MICROVASCULAR DYSFUNCTION ASSESSED BY CORONARY FLOW VELOCITY PATTERN AS A PREDICTOR OF LEFT VENTRICULAR REMODELING AND THROMBUS FORMATION IN PATIENTS WITH ANTERIOR ACUTE MYOCARDIAL INFARCTION

i2 Poster Contributions
Georgia World Congress Center, Hall B5
Sunday, March 14, 2010, 9:30 a.m.-10:30 a.m.

Session Title: DES I and Acute Coronary Syndromes
Abstract Category: PCI - Acute MI
Presentation Number: 2501-463

Authors: Yoshimori An, Atsushi Yamamura, Shuichiro Kaji, Makoto Kinoshita, Natsuhiko Ehara, Atsushi Kobori, Takeshi Kitai, Kitae Kim, Tomoko Tani, Toru Kita, Yutaka Furukawa, Kobe City Medical Center General Hospital, Kobe, CA, Japan

Background: The development of left ventricular (LV) thrombus after acute myocardial infarction (AMI) is associated with thromboembolic complications, particularly in patients with anterior AMI. However, predictors of LV thrombus formation remain uncertain in the reperfusion era. The purpose of this study was to investigate whether coronary flow velocity (CFV) pattern immediately after percutaneous coronary intervention (PCI) can assess the risk of LV thrombus formation in patients with AMI after coronary reperfusion.

Methods: A consecutive series of 211 patients with first anterior AMI underwent successful PCI (<50% residual stenosis with TIMI flow grade 2-3) and coronary flow measurement with a Doppler guidewire. The CFV spectrum provided systolic peak velocity (cm/s, SPV) and diastolic deceleration time (ms, DDT). According to our previous reports, we defined microvascular dysfunction as a diastole deceleration time (DDT)≤600 ms and the presence of systolic flow reversal. LV thrombus was assessed by echocardiography on day 1, 2, 3 and 14, and at 1 and 6 months after AMI. Patients were divided into the two groups: those with (n=20; group 1) and without (n=191; group 2) LV thrombus. Left ventriculograms obtained immediately after PCI and at 6 months after infarction were analyzed to measure the LV volume index.

Results: CFV analysis immediately after PCI showed significantly lower SPV (-25.3±5.4 vs. -0.97±1.75 cm/s; p<0.001) and shorter DDT (361±53.3 vs. 598±17.2 ms; p<0.001) in group 1 than in group 2. SPV and DDT correlated to the LV end-diastolic volume index obtained 6 months after AMI (r=-0.67; p<0.001 and r=-0.78; p<0.001, respectively) and end-diastolic LV volume index 6 months after AMI was greater in group 1 than in group 2 (120±19.7 vs. 93.1±23.7 ml/m2; p<0.001). Microvascular dysfunction had a sensitivity of 85.0% and specificity of 62.3% for LV thrombus formation following AMI.

Conclusions: Microvascular dysfunction of infarct-related coronary artery immediately after PCI predicts LV remodeling and thrombus formation. CFV analysis may provide important information to determine an indication of anticoagulation therapy in patients with anterior AMI.