Serial Assessment of Coronary Flow Velocity Pattern in Patients With Acute Myocardial Infarction: Comparison to Intravenous Myocardial Contrast Echocardiography

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Intravenous myocardial contrast echocardiography (MCE) has been used to demonstrate the degree of microvascular damage in patients with acute myocardial infarction (AMI) treated by primary transmural coronary angioplasty (PTCA). We hypothesized that the degree of perfusion as shown by MCE relates to the coronary flow velocity pattern (CFVP) in the infarct related artery after PTCA for AMI.

Methods: Twenty-five patients with first AMI underwent MCE (Sonazoid, Nycomed-Amersham) with intermittent harmonic imaging. MCE before PTCA defined the region at risk (RR) and MCE at 24 h after the “no-reflow” region divided by the RR determined the ratio to the RR. A ratio to the RR of <50% defined a repertusion group and one of >50% a no-reperfusion group.

Results: There were significant differences in mean systolic flow velocity, systolic flow duration, presence of early systolic flow reversal, diastolic deceleration time and diastolic-systolic velocity ratio between the two groups (see Table 1). In both groups there was a tendency for improvement of all flow parameters 24 h after follow-up.

Conclusions: Microvascular dysfunction in patients after PTCA for AMI demonstrated by intravenous MCE is reflected by alterations in CFVP. There was no evidence for a further deterioration of the CFVP after the initial insult, indicating the absence of a major reperfusion injury.

1212-59 High Potential of Low Dose Dipyridamole Stress Myocardial Contrast Echo to Detect Coronary Stenosis: Simultaneous Comparison With Stress 2-D Echo and ECG

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Background: Low-dose dipyridamole (DYP) stress myocardial contrast echo (MCE) can depict perfusion abnormality in patients with ischemic heart disease, but the advantages of this technique over the stress 2-D echo or ECG remains unknown. The goal of this study was to compare the potential of DYP-stress MCE to diagnose coronary stenosis with that of stress 2-D echo or ECG.

Methods: Study population was consisted of 32 patients (pts) with coronary heart disease. MCE was performed during slow bolus (2-3ml) of Levovist and harmonic power Doppler or ultraharmonic image (2C/4C view) was obtained with Sonos 5500. Consecutive 2-D echo and DYP-stress MCE were performed in 32 pts. To determine the presence of coronary stenosis, DYP-stress MCE was analyzed as positive for ischemia. Coronary stenosis was considered significant, if it exceeded 75%.

Results: Average MCE examination time was 10 minutes. Twenty-four of 32 pts showed inducible ischemia and each location of PD was correlated with the perfusion territory of diseased coronary artery. Only 11 pts showed WMA, 1 pt showed ST change, and 2 pts complained of chest pain after DYP-stress. The sensitivity of stress MCE for detecting coronary stenosis, 74%, is much higher than stress 2-D echo, 34%, and ECG, 3%.

Conclusion: Short-triggered MCE with low-dose DYP stress is time-saving (10 min) and provides more accurate methods to the diagnosis of coronary stenosis than stress 2-D echo and ECG.

1212-60 Is Quantification of Myocardial Blood Flow Necessary to Delineate Resting Perfusion Abnormalities in Patients With Prior Myocardial Infarction?

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Background: Although low mechanical index real-time myocardial contrast echocardiography (RT-MCE) allows for both visual identification of abnormal perfusions in myocardial blood flow and the absolute quantification of myocardial blood flow, it is unclear whether, in daily clinical practice, quantification of RT-MCE images provides an incremental diagnostic value. To test this, we studied 15 patients (53±12 years) with prior myocardial infarction. Methods: Resting RT-MCE data were analyzed both qualitatively (jubilations replenishment kinetic) and qualitatively (visual assessment) and compared to original wall motion (2-D echo) and relative MIBI uptake (SPECT).

Results: A total of 262 segments were analyzed, including 54 dysfunctional and 211 normally contracting segments. Microbubbles velocity (0.26±0.06 vs 0.22±0.08 cm/s, p<0.01), myocardial blood volume (6.18±1.33 vs 3.52±1.66, p<0.001) and myocardial blood flow (MBF) (1.57±0.48 vs 1.75±0.50 ml/min/g, p<0.01) were lower in dysfunctional than in normal segments. These parameters were also lower in the 76 segments with reduced MIBI uptake than in 189 segments with normal MIBI uptake (0.21±0.06 vs 0.29±0.08 cm/s, 6.08±4.57 vs 2.11±1.63 cm/s, 5.44±4.45 vs 1.57±0.46 ml/min/g, p<0.001).

Conclusion: Quantitative RT-MCE may be a useful tool in daily clinical practice.