

Project No: 3452/2006

Role of contrast enhanced MRI in evaluation of myocardial viability in patients with left ventricular dysfunction following coronary artery disease

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OBJECTIVES

Left ventricular dysfunction which is an important determining factor of long term survival in ischemic heart disease (IHD) patients is not always a result of infraction, and its contractile function can improve significantly after revascularization. In patients with coronary artery disease and left ventricular dysfunction, the distinction between reversible and irreversible myocardial injury is important, as identification of viable myocardium is valuable in predicting outcome after revascularization. MRI is an evolving modality for myocardial infarct imaging.

METHOD

75 cases were included evaluated clinically and investigated according to the institutional protocol for all cardiac cases with ischemic heart disease. All these cases underwent an MRI study prior to coronary angiography / revascularization. After the first MR study, the cases underwent coronary angiography & a percutaneous coronary revascularization procedure to treat the stenotic lesions in the same sitting. A second MRI study to demonstrate improvement was done.

RESULTS

This study has shown an improvement in contractility after revascularization in 25 (61%) segments with abnormal delayed hyperenhancement of 1-25% of the wall thickness but only 19 (28%) of the segments with abnormal delayed transmural hyperenhancement > 75% showed improvement. 44 (73%) of the segments with no abnormal delayed transmural hyperenhancement improved in function after revascularization.

RECOMMENDATIONS

The MR technique of delayed contrast enhancement (DE) scores over the other techniques available for various reasons. Transmural extent of the infarct can only be demonstrated on delayed MR enhancement technique and can be graded as a continuum. Thus the strength of DE MRI is unmatched in assessment of cardiac viability & in predicting the likelihood of improvement in regional function after revascularisation function.