaging has already been shown to quantify regional myocardial function both in acute ischemic myocardium and infarcted myocardium. We proposed that strain image could measure deformation of normal and dysfunctional myocardium without regional wall motion abnormality assessed by conventional echocardiography. The aim of this study is to address diagnostic value of strain imaging for detection and localization of coronary lesions in patients suspected coronary artery disease.

Methods: Strain imaging for advanced wall-motion analysis (Vivid 7 Dimension, GE Medical) was performed in 114 consecutive patients with chest pain but without visually apparent wall-motion abnormality by conventional echocardiography prior to coronary angiography. Longitudinal strain was measured in 3 apical views and assessment of strain value for 1824 individual segments using a 16-segment division of left ventricle were performed to determine the average strain value. Marked nonuniformity of strain was considered as abnormal, and significant coronary artery disease was considered if stenosis was above 50% from quantitative angiography.

Results: 46 patients showed a constant systolic strain throughout the wall and no coronary lesion was found in 34 patients. 54 of 68 patients with marked nonuniformity of strain had angiographically significant coronary stenosis (Table 1). 13 of 14 patients with abnormal strain pattern with normal coronary showed abnormal apical strain, and 7 of 12 patients with normal strain pattern with significant coronary artery disease had multi-vessel stenosis. Strain value under -5.7% was considered as the best discriminating value for the presence of critical stenosis.

Table 1

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<th>Strain-positive</th>
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<td>value</td>
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Conclusion: Ultrasound-based strain imaging demonstrates a strong correlation with coronary angiography and would have the potential as non-invasive diagnostic tool for detection of coronary artery stenosis in patients with chest pain but without apparent wall motion abnormalities on conventional echocardiography.

173 Normal global left ventricular systolic function does not preclude significant contractile dyssynchrony in stable ischaemic heart disease

R. Skalki, A. Gontzik, W. Kustrzycki, L. Borodulin-Nadzieja, R. Foreba

Background: Strain imaging has already been shown to quantify regional myocardial function both in acute ischemic myocardium and infarcted myocardium. We proposed that strain image could measure deformation of normal and dysfunctional myocardium without regional wall motion abnormality assessed by conventional echocardiography. The aim of this study is to address diagnostic value of strain imaging for detection and localization of coronary lesions in patients suspected coronary artery disease.

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The up-to-date literature reports validate the significant regional left ventricular (LV) contractile dyssynchrony in patients with severe impairment of LV systolic function and presence of intraventricular conduction disturbances. The extent and significance of LV dysynchrony as measured with use of Pulsed Wave Tissue Doppler Echocardiography (PW-TDE) in the ischemic heart disease patients with well preserved left ventricular systolic function or without history of severe myocardial infarction has not been thoroughly investigated as yet.


Methods: 30 patients with single coronary vessel disease (critical stenosis of Left Anterior Descending Artery, normal LV Exertion Frac/on (EF) and lack of intraventricular conduction disturbances (without RBBB or LBBB) under the study. The echocardiographic measurements of regional contractile function (ivct'-isovolumic contraction time) with use of PW-TDE was performed within the designated ischemic (basal and midend segment of anterior wall and intraventricular septum) and non-ischemic (basal and midend segment of inferior wall) LV segments.

Eur J Echocardiography Abstracts Supplement, December 2005

Poster session 1

Thursday, 8 December 2005, 8:30–12:30

Location: Poster Area
Results: The PW-DTE interrogation of regional lift showed significant contraction dysynchrony, especially in non-ischaemic segments of left ventricle (anterior versus inferior wall, interventricular septum versus inferior wall) despite normal LV EF and lack of intraventricular conduction disturbances (table 1).

Table 1

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<tr>
<th>LV wall</th>
<th>basal segment</th>
<th>medial segment</th>
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<tr>
<td>anterior wall 1</td>
<td>54.27±7.07ms</td>
<td>34.12±5.4ms</td>
</tr>
<tr>
<td>anterior wall 2</td>
<td>54.45±8.6ms</td>
<td>34.12±5.4ms</td>
</tr>
<tr>
<td>interventricular septum 1</td>
<td>51.42±6.7ms</td>
<td>51.60±6.4ms</td>
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1 - ischaemic LV wall segments; 2 - non-ischaemic LV wall segments; *significant difference between the selected values (p-value<0.05) basal segment of anterior wall vs basal segment of inferior wall; **significant difference between the selected values (p-value<0.05) medial segment of anterior wall vs medial segment of interventricular septum

Conclusions: Patients with stable ischaemic heart disease may present significant LV regional contractile dysynchrony as measured by PW-DTE despite the preserved global systolic LV function and absence of intraventricular conduction disturbances.

174 Prediction of major adverse cardiovascular events after acute myocardial infarction: new echocardiographic parameters

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Background: Major cardiovascular adverse events (MACE) following acute myocardial infarction (AMI) are responsible for most of the cardiac deaths. Therefore identification of AMI patients with high risk of developing major adverse cardiac events has critical importance. We aimed to determine and evaluate the Doppler echocardiographic and myocardial strain echocardiographic parameters for predicting MACE after AMI.

Methods: Seventy-one patients (55 male, mean age: 59±12) with first acute STEMI were enrolled to the study. Conventional echocardiography with pulsed and color tissue Doppler and mitral color M-mode imaging was performed during initial hospital admission. Peak systolic myocardial velocities (Sm) were recorded from 4 different sites on the mitral annulus corresponding to the septal, lateral, inferior and anterior sites of the left ventricle by pulsed wave Doppler tissue imaging. Mean mitral annular systolic motion (MAM) was calculated from these sites. E/E' and E/E' values, which were derived from transmural flow velocities, tissue Doppler and mitral color M-mode flow propagation velocities were calculated. Left ventricular myocardial systolic longitudinal strain values were measured from 12 segments (apical 2 and 4 chamber loops), and a mean value was calculated from these measurements. A composite endpoint of repeat revascularization, nonfatal myocardial infarction and cardiovascular death was used as MACE. Patients were followed for 6 months.

Results: A total number of 17 AMI patients had MACE. There was no difference in E/E' (MACE = 11.78±5.1 vs no MACE: 10.7±2.0, p = 0.063) and E/E' (MACE = 5.5±0.5 cm/s vs no MACE: 5.5±0.2 cm/s, p = 0.944) values. Mean myocardial systolic longitudinal strain (MLS) was significantly lower to be detected in the lower in the MACE group (8.6±1.0 vs 11.7±0.9, p = 0.011). A cut off value of mean myocardial systolic longitudinal strain -9.98% had a sensitivity of 53%, specificity of 87% in predicting MACE in patients with acute myocardial infarction.

Conclusions: These findings indicate that in patients with acute myocardial infarction; mean systolic longitudinal strain parameters predict major cardiovascular adverse events.

175 May post-systolic motion during dobutamine stress echocardiography predict the functional recovery of dysfunctional myocardium after successful percutaneous coronary revascularization?

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Purpose: Doppler myocardial imaging (DMI) has been suggested as a method of quantifying induced ischemia during dobutamine stress echocardiography (DSE). Post-systolic motion (PSM) detected by DMI is related with peri-infarct ischemia at DSE. We hypothesized that PSM during DSE would predict functional recovery of dysfunctional myocardium after successful percutaneous coronary revascularization (PCI).

Methods: Among 30 patients with dysfunctional myocardium on left anterior descending coronary artery (LAD) territory, we divided into two groups according to the improvement of wall motion score index (WMSI) on LAD territory at 6 months after successful PCI on LAD. and evaluated DMI on the LAD territory during DSE in both 15 improved WMSI (1.42±0.39) patients and 15 no changed WMSI (1.75±0.46) patients at 1 month after PCI. Myocardial velocity data were measured in the basal and mid-segment, and basal anterior segment of LAD territory. PSM was defined as positive wave, which appeared after the curve of systolic ejection had reached the zero line.

Results: There was no difference of resting PSM in both groups. However, PSM during DSE was significantly higher in improved WMSI group than in no changed group.

Conclusions: We suggest that PSM during DSE would predict functional recovery of dysfunctional myocardium after successful PCI on LAD.

176 Diagnostic potential of post systolic motion index as a marker of stress induced versus asymptomatic myocardial ischemia

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The aim of the study was a quantitative assessment of the impact of stress induced symptomatic or asymptomatic myocardial ischemia (MI) on systolic myocardial velocities (V) and post-systolic motion index (PSMI) changes during dobutamine echocardiography (DE) using pulsed wave Doppler myocardial imaging (PW-DMI).

Methods: In the study group of 78 patients (pts) with known or suspected coronary artery disease (CAD) (from 5 up to 60 years old) an exercise test was performed. DE identified ischemia by the occurrence of wall motion abnormalities (WMA) with stress. A 11-segments left ventricular (LV) model was utilized. At baseline and after DE in each adequately visualized dyssynergic LV segment, we analyzed the presence of PSM and from apical approach, we measured peak myocardial velocities of systolic and PSM wave using PW-DMI. PSMI was assessed as followed (peak Vs at peak stress - peak velocity of PSM)/peak Vs at peak stress.

Results: During DE 136 ischaemic myocardial segments in 48 pts were detected (80 segments in 33 pts with symptomatic and 47 segments in 21 pts with asymptomatic MI), while in 30 pts WMA were not appeared. After DE value of wall motion score and number of ischamic segments per patient were significantly bigger in pts with symptomatic than in pts with asymptomatic MI (P<0.02 and P<0.001). In segments with DE provoked symptomatic and asymptomatic WMA, Vs decreased (from 6.2±3.4 to 5.6±1.5 cm/s, P<0.005, difference 20.7% and from 8.1±2.8 to 6.9±3.0 cm/s, P<0.05, difference 14.8%). PSMI in ischaemic left ventricular segments was significantly lower in pts with asymptomatic than in those with symptomatic MI (0.25±0.11 vs 0.40±0.16, P<0.001). After DE, in segments without stress-induced WMA, Vs significantly increased (P<0.001).

Conclusion: Our data show that PSMI develops actually in segments with stress provoked symptomatic as well as asymptomatic MI changes. In regions of myocardial function due to MI induced MI are more pronounced in symptomatic than in asymptomatic MI, which is expressed through significantly higher reduction of Vy and higher value of PSMI.

177 Early predictors of adverse left ventricular remodeling after myocardial infarction treated by primary angioplasty

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Background: Whether progressive left ventricular dilatation (p.v.d.) occurs after myocardial infarction in primary angioplasty (p-PCI) data has not been established yet. The factors predicting p.v.d. after p-PCI still need to be clarified.

The aim of the study was to assess prevalence and to define baseline clinical and echocardiographic predictors of p.v.d. after p-PCI in 90 consecutive pts (44 F and 46 M, mean age 67±5.6 y) with first STEMI.

Methods: Echocardiographic examination was performed in all pts at discharge (M1) and after 6 months (M2). Following factors influencing p.v.d. were evaluated: MI localization and type of IRA, intar size (WMSI<1.5 cm), EDVI<80 ml/m², ESVI, ejection fraction (Simpson,EF<45%), restrictive patterns of transmural flow (TIMI flow, TIMI flow, time to reperfusion <4h), LVH defined by left ventricular mass index (LVMI<125 g/m²), coronary risk factors >2 or more.

Results: The overall prevalence of p.v.d.(according to criteria of 15% EDVI increase from M1 to M6) was 24%. Statistical analysis (Fisher test) revealed that the significant baseline (M1) predictors of adverse p.v.d. were: LAD as infarct related artery (relative risk n=2.3±0.5, P<0.05), WMSI>1.5 (p=4.29×10<0.005), EF<45% (p=2.89×10<0.05) and restrictive pattern of transmural flow (n=2.4±p<0.01). Multivariate logistic stepwise analysis showed that the only independent determinant of p.v.d. was WMSI>1.5.

Conclusion: Both regional and global LV systolic dysfunction indices as well as strain and strain rate LV diastolic abnormalities but not left ventricular dilatation at baseline echo are the significant adverse cardiac remodeling predictors after primary PCI treated STEMI pts. Population with baseline low end-diastolic volume index does not con-
altите a low risk group of adverse left ventricular remodeling development and still needs to be monitored by serial echocardiographic examinations.

178

Left ventricular volume and viability but not transmural extent of scar determine LV remodeling and exercise capacity responses to revascularization and medical therapy in patients with LV dysfunction

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Myocardial revascularization (RVS) is known to improve LV remodeling and exercise capacity in selected pts. We sought the relative impact of baseline LV volume, viable myocardium (VM) and transmural extent of scar (TME) on these phenomena.

Methods: We recruited 84 pts with LV dysfunction after myocardial infarction. At baseline, VM was identified as contractile reserve with dobutamine echo and TME was measured by the proportion of the LV wall showing late uptake on gadolinium MRI, also expressed as TME score (sum of segmental scores ranging from 0% to 4% [100%]). Baseline measurements of MRI volume and VO2 were compared with 12 month follow-up.

Results: In 33 pts (63±10 y, 27 with VM) undergoing RVS, baseline EDV was 160±50 and decreased by 54±10%. TME modeling was performed by VM segts and baseline EDV (Table). In RVS, baseline VO2 was 13.4±7ml/kg/min, and increased by 2.7±17%, change in functional capacity was associated with extensive (>25%) viable segts. Medical therapy was continued in 51 pts (63±10 y) with VM, in whom baseline EDV was 191±40 ml. Remodeling was predicted by VM segts and baseline EDV (Table). In the medical group, baseline VO2 was 15.6±5ml/kg/min, and deteriorated by 12±5±21%. TME was not predictive of remodeling.

Conclusions: Although RVS and medical therapy have opposite effects on volume change, increasing EDV is associated with less viability and greater baseline EDV but not dependent on scar extent. Changes in exercise capacity are dependent on revascularization of extensive VM.

180

Myocardial contrast echocardiography and quantitative analysis of videointensity after myocardial infarction: correlation between myocardial perfusion, contractile reserve and remodeling

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Background: Previous studies have shown the potential role played by intracorony myocardial contrast echocardiography (MCE) in predicting long-term remodeling and function after myocardial infarction (MI). Scanty data, however, are available on the role of intravenous MCE in this regard.

Purpose of the study: to assess the role of residual myocardial blood volume (MBV) in the asynergic region in modulating LV volume changes over time post-MI.

Methods: 35 consecutive patients (pts) with an anterior MI were studied using low-dose dobutamine echo (DOB) and intravenous triggered MCE (Levostin infusion 400 mg/ml over 2) 4-6 days after the acute event. In all pts the LAB was identified as the infarct-related vessel (residual stenosis after steering 39±53%). Videointensity plots were generated from the apical approach using a 12 segment model, with the results fitted to an exponential function. Quantitative estimation of the positive and plateauing value of the curve was then assessed for each segment, assuming that higher peak intensity reflects greater MBV, and averaged for the asynergic region. LV volumes were assessed at baseline, during DOB and after 6-12 months. 2-way ANOVA was used for comparison purposes. Forward multivariate regression was also used.

Results: Baseline volumes appeared to be directly related to the extent of the asynergic region (p<0.01 for both) but showed no relation with the normalized gray level (NGL) in that area. Overall LV volumes did not change at follow-up, although wall motion score index (WMSI) from 1.73±0.3 to 1.62±0.3 (p<0.01), EF from 40±2 to 42±2% (p<0.05) and the rate of end-systolic pressure/volume (ESP/V) (from 3.4±1.4 to 4.7±2.1 ml/mg/ml) improved at DOB. NGL in the asynergic region exhibited a significant interaction with the change in diastolic volume between baseline and follow-up (p<0.05), with pts with the highest NGL in that area (n=10) exhibiting reverse remodeling (from 72±12 to 65±12 ml/m2) over time (vs. from 65±10 to 68±10 ml/m2 in the remaining population). This was not true when parameters derived from DOB (WMSI, EF and ESP/V) were used. A multi-variate analysis, including variables known to affect post-MI LV dilation ranked NGL second (p=0.06), after baseline stroke volume (p=0.001), in predicting changes in diastolic volumes over time.

Conclusions: Residual MBV in the dysfunctional muscle, as assessed quantitatively by intravenous MCE early after the acute event, has the potential to modulate chronic LV remodeling in pts following an anterior MI, in excess of data derived from prodischarge inotropic stimulation.

181

The rate of wall motion abnormality does not depend on the ischemic time in the first hours of acute myocardial infarction


Background: In acute myocardial infarction (AMI) wall motion abnormality detected by 2D echocardiography may depend on the elapsed time from the coronary occlusion.

Aim: Between March 1st and May 31st, 2004, patients with first myocardial infarction in contact with ST elevation admitted to our institution for primary PCI were involved in the study. The echocardiography results were compared with the simultaneous coronary angiography data in relation to the elapsed time from the beginning of the symptoms.

Method: Two different polar maps using the 17-segment model were compared. One displayed the left ventricular segments with wall motion abnormality detected by the echocardiography, while the other polar map was derived by the coronary angiography showing the segments supplied by the occluded coronary branch representing the area at risk. An Accessa (Microsoft Office) based Holocor Coronary Angiography program developed at our institute handled the data for integration.

Results: 23 patients (15 men, 8 women, age 56±10.5) qualified for the inclusion criteria: first AMI, one occluded coronary artery. The simultaneous examinations were performed in 2-14 (average 4.7) hours after the onset of the symptoms. We matched 129 and 98 left ventricular segments based on the detected occlusions on the coronary angiography and the wall motion abnormalities shown by echocardiography, respectively. Predicting r=0.07, with pts with the highest NGL in that area (n=10) exhibiting reverse remodeling (from 72±12 to 65±12 ml/m2) over time (vs. from 65±10 to 68±10 ml/m2 in the remaining population). This was not true when parameters derived from DOB (WMSI, EF and ESP/V) were used. A multivariate analysis, including variables known to affect post-MI LV dilation ranked NGL second (p=0.06), after baseline stroke volume (p=0.001), in predicting changes in diastolic volumes over time.

Conclusions: Residual MBV in the dysfunctional muscle, as assessed quantitatively by intravenous MCE early after the acute event, has the potential to modulate chronic LV remodeling in pts following an anterior MI, in excess of data derived from prodischarge inotropic stimulation.
Increased thickness of dysynergic segments in the acute phase of myocardial infarction: a presage of left ventricular remodeling?

M.J. Andrade 1, M.G. Trabulsi 2, E. Horta 3, C. Aguinã 4, J. Ferreira 5, R. Gouveia 5, J. Ancueto Silva 5, R. Sibella-Gomes 5, Lisbon, Portugal; 2Santa Cruz Hospital, Cardiology, Carraça de Ourique, Portugal.

Introduction: In the acute phase of myocardial infarction (AMI), echocardiography apportions the location, extent and severity of dysynergy, which correlate with the infarct-related vessel and the occluded segment. Initially, wall thickness of the affected segments is unusually normal, but systolic thickening is decreased or absent, often with an increase in echogenicity. In a small group of patients (pts), 6 in a series of 50 - with ST-segment elevation anterior AMI, we observed a significant increase of myocardial thickness in dysynergic segments. The aim of our study was to evaluate these pts in order to clarify the meaning of this finding.

Methods: The study group consists of 6 men (mean age 45 years) who received reperfusion therapy within 6 hrs after symptom onset. The 2 pts who underwent primary angioplasty presented TIMI grade 3 flow at the end of the procedure. All 4 pts who received fibrinolysis underwent urgent coronary angiography because of apparently unsuccessful reperfusion. rescue angioplasty was performed in 3 of these pts, but TIMI grade 3 flow was achieved in only one; the remaining pt presented a non-significant residual stenosis but TIMI grade 2 flow in the distal LAD. All pts had single-vessel (LAD) disease, except one (this pt had coronary angioplasty of the LCX on day 5 post AMI). All pts evolved in Killip class I, except one (modest Killip II). Peak CK-MB averaged 404 IU/L. We compared the echocardiographic findings at 2 time points: acute (Echo-I), in the first 48 hrs after admission, and chronic (Echo-II), 12±3 months after revascularization.

Results: On Echo-I, wall thickness of the involved septal segments was increased (14-17mm), but normal in all the remaining uninvolved segments. Left ventricular (LV) ejection fraction was <40% in 4 pts. E-wave diastolic time ratio ranged from 88 to 143 ms. Three pts had a mural thrombus and 3 had pericardial effusion (2 with thrombus). On Echo-II, compared to baseline, LV end-diastolic volume increased by >20% and wall thickness of the infarcted segments decreased by >50% in all but 1 pt.

Conclusion: In pts with large anterior ST-segment elevation AMI, a markedly increased paranital thickness of the infarct-related segments observed after reperfusion therapy seems to relate with LV remodeling. Failure of reperfusion therapy may be the underlying mechanism of this finding.

183 Positive myocardial velocity occurring during intraventricular contraction phase of cardiac cycle is associated with reversed left ventricular remodeling after CABG

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We have previously demonstrated high accuracy of regional positive myocardial velocity occurring during intraventricular contraction (+VIC) to identify viable myocardium in patients with a recent myocardial infarction. In this study, we tested the hypothesis that analysis of +VIC would predict the recovery of regional and global left ventricular (LV) function after surgical revascularization (CABG) in patients with chronic ischemic LV dysfunction.

Methods: Baseline +VIC in dysfunctional segments was analyzed by pulsed-wave tissue Doppler (TDI) in 44 patients with chronic ischemic LV dysfunction (age, 66±16 yrs; LV ejection fraction, 31±6% undergoing CABG. Regional and global LV function was assessed by echocardiography (16-segment model, ischemic Simpsons method) before and 6 months after revascularization.

Results: A total of 385 dysfunctional segments (severe hypokinesis or akinesis) could be analyzed, out of which 241 (62%) showed functional recovery. Sensitivity and specificity of +VIC to predict recovery of regional function was 100% and 81%, respectively. Twenty-seven patients showed >5% increase in LV ejection fraction between baseline and 6-month echocardiography (responders). The presence of +VIC in ≥5 dysfunctional segments had the highest predictive accuracy (AUC=0.77) to identify responders, with sensitivity of 100% and specificity of 90%. During follow-up (median, 44±124 days), ten patients showed major clinical events. The majority of events (2 sudden cardiac deaths, 6 hospitalizations for heart failure) were observed in 17 patients with small area of viable myocardium (<5 +VIC). In contrast, patients with ≥5 +VIC had only 2 events (heart failure hospitalizations) (p=0.01).

Conclusion: This study demonstrated high accuracy of TDI-derived +VIC to predict recovery of regional and global LV function after CABG. The data also suggest the value of +VIC to predict prognostic effects of CABG.
Comparison of low-dose diprydamole radiouclide ventriculography and low-dose diprydamole stress echocardiography for identification of myocardial viability

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Objective: The purpose of the study was to compare diagnostic value of low dose diprydamole radiouclide ventriculography (Dipy-RNV) and low dose diprydamole echocardiography (Dipy-ECHO) for the prediction of functional recovery of viable myocardium in the medium term follow up.

Methods: Twenty five (18 male; 51.10 years) with previous myocardial infarction and resting wall motion dysymmetry were studied before angioplasty of infarct and can be treated conservatively. Diastolic parameters: LV ejection fraction (EF, Simpson's), aortic flow-volume (as measured with phase contrast magnetic resonance imaging) and changes of fetuin were strongly predictive of the identification of HR patients (OR=5.3 [1.3-21.0], p=0.02).

Results: LV dysfunction (n=21) was associated to a significant decrease of tet-nemia and patient outcome. This negative acute phase reactant protein has a potential important prognostic value in patients after AMI.

Methods: Seventy one patients (60±14 years, 61 men) with AMI (37 anterior) were included. Plasmatic fetuin level (Elisa Kit by Epitopes-Diagnosis Laboratory) and Blnn Natriuretic peptide (BNP) were determined at day 1 (D1) and day 7 (D7).

Conclusions: Both techniques, RNV and ECHO are comparable diagnostic predic- tors of myocardial viability in medium term follow up, with Dipy-ECHO having even stronger diagnostic potential.

188

Poor concordance between systolic and diastolic remodeling after acute myocardial infarction

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Background: During the early hours of an acute myocardial infarction both systolic and diastolic parameters improve. Hence, the assessment of both parameters is important for the prediction of functional recovery.

Methods: A full echo study was performed within 24 hours of an acute myocardial infarction and repeated 3 months later in 76 consecutive patients (age 61±16).

Results: Improvements of both systolic and diastolic parameters were seen: LV ejection fraction (EF) (26) (11.7) (17.4) (17.4) (-2.4) (-0.2) (5.8) (20)

Conclusions: Deterioration of LVEF, DT and IVS motion may occur after AMI and the development of LV dysfunction is a poor indicator of myocardial viability.

189

Dissecting intramural haematomas complicating acute myocardial infarction

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Introduction: Dissecting intramural haematoma (DIH) is a rare form of myocardial rupture complicating acute myocardial infarction (AMI). The purpose of the current study is to determine the prevalence and outcome of DIHs in AMI patients.

Methods: Prospective single-center study of all patients admitted with the diagnosis of AMI from June 2003 to January 2005. All patients underwent echocar- diography within five to seven days after admission or earlier if clinically indicated (new murmur, pericardial friction rub, heart failure symptoms, haemodynamic in- stability, cardiogenic shock). Endocardial delineation was enhanced by means of an echocardiographic contrast agent if it was initially considered suboptimal.

Results: The study population consisted of 115 consecutive AMI patients (age 68±12 years, 87 male). A DIH was detected in 6 (5.2%) patients (age 68±12 years, range 42 to 80, 5 male) from 1 to 7 days after AMI. It was associated with anterior AMI in 4 patients, inferior in 1 and lateral in 1 patient. Location of the DIH was: interventricular septum (IVS) - 3 patients, apex - 1 patient, lateral wall - 1, inferior and right atrial wall - 1. In 2 cases DIH was associated with rupture of the affected wall-case one with free wall, one case with IVS rupture. In one case DIH extended from the inferior left ventricular wall through the posterior wall of the right atrium and the right ventricular free wall and decompressed into both ventricles resulting in interventricular communication with intact IVS. Total mortality of patients with DIHs was 50%.

Conclusion: DIHs complicating AMI might not be as rare as previously considered and are associated with high mortality in the immediate post infarction period. Old DIs do not show the tendency to expand or to lead to complete myocardial rupture and can be treated conservatively.

190

Intracardiac calcification is a marker of generalized atherosclerosis

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Aortic valve calcification (AVC) and carotid artery calcification (CAC) are considered to be markers of generalized atherosclerosis. The role of intracardiac calci- fication (ICC) however is not so clear. The objective of this retrospective study was to analyse the relationship of ICC and CAC, risk factors and clinical atheroscle- rotic disease. Risk factors included age, sex, diabetes mellitus (DM), hyperchole-
Methods: Between January 2001 and January 2004 all consecutive patients (pts) were enrolled in this study who underwent coronary ultrasound (CUS) and echocardiographic examinations within 2 months. Pts with renal failure, significant aortic stenosis and cardiac artery occlusion were excluded. There were 343 pts (120 males, age 67±6.7 years). Positive CUS was defined as any CAC. Pts were divided into 3 subgroups: mild, moderate and severe CAC. Positive echo was defined as any CAC. CAC, tachycardia index (MIC) or both.

Results: CAC was found in 201 pts. AVC in 57, MAC in 56, both in 88 pts. With multiple logistic regression analysis only CAC (odds ratio (OR) 2.0; age (10 years old, OR 2.0; female, OR 0.59; myocardial infarction (MI), 1.7) were found to be independent predictors of CAC. CAC was positive in 6.74% cases. Sensitivity of AVC, MAC, both or any IAC was 52%, 52%, 34% and 72% for CAC resp, specificity was 84, 88, 94 and 78% for CAC resp. The extension of CAC as none, 1 LV wall or MAC or 2 locations (AV/MAC) was associated to the severity of CAC (p=0.02; t=0.27). There was no difference between patients with AVC or MAC in the presence of different stages of CAC (p=0.9).

Conclusions: CAC (MAC or AVC) is an independent predictor of CAC as a marker of atherosclerosis. Although, the lack of CAC does not rule out atherosclerosis. CAC is related with high specificity. The extension of CAC is related to the severity of atherosclerosis. Based on our results, antiatherothrombotic therapy should be considered in case of CAC even before positive CUS result.

Impact of LV remodeling after acute myocardial infarction on systolic and diastolic performance
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Myocardial performance index (MPI) is clinically relevant measure 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 wall motion echocardiographic and Doppler indices of LV remodeling have an impact on MPI.

Methods: Using conventional echocardiographic: Doppler methods, LV ejection fraction (LVEF), and diastolic volumes (EDV, ESV), and systolic volume (ESV), wall motion score index (WMSI), mitral inflow peak E and A velocities, Ea/A ratio, Color M mode velocity propagation (Vp), Vp ratio, deceleration time (DTE), aortic flow ejection time (ET), scolicic contraction (ICV) and relaxation time (IRV) intervals (PWIV, IVIC, IVI, IVT) was calculated.

Assessment of LV function was done in first week, after one and three months.

Results: Forty-nine consecutive patients with first AMI were divided in two groups according to cut off value of MPI. In patients with MPI>0.80, group I (19) there were significantly higher values of EDV (255.86±21.77 vs 170.51±42.32; p=0.001) and ESV (141.80±14.18 vs 95.88±5.98; p=0.001) in first week after AMI comparing with pts from group II (MPI<0.80). MPI was closely related in both groups with EDV (r=0.365, p=0.017) and ESV (r=0.347, p=0.008) and E/A ratio (p=-0.245, p=0.049). By repeated measurements analysis, there was no significant difference in EDV values between two groups. ESV values significantly decreased during three months in group II (p=0.077), but in group I ESV didn’t change (p=0.061). After three months values of ESV was significantly higher in group I comparing with II (119.32±59.98 vs 88.04, p=0.063).

By jet systolic flow model, in early phase of LV remodeling, index of global LV dysfunction in group I was in close relation with EDV (p=0.360, p=0.014) and WMSI (p=0.380, p=0.019), but after three months of remodeling process, MPI is more closely related with ESV (p=0.485, p=0.002).

Conclusions: Increased values of MPI (p=0.80) could be simple and good predictor for high and progressive degree of LV remodeling in patients after first AMI.

In early phase of LV remodeling, dominant factors of LV dysfunction are close to LV geometry changes, but in late phase these factors could be myocardial properties of LV diastolic filling.

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, but dysfunctional myocardium has become an important component of the clinical assessment of patients after acute myocardial infarction.

The aim of the present study was: a) to compare low-dose dobutamin echocardiography (LDEE) results in detecting myocardial viability using low-dose Dipiridamol Technetium-99m Tetrophosmin Scintigraphy (SPECT) in patients immediately after acute myocardial infarction (AMI) treated with primary coronary angioplasty (PCA), and b) to investigate influence of detected viability on systolic function and myocardial perfusion.

We prospectively enrolled 44 patients with first AMI treated with PCA. LDEE and SPECT with low doses Dipiridamol (0.28 mg/kg/over four minutes) was performed 7-10 days after acute event. The dysfunctional segments were defined as viable if they exhibited improvement in their thickening by at least 1 grade from baseline to 10 minutes after dobutamine infusion, in 2 or more segments, or tracer uptake = 50% after Dipiridamol infusion by SPECT. Regional wall motion was scored in each segment of a standard 16-segment model, by both techniques.

Results: Among 249 asynergic segments on echocardiography, 151 (60.6%) was defined as viable if they exhibited improvement in their thickening by at least 1 grade from baseline to 10 minutes after dobutamine infusion, in 2 or more segments, or tracer uptake = 50% after Dipiridamol infusion by SPECT. Regional wall motion was scored in each segment of a standard 16-segment model, by both techniques.

Conclusions: The regional wall motion score index (WMSI) decreased from 1.61±0.38 at rest to 1.19±0.16 at the peak of Dobutamine infusion, in patients with viability confirmed with both techniques (t=8.8713; p<0.001). WMSI decreased less in patients with viable seg-
195

Integrity 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 a predictor of adverse outcomes in patients after myocardial infarction (MI). However, groups of patients with mild and moderate CHF are not homogeneous. It is possible that low left ventricle ejection fraction (EF) is more powerful predictor of poor prognosis in patients with different CHF stages.

The purpose of the study was to identify low EF in cardiac patients with different stages of disease characterized by mild and moderate CHF according to ACC/AHA classification (2002).

Material and methods: 122 consecutive patients (65 male, aged range 34-75, mean 62.9) 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% (32 pts); c) stage C and EF< 40% (19 pts); d) 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.

| Stage B and EF<40% vs Stage B and EF>40% | 0 vs 6 | 6% |
| Stage B and EF<40% vs Stage C and EF<40% | 0 vs 12 | p<0.01 |
| Stage B and EF<40% vs Stage C and EF<40% | 5 vs 16 | p<0.01 |
| Stage B and EF>40% vs Stage C and EF<40% | 12 vs 18 | NS |
| Stage B and EF>40% vs Stage C and EF>40% | 0 vs 16 | p<0.05 |
| Stage B and EF>40% vs Stage C and EF<40% | 5 vs 12 | p<0.01 |
| Stage B and EF>40% vs Stage C and EF>40% | 0 vs 16 | p<0.01 |

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.

196

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 reinfarction.

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. Severity of disease (aged 64±12 years) were followed maximum 57 months (40±14 months) for symptoms of heart failure, reinfarction 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, reinfarction – 30% (21 patients) and cardiac death – 20% (16 patients). On Cox regression analysis higher late diastolic A-velocity of mitral filling was the most powerful predictor of reinfarction (p=0.002, RR 1.03, 95%CI [1.01-1.05]) and 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 [1.00-1.08]) were the second predictor of heart failure and reinfarction, 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.

197

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 acute myocardial infarction is not well established. However, some studies showed the efficacy of GIK to improve regional myocardial perfusion and function mainly in segments to the recently infarcted area.

Methods: 62 consecutive pts with STEMI, treated with thrombolytic therapy and intravenous beta blocker, mean age 56±10 years, risk ratio 45±17, received GIK infusion (GIK group, N=30), or did not (CON group, N=32) within 12 hours from the symptom onset (mean 3±1.2h). GIK infusion consisted of 25% glucose, 50IU soluble insulin per liter and 100mol KCl per liter at an infusion rate of 1mg/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 AIM and same in both groups. The primary and points of time of the study were 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 function in the same groups.

Results: The groups did not differ in age (GIK 56±11 vs. CON 55±9 years); in risk ratio (GIK 26±11 vs. CON 17±9); and maximum values of CK (GIK 1080±1288 vs. CON 1530±1859 U). In the GIK group WMSI was not significantly lower compared with WMSI in CON group (WMSI: 2.53±0.22 vs. 2.54±0.26, p=0.938) within 7 days of treatment. As well, EF was not significantly higher in GIK group (46±5% vs. 44±7%, p=0.495) within 7 days of treatment. WMSI (1.23±0.21 vs. 1.25±0.22, p=0.038) and EF (50±11% 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 (53% ) in GIK group and 19/35 pts (52% ) in CON group, p=0.013, 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 does 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.

198

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 echocardiographical parameters and difficult statistical analysis.

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

Methods and material: 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, LVEESD), sphericity (SF) and interaction 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 characteristics were included in the analysis (history of infarct - MI and stabilization of angina - SA). Mitral regurgitation was assessed by: volume (VM), regurgitant fraction (RF) 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 to 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 and 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.
200
Association between mitral annular calcification, aortic valve annulus calcification and aortic valve calcification with coronary artery disease
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Objective: To determine whether there is an association between mitral annular calcification (MAC) and coronary artery disease (CAD).

Methods: 386 patients aged >65 years with MAC diagnosed by transthoracic echocardiography underwent coronary angiography. They were compared with 86 age- and sex-matched patients without MAC who underwent coronary angiography during the same period.

Results: 1. Compared with the control group, the MAC group had a higher prevalence of coronary artery disease (88.28% vs 65.12%, P = 0.0023) and a higher prevalence of left main coronary disease (15.63% vs 4.65%, P = 0.0017) and triple vessel disease (55.47% vs 32.56%, P = 0.0017). 2. Multivariate analysis, MAC (P = 0.008) was the independent predictors of coronary artery disease, and the prevalence of CAD were higher than hypertensive disease (P = 0.02), chronic pain (P = 0.003) and age (P = 0.04). The positive predictive value of MAC for finding coronary artery disease was 88.28%.

Conclusions: In patients aged >65 years, there is a significant association between the presence of MAC and coronary artery disease. MAC may be an important marker for coronary artery disease. Coronary angiography should be performed in the patients with MAC diagnosed by transthoracic echocardiography as a common.

201
Effectiveness of intravascular ultrasound in drug-eluting stents age
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Purpose: Drug-eluting stents (DES) have been developed to prevent in-stent restenosis following percutaneous coronary revascularization, and its effectiveness in the prevention of restenosis has been confirmed in the world. Intravascular ultrasound (IVUS) is effective to determine a strategy of percutaneous coronary intervention even using bare metal stents. We evaluated whether IVUS could be useful to determine strategy for chronic total occlusion (CTO) in DES age.

Methods: Twenty patients who performed PCI to CTO were studied. Longest, diameter and characteristics of lesion were confirmed by IVUS in all patients after pre-stenting dilation (balloon size was 1.5-1.5mm).

Results: 1. Length was 16.5±4.7mm, diameter was 3.2±1.4mm, 2-4±1.4 stents were needed for covering lesion. No perforation was observed during stent implantation. Complications during percutaneous coronary intervention with IVUS were less than with IVUS (20% vs 10%). Target vessel revascularization was not occurred at six months follow up. (Major adverse cardiac event was not occurred at six months follow up.)

Conclusion: IVUS was effective device for PCI even in DES age.

202
Coronary artery wall thickness of the left anterior descending artery using high resolution transthoracic echocardiography an intra and inter operator variability
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The ability of angiography to detect early atherosclerotic changes in the coronary arteries is limited by arterial remodeling. Failure to detect early atherosclerosis may represent a missed opportunity for pre-emptive treatment. The optimal method for the detection of subclinical coronary atherosclerosis would be non-invasive, inexpensive and would focus on the arterial wall rather than the lumen. A recent study has shown that high resolution transthoracic echocardiography (HTTIE) can be used to visualize and make accurate measurements of the proximal left anterior descending artery (LAD) wall. Moreover, these measurements differ between patients with coronary disease and normal volunteers.

We used HTTIE to visualize and measure the LAD anterior and posterior wall thickness and vessel luminal and external diameters to determine the intra- and inter-operator variability of these measurements. Thirty volunteers without a history of cardiac disease underwent a HTTIE assessment of their LAD by two different operators on three separate occasions.

Results: The correlations for intra-operator variability were r = 0.86 (P < 0.001), r = 0.81 (P < 0.001) and r = 0.85 (P < 0.001) for anterior and posterior wall thickness and luminal and external diameters respectively. The correlations for inter-operator variability were r = 0.88 (P < 0.001), r = 0.82 (P < 0.001), r = 0.76 (P < 0.001) and r = 0.70 (P < 0.001) for anterior and posterior wall thickness and luminal and external diameters respectively.

Conclusion: HTTIE measurement of the LAD vessel is reproducible within and between operators in normal volunteers. This technique therefore warrants further study as a potential screening modality for subclinical coronary atherosclerosis.
Abstracts

S17

methods: Between January 2002 and May 2005 in a series of 633 consecutive pts with STEMI undergoing coronary angiography within 48 hours from symptoms, 19 pts (3%), all women, aged 72±7 yrs, fulfilled the diagnostic criteria for LVABS. TIMI flow grade (TFC) was assessed and acute and follow-up (FU) echocardiography (E) carried out in all pts. Dobutamine E was carried out in 11/19 pts to identify dynamic LV obstruction and Ergonovine E in 11/19 to assess coronary artery spasm. The pts were followed up for 14±7 months.

Results: A triggering event occurred in 37% of pts; anterior ST elevation was present in 53% and deep negative T waves in 65% of pts; peak CK MB was 50±33 mU/ml (peak troponin-I: 2±1.14 ng/ml). An abnormal (≥2 frames/sec) contact TFC was present in the left anterior descending, circumflex, and right coronary arteries in 87, 69 and 37% of pts, respectively. In the acute phase LV ejection fraction was 45±5% and improved to 60±4% at least 2 months later. Septal wall motion abnormalities returned to normal in all 16 pts with ≥ 1 month FU. Dobutamine induced severe midventricular obstruction and grade 3-4 mitral regurgitation in 2/15 pts (13%), mild ventricular obstruction in 1 (6%), Ergonovine was negative in 11/11 pts. No pt died or had major complications in the acute phase.

No cardiac death or recurrence occurred during FU.

Conclusion: 1) In a population of white pts with STEMI LVABS shows a prevalence of 3% and affects post-menopausal women; 2) Short and medium-term prognosis is good with complete recovery of global and regional LV function and no recurrence; 3) The abnormal TFC resolving > 1 coronary artery suggests that a generalized dysfunction of coronary microcirculation may play a role in LVABS; 4) Dynamic LV obstruction caused by sympathetic stimulation may be operative in some pts and lead to acute LV failure, while coronary artery spasm does not play a significant pathogenic role.

205

New perspective in X syndrome

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Introduction: - It is reported that the development of intraventricular gradients (IVG) on exertion seldom occurs. We performed exercise echocardiography in a 25-year-old athlete with atypical angina, a positive treadmill ECG and normal rest echocardiogram, and without angiographically demonstrable coronary disease (cardiac X syndrome). During stress-testing the echographic development of IVG of 10mmHg and systolic anterior movement of the mitral valve (SAM).

Purpose: - To demonstrate the existence of dynamic LV obstruction in pts with positive exercise ECG testing and normal coronary angiography.

Methods: - We conducted a prospective evaluation of 75 patients (pts), mean aged 50.5±12 years (age range, 20 to 72 years), 36 were women. All pts had positive exercise treadmill testing, normal rest echocardiogram and no coronary artery disease on coronary angiography (cardiac X syndrome). They all underwent stress echocardiography with 2D and Doppler echocardiographic evaluation before, during and after treadmill exercise.

Results: - Dobpler evidence of IVG was found in 27 pts (36%), mean aged 48.5±14.3 years (age range, 20 to 72 years), 16 men (Group A). This group developed IVG with a mean end-systolic peak of 86±52 mmHg (20 to 110 mmHg) accompanied by mitral valve SAM in 18 pts. GVF development was complicated by symptomatic hypotension in 3 of those pts. The IVG in Group B, mean aged 52.1±5.8 years, with an age range from 34 to 76 years, (p=0.05 vs Group A), 15 of them men, didn't develop IVG and three of them developed left ventricular segmental wall motion abnormalities.

Left ventricular ejection volume was 80±23ml in Group A and 94±1 ml in Group B (p<0.0005). Left ventricular outflow tract was 18.66 mm in Group A and 19.93 mm in Group B (p=0.0009). The current study enrolled 152 patients admitted to the coronary care unit with ASTEMI. Admission levels of total and differential leukocyte counts and C-reactive protein were estimated by routine tests with ASTEMI. The study population consisted of 80 (87%) pts with ASTEMI.

Methods: - The current study enrolled 152 patients admitted to the coronary care unit with ASTEMI. Admission levels of total and differential leukocyte counts and C-reactive protein were estimated by routine tests.

Results: - Forty-nine percent of the studied patient population had admission total leukocyte count > 11 x 10^9/L, 56% had neutrophil percentage > 65%, and 56.7% had lymphocyte count = 25% CHF developed in 52 patients (60%) of the study population. Of those (who developed CHF), 80 (87%) patients had relative neutrophilia (neutrophil count > 65%), 71 (77%) patients had total leukocyte count > 11 x 10^9/L, 64 (69.8%) patients had creatine phosphokinase (CPK) level > 500 U/L compared with 5.8% patients, 4 (6.7%) patients & 24 (40%) patients, respectively in whom CHF did not develop (80 patients). A relatively strong negative correlation was detected between leukocyte percentage and TIMI flow grade (r = -0.66, p < 0.001). In multivariate analysis, relative neutrophilia was found to be a highly significant independent predictor of both closed infarct related artery (TIMI flow grade 0/1/2) and LV dysfunction (LV EF < 0.50) (OR 2.1, 95% confidence interval[CI] 1.6 to 8.7, and subsequent development of CHF (OR 4; 95% CI 1.9 to 8.6).

Conclusions: - Relative neutrophilia on admission to the hospital in patients with ASTEMI is significantly associated with the early development of CHF and impaired epicardial flow. This measure may help in the identification of individuals at high-risk who might benefit from more aggressive therapeutic and/or interventional reperfusion to prevent or reduce the risk of CHF.

206

Wall necrosis score index with delayed enhancement in acute myocardial infarction: most important prognostic marker of ventricular remodeling and function after 6 months

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Background: Several studies have shown the potential of contrast-enhanced cardiac magnetic resonance imaging (cCMR) to predict subsequent development of acute myocardial infarction (AMI). Nonetheless, cCMR's role on global ventricular remodelling (GVR) and function (GVF) has been occasionally explored.

Aim: To assess potential of cCMR as predictor of GVR and GVF after 6 months of AMI.

Method: We assessed 20 patients by cCMR at first reperfusion AMI and 6 months after AMI. AMI was treated by primary percutaneous coronary intervention on the left anterior descending coronary artery. We evaluated for each patient