Cardiac MRI - A Tool for Routine Early Evaluation of ST Elevation Myocardial Infarction (STEMI)

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Background: Cardiovascular magnetic resonance (CMR) is an emerging modality for the evaluation of acute ST elevation myocardial infarction (STEMI). New software allows myocardial damage accurate quantification.
Purpose: The aim of this prospective study was to report the value of quantitative CMR in routine evaluation of consecutive STEMI patients.
Subjects and methods: The study cohort included 27 consecutive patients who underwent primary angioplasty for first STEMI (26 males, mean age 58± years. CMR studies (1.5T scanner) sequences included steady state free precession, T2, perfusion and myocardial delayed enhancement (MDE Evaluation included LVEF and RVEF calculation; quantification in grams of: MDE and microvascular obstruction (MVO).
Results: Scans were performed within an average of 5.4 days from admission. MDE was present in 26/27 patients with an average of 20.1 gr (15.7 % of myocardial mass). MVO was present in 19/27 patients with an average of 3.26 gr (2.5% of myocardial mass). LVEF was strongly and negatively correlated with MDE (p=0.005) and MVO (p=0.02). MDE was strongly positively correlated with MVO (p=0.0004). RVEF was not significantly correlated with MDE or MVO. Additional findings on CMR studies included LV thrombus in 3/27 and an unknown old MI in a different territory in 1/27.
Conclusions: CMR for STEMI allows accurate MDE and MVO quantification. The importance of this is stressed by the strong negative correlation between MDE and MVO amount and LVEF. MDE and MVO reflect the extent of myocardial injury and predict functional impairment. CMR enables the detection of additional unexpected findings as well.