MODERATED POSTER SESSION 3

Friday, 8 December 2006, 8:30–12:30
Location: Poster Hall

MISCELLANEOUS

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Intensity of the cell inflammatory response and myocardial perfusion pattern by myocardial contrast echocardiography post acute coronary syndrome

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Background: The intensity of the cell inflammatory response after an acute coronary syndrome (ACS) is a consequence of the extension of the left ventricular (LV) myocardial ischemic area and the area at risk, which can be assessed by myocardial contrast echocardiography (MCE).

Purpose: We studied a population of 36 ACS patients (pts), 52.7% (n=19 pts) STEMI, 25% (n=14 pts) NSTEMI, and 22.2% (n=8 pts) with unstable angina, between the first (D1) and third (D3) days post ACS.

Methods: In each case, we collected blood samples to determine the levels of high sensitivity C-reactive protein (hs-CRP-ng/ml) and cell membrane receptors CD4 and CD40 (n/mm3), and its variation gradients (D=D3-D1) as an estimation of the intensity of the cell inflammatory response. For each laboratory parameter the increasing A values were graded in 50%. MCE study was performed at D3 post ACS with a C256 and 512 Sequoia (Acuson Siemens, Germany) ultrasound machines after intravenous SonoVue® (Bracco, Rovi) continuous infusion during 3´, intermittent digital MCE imaging acquisition, Δt=175 ms, Tec imaging condition, and PCI software, with the acquisition of destruction/perfusion sequential images. The MCE pattern was classified in 16 LV wall segments as normal (P0), late filling (P1), heterogeneous (P2) and absence of perfusion (P3), the mean value/pt, percent distribution (%) and the correspondent segmental perfusion index (SPI) were calculated.

Results: We observed a direct relationship between SPI and hs-CRP (r=0.44; p=0.01) and ΔCD40 (r=0.51; p<0.01). Linear regression and multiple correlation analysis were applied between hs-CRP and the different MCE patterns, with P1/pt (r=0.37; p=0.01), P2/pt (r=0.53; p<0.01) and between CD40 and P1/pt (r=0.42; p=0.01) and P2/pt (r=0.56; p<0.01).

Conclusions: In this study we obtained a direct relationship between the intensity of the cell inflammatory response post ACS evaluated by serum markers and the extension of the LV myocardial ischemic area by MCE. This relationship was more significant for the late filling and patchy MCE patterns, revealing the presence of a greater myocardial area at risk post ACS by this new non invasive technique.

CORONARY FLOW

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Comparison between noninvasive transthoracic coronary flow reserve and contrast cardiac magnetic resonance to identify myocardial recovery after anterir reperfused myocardial infarction

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Previous studies showed that coronary flow reserve (CFR) measurement after recanalization of the infarct-related coronary artery has predictive value of myocardial viability. Gadolinium contrast enhanced cardiac magnetic resonance (GE-MRI) is a non invasive technique able to assess myocardial function and irreversible myocardial damage. Aim of this study was to compare CFR and GE-MRI to assess myocardial viability and to predict myocardial recovery after primary PCI.

Methods: Forty patients (36 male, aged 60±12 years) with first anterior AMI treated with primary PCI underwent CFR echocardiography in the left anterior descending coronary artery with adenosine transthoracic echocardiography and GE-MRI 5±3 days after PCI and two-dimensional echocardiography at admission and at 6 month follow-up. A 17-segment model of the left ventricle was used to analyze both wall motion abnormalities and trasmural extent of necrosis at GE-MRI as assessed by hyperenhancement (HE) extent. A necrosis score was derived for each segment in the risk area considering HE thickness extent (1: none; 2: HE less than 25%; 3: HE greater than 25% - less than 50%; 4: HE greater than 50% - less than 75%; 5: HE transmural greater than 75%). In each patient a wall motion score index (WMSI) and a necrosis score index (NSI) and a transmural score index (TSI) were calculated in the risk area. A satisfactory recovery was defined as wall motion improvement in at least two contiguous dysfunctioning segments for >1 grade.

Results: At univariate analysis predictors of recovery of function at follow-up were peak CPK value (r=0.36, p=0.02), CFR value (r=0.81, p<0.0001), NSI (r=0.37, p<0.02) and TSI (r=0.56, p<0.0001), microvascular obstruction at GE-MRI (r=-0.38, p<0.02). At multivariate analysis the significant predictor of recovery at 6 month follow-up were TSI at GE-MRI (coefficient 0.35; p=0.006), and CFR value (coefficient 0.48, p<0.001). Using receiver operating characteristics ROC curve analysis the optimal CFR cutoff identified was <2.4, with 73% of sensitivity and 92% of specificity (p<0.0001), in identifying patients with significant recovery at follow-up. Moreover, the optimal TSI cutoff identified was <0.3. Thus TSI cutoff was 73% sensitive and 88% specific (p<0.0001).

Conclusions: CFR and GE-MRI after AMI predict myocardial viability and LV functional recovery at follow-up. Our study showed that noninvasive CFR and GE-MRI have the same sensitivity and specificity to assess regionalventricular recovery after AMI.

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Clinical value of echocardiographic assessment of coronary flow reserve after descending coronary artery stenting in unselected population

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Aim of the study: Assess the usefulness of echocardiographic evaluation of coronary flow reserve (CFR) in detecting significant angiographic restenosis after coronary stenting of the left anterior descending (LAD) coronary artery in a non-selected population.

Methods: 223 patients (age 61±10 years; 168 men) treated in the last 9 months with stenting of the middle-proximal tract of the LAD, underwent measurement of CFR by transthoracic Doppler echocardiography in the distal tract of the LAD during adenosine infusion (0.14 mg/kg/min over 90 sec) within 48 hours of control coronary angiography. Drug therapy was contin- ued, and patients with old anterior-apical MI were included. Exclusion crite- ria were atrial fibrillation, second or third degree atrio-ventricular block, car- diomyopathy, severe valvular heart disease, and left-ventricular ejection fraction <40%. CFR was calculated as the ratio of hyperemic to basal peak