T2 mapping contribution in cardiac MRI examination: reversible oedema in dysfunctional myocardial segments in stress cardiomyopathy

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Objectives: We sought to evaluate whether transient myocardial systolic impairment in stress cardiomyopathy is associated with myocardial edema.

Background: The mechanisms of stress cardiomyopathy are still debated. T2 mapping in cardiac MRI (CMR) examination allows quantification of myocardial edema. The aim of the study was to detect and quantify transient myocardial edema in systolic dysfunctional myocardial segments in this setting.

Methods: We conducted a retrospective study of 6 patients presenting confirmed stress cardiomyopathy. CMR results of patients were compared with results of 11 healthy volunteers (control group). All examinations were performed in acute phase: left ventricle long axis T2 mapping sequence and dynamic sequences in the 3 axis of heart and delayed enhancement (DE) sequences 10 minutes after 0.2mmol/kg body weight of Gd-DTPA. A second CMR was performed in 4 patients after a delay >2 months.

Results: No abnormal DE was observed. All systolic dysfunction recovered on follow-up. In acute phase, apical systolic dysfunction was observed in all patients. Mean T2 values of hypo- or akinetic segments were significantly higher than those of normokinetic segments (88.7±22.7ms vs. 55.4±7.7ms; p<0.0001) or than T2 values of control group (56.8±3.4ms; p<0.0001). No significant difference was observed between T2 of normokinetic segments in patients and control group. On second CMR, segmental systolic dysfunction recovered with significant regression of T2 values.

Conclusion: A transient apical myocardial edema associated with a reversible systolic dysfunction occurred in stress cardiomyopathy. CMR with T2 mapping allows quantification of myocardial infiltration in stress cardiomyopathy.