Abstract: 4937

Global longitudinal strain by feature tracking predicts adverse remodeling in ST-elevation myocardial infarction incremental to

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Objectives: To evaluate the independent and incremental value of left ventricular (LV) strain assessed by cardiac magnetic resonance feature tracking (CMR-FT) for prediction of adverse LV remodeling following ST-elevation myocardial infarction (STEMI).

Background: The role of LV myocardial strain by CMR-FT for prediction of adverse remodeling after STEMI in comparison to LV ejection fraction and infarct severity is unclear.

Methods: STEMI patients treated with primary percutaneous coronary intervention within 24 hours after symptom onset were enrolled. CMR core laboratory analysis was performed to assess LV ejection fraction, infarct pathology and LV myocardial strain. The primary endpoint was adverse remodeling defined as ≥20% increase in LV end-diastolic volume from baseline to 4 months.

Results: From the 232 patients included, 38 (16.4%) reached the primary endpoint. Global longitudinal strain (GLS), global radial strain, and global circumferential strain were all predictive of adverse remodeling (p<0.01 for all), but among strain values only GLS was an independent predictor of adverse remodeling (hazard ratio: 1.36 [1.03–1.78]; p=0.028) after adjustment for strain parameters, ejection fraction and CMR markers of infarct severity. A GLS >-14% was associated with a 4-fold increase in risk for LV remodeling (hazard ratio: 4.16 [1.56–11.13]; p=0.005). Addition of GLS to a baseline model comprising ejection fraction, infarct size and microvascular obstruction resulted in net reclassification improvement of 0.26 ([0.13–0.38]; p<0.001) and integrated discrimination improvement of 0.02 ([0.01–0.03]; p=0.006).

Conclusions: In STEMI survivors, determination of GLS using CMR-FT provides important prognostic information for the development of adverse remodeling that is incremental to LV ejection fraction and CMR markers of infarct severity.