

RELATIONSHIP BETWEEN ST SEGMENT RE-ELEVATION AND MICROVASCULAR OBSTRUCTION MEASURED BY INTRACORONARY DOPPLER FLOW VELOCITY IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

i2 Poster Contributions

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Background: Previous studies have reported that ST re-elevation at reperfusion is a sign of limited myocardial salvage by thrombolysis in patients with acute myocardial infarction (AMI). Our studies have demonstrated that microvascular damage can be quantitatively assessed from coronary flow velocity patterns obtained with a Doppler guidewire. The purpose of this study was to examine the effect of the ST re-elevation on microvascular obstruction in patients with anterior AMI.

Methods: Two hundred and eleven consecutive patients with first anterior AMI who underwent successful percutaneous coronary intervention (PCI) were subjected to coronary flow measurement with a Doppler guidewire. The coronary flow velocity spectrum provided the following parameters: systolic peak velocity (cm/s, SPV) and diastolic deceleration time (ms, DDT). We defined the presence of microvascular obstruction as DDT of ≤ 600 ms and the presence of systolic flow reversal. Additional ST-segment elevation (>2 mm) immediately after ballooning or stenting, in the absence of mechanical obstruction, was defined as ST re-elevation. Patients were divided into the two groups: those subsequently complicated by ST re-elevation ($n=77$) and those without ST re-elevation ($n=134$). The in-hospital outcome was compared among the 2 groups.

Results: As for the relationship between the ST re-elevation at reperfusion and the severity of microvascular damage, additional ST-segment elevation was associated with a significantly higher risk of microvascular obstruction (66/77 patients, 86% vs. 23/134 patients, 17%; $p<0.001$). Patients with ST-segment re-elevation group had a significantly shorter DDT and a significantly lower SPV (361 ± 179 ms vs. 698 ± 197 ms, $p<0.001$ and -23 ± 18 vs. 8 ± 21 , $p<0.001$, respectively). The in-hospital mortality rates were significantly higher in patients with ST-segment re-elevation group (7/77 patients, 9% vs. 3/134 patients, 2%; $p<0.001$).

Conclusions: Patients showing ST-segment re-elevation immediately after PCI are associated with microvascular obstruction and worse in-hospital outcome in patients with anterior AMI.