Contrast-enhanced MRI predicts myocardial viability in acute myocardial infarction

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Purpose: To evaluate the utility of contrast-enhanced MRI with first-pass (FI) and delayed imaging (DI) for assessing myocardial viability in acute myocardial infarction (AMI).

Materials and Method: Ten patients (M:F= 6:4,mean age= 56±5) with AMI under -went FI after bolus injection of gadolinium (one image/sec for 120 sec) and DI (7±2 minutes later).The assessment of MRI were concerned about location of lesion, depth of lesion, enhancement on FI and enhancement pattern on DI. MRI Findings were compared with echo -cardiography and coronary angiography.

Results: MRI findings were classified into 4 types:normal enhancement on FI and non-transmural enhancement on DI (type 1) in three patients, normal enhancement on FI and transmural enhancement on DI (type 2) in two, enhancing defect on FI and transmural enhancement on DI (type 3) in two, and enhancing defect on FI (Fig, left) and transmural enhancement with endocardial non-enhancing dark-line (type 4) on DI (Fig, right) in three. Good correlation between MRI and echocardiography was noted in location of lesion according to 6 segments on mid ventricular short axis image. Type 1 showed hypokinesia on echocardiography and normal angiography and type 2 showed hypokinesia and partial occlusion of affected artery. Type 3 & 4 showed akinesia and near total occlusion or multivessel involvement.

Conclusion: Enhancing defect on first-pass image and involving thickness of delayed enhancement in contrast-enhanced MRI may predict myocardial viability.