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Acute Coronary Syndromes

PROGNOSTIC SIGNIFICANCE OF INFARCT CORE PATHOLOGY IN ST-ELEVATION MYOCARDIAL INFARCTION SURVIVORS REVEALED BY QUANTITATIVE T2-WEIGHTED CARDIAC MAGNETIC RESONANCE

Poster Contributions
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Session Title: From Cardiac Arrest, LV Failure to Myocardium Salvage
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Background: Myocardial transverse relaxation time (T2, ms) is a fundamental magnetic property of tissue that is related to water content and mobility. The pathophysiological and prognostic importance of native myocardial T2 in acute STEMI patients is unknown.

Methods: We performed a prospective single center cohort study in reperfused STEMI patients who underwent CMR 2 days and 6 months post-MI. T2-weighted CMR was measured in myocardial regions-of-interest. The infarct territory and microvascular obstruction were depicted with late gadolinium enhancement CMR. All-cause death or heart failure hospitalization was a pre-specified outcome that was assessed during follow-up.

Results: 324 STEMI patients (mean age 59 years, 237 males) gave informed consent (14 July 2011 - 22 November 2012). Of these, 295 STEMI patients had evaluable T2 maps. All 324 had follow-up assessments (median duration 860 days). Infarct size was 18 ±14% of LV mass. 164 (51%) patients had late microvascular obstruction whereas 197 (61%) patients had an infarct core revealed by native T2. Native T2 within the infarct core (53.9±4.8) was higher than in the remote zone (49.7±2.1 ms; p<0.01) but lower than in the area-at-risk (62.9±5.1 ms) (p<0.01). Native T2 in the infarct core was negatively multivariably associated with heart rate, Killip class, and peak neutrophil count at presentation (all p<0.05). Baseline T2 core (ms) was univariably associated with baseline LVEF (0.31 (0.04, 0.58); p=0.023), but not associated with LVEF or volumes at 6 months. Thirty (10.4%) patients died or experienced a heart failure event. These events included 5 cardiovascular deaths, 3 non-cardiovascular deaths and 22 episodes of heart failure (Killip Class 3 or 4 heart failure (n=20) or defibrillator implantation (n=2)). T2-core (ms) was associated with a reduced risk of all-cause death or heart failure hospitalization (hazard ratio 0.786, 95% CI 0.658, 0.939; p=0.008) including after adjustment for LVEF at baseline (p=0.017) or LV end-diastolic volume at baseline (p=0.009) (Figure 3).

Conclusion: Infarct core revealed by native T2 was common and independently associated with all-cause death or heart failure hospitalization post-discharge.