学 位 論 文 の 要 旨

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【主論文の題名】

Quantitative assessment of myocardial strain with displacement encoding with stimulated echoes MRI in patients with coronary artery disease

【主論文の要約】

Objectives: To determine the diagnostic value and reproducibility of strain assessment with Displacement Encoding with Stimulated Echoes (DENSE) MRI in patients with suspected coronary artery disease (CAD).

Methods: DENSE MRI was obtained on short-axis planes of the left ventricle (LV) in 24 patients with suspected CAD. e1 and e2 strains of LV wall were quantified. Cine MRI was acquired to determine percent systolic wall thickening (%SWT), followed by late gadolinium enhancement (LGE) MRI. The diagnostic performance of e1, e2 and %SWT for predicting the presence of LGE was evaluated by receiver operating characteristics (ROC) analysis.

Results: Myocardial scar on LGE MRI was observed in 91 (24%) of 384 segments. The area under ROC curve for predicting the segments with LGE was 0.874 by e1, 0.916 by e2 and 0.828 by %SWT (p=0.001 between e2 and %SWT). Excellent inter-observer reproducibility was found for strain (ICC=0.962 for e1, 0.955 for e2) as compared with %SWT (ICC=0.790).

Conclusions: DENSE MRI can be performed as a part of routine cardiac MR study and allows for quantification of myocardial strain with high inter-observer reproducibility. Myocardial strain, especially e2 strain is useful in detecting altered abnormal systolic contraction in the segments with myocardial scar.