Gadolinium-enhanced CMR predicts AMI functional recovery

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MedWire News: Functional recovery after acute myocardial infarction (AMI) is better predicted from microvascular injury assessed using gadolinium-enhanced cardiovascular magnetic resonance (CMR) imaging instead of angiography or electrocardiography (ECG), a Dutch study suggests.

Despite successful recanalization of the infarct-related artery, 30% of patients do not experience complete restoration of perfusion of the ischemic myocardium due to microvascular obstruction (MVO), say Robin Nijveldt (VU University Medical Center, Amsterdam) and co-workers.

They assessed two methods of determining MVO using gadolinium-enhanced CMR - first-pass perfusion to detect early MVO and late gadolinium enhancement (LGE) to detect late MVO - in 60 patients with AMI treated with primary stenting.

CMR was performed between 2 and 9 days after revascularization and at 4 months using a 1.5-Tesla clinical scanner.

Early and late MVO were both related to incomplete ST-segment resolution on the ECG but not to Thrombolysis in MI flow grade or myocardial blush grade determined using angiography.

Of all assessed criteria for microvascular injury, late MVO was the strongest predictor of changes in end-diastolic volume, end-systolic volume, and ejection fraction measured using cine imaging at baseline and 4 months of follow-up.

Regional analysis showed that late MVO had incremental diagnostic value to the transmural extent of infarction. Only 6% of 372 dysfunctional segments with late MVO showed complete recovery during follow up compared with 35% of the 1786 dysfunctional segments without MVO (odds ratio=0.18, p<0.0001).

"Our findings may become relevant for selecting patients that may benefit from adjunctive (eg, cell) therapy to promote the repair of infarcted myocardium," the researchers suggest in the *Journal of the American College of Cardiology.*

"In addition, because gadolinium-enhanced CMR accurately visualizes both infarct and MVO, it should be strongly recommended as a principal imaging technique in trials evaluating new therapeutic strategies to limit microvascular injury in the setting of AMI."

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