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View Abstract / View Presentation

Single-shot model-based non-rigid motion-corrected T1 rho mapping for endogenous assessment of myocardial injury

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Myocardial T1 rho mapping with model-based non-rigid motion correction enables quantitative characterization of myocardial injuries with relatively low sensitivity to respiratory motion and field inhomogeneity.

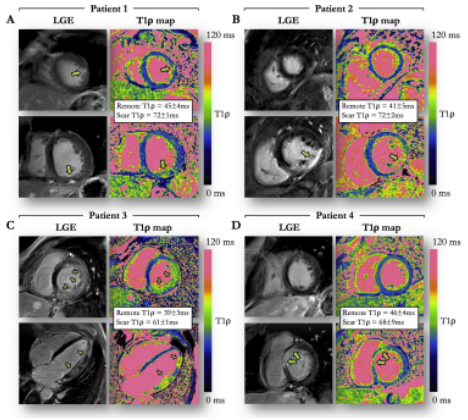

Figure 3: Examples of 4 patients with evidence of myocardial injury on LGE and motion-corrected T1ρ mapping. (A) 59-year-old male patient with sub-epicardial LGE in the latero-apical segment. (B) 53-year-old male patient with ischemic cardiomyopathy and transmural LGE in the inferior and infero-septal mid segments. (C) 51-year-old male patient with acute myocarditis and extensive patchy intramural and subepicardial LGE in the left ventricular free wall. (D) 35-year-old male patient with myocarditis and intramural LGE in the antero-septo-basal segment.

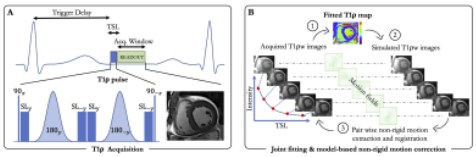

Figure 1: Schematic of the proposed single breath-hold 2D myocardial T1ρ mapping technique (A) with joint T1ρ fitting and model-based motion correction (B). T1ρ mapping is performed using a single-shot electrocardiogram-triggered bSSFP acquisition where five images with different spin lock times are acquired within a single breath-hold. Motion correction is performed by iterating between a T1ρ fitting (step 1), the simulation of T1ρ-weighted images (step 2) and a pair-wise non-rigid motion correction (step 3).