DIAGNOSTIC SIGNIFICANCE OF MICRO-VASCULAR OBSTRUCTION BY DELAYED ENHANCEMENT CMRI IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

Poster Contributions
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Authors: Hiroaki Mori, Yokkaichi Municipal Hospital, Yokkaichi, Japan

Background: Cardiac magnetic resonance (CMR) imaging is a useful modality in assessing myocardial structural changes in patients with acute myocardial infarction (AMI). The hypo-enhanced regions within the hyper-enhanced infarct areas detected by CMR imaging are considered to be areas of micro-vascular obstruction (MO). In previous studies, MO is an important finding for early detection of the prevalence of irreversible myocardial damage. However, the pathophysiological mechanism still remains unclear. We investigated the relationship among MO and time to reperfusion from the onset of AMI, time to peak CK from reperfusion, peak CK value, and no-reflow or slow flow after reperfusion in patients with AMI.

Methods: 107 patients with first AMI who underwent primary percutaneous coronary intervention were enrolled. CMR imaging was performed 10.4 ± 4.1 days after PCI. MO was defined by CMR imaging. Patients were divided into 2 groups as follows: MO group (n=46) and non-MO group (n=61).

Results: There were no significant differences in the onset-to-reperfusion-time between the MO group and the non-MO group (332±358 min vs 295±226 min, p=ns), but in the reperfusion-to-peak-CK-time was significantly shorter in the MO group than in the non-MO group (304±104 min vs 473±226 min, p<0.001). The peak CK value was significantly greater in the MO group than in the non-MO group (5475±2083 IU/L vs 2280±1355 IU/L, p<0.001). The percentage of patients showing no-reflow or slow flow after reperfusion was greater in the MO group than in the non-MO group (58.6% vs 24.5%, p<0.001).

Conclusions: The magnitude of damaged myocardium more strongly depends on the time to peak CK from reperfusion rather than the time to reperfusion from onset. MO may indicate a prolonged “washout” of cardiac enzymes after reperfusion. Our results suggest that MO is an important finding for the early detection of irreversible myocardial damage after AMI. CMR imaging is a useful modality in evaluating therapeutic effectiveness in AMI patients receiving emergency reperfusion therapies.