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ORAL PRESENTATION

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# Prognostic significance of infarct core pathology in ST-elevation myocardial infarction survivors revealed by quantitative T2-weighted cardiac magnetic resonance

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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 ST-elevation myocardial infarction (STEMI) patients is unknown. We aimed to assess the clinical significance of native T2 within the infarct core using cardiac magnetic resonance (CMR) imaging.

## 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 (investigational prototype T2-prepared TrueFisp sequence) 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±SD age 59±12 years, 237 males, 121 with anterior STEMI) gave informed consent and had CMR (14 July 2011 - 22 November 2012). All 324 had follow-up assessments (median duration 860 days). Infarct size was 18 ±14% of LV mass. One hundred and

sixty four (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) ( $p<0.01$ ). In multivariable linear regression, native T2 in the infarct core was negatively associated with heart rate, Killip class, and peak neutrophil count at presentation (all  $p<0.05$ ).

Baseline T2 core (ms) was univariably associated with LVEF (0.31 (0.04, 0.58);  $p=0.023$ ). Baseline T2 core was 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 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 ( $p=0.009$ ).

## Conclusions

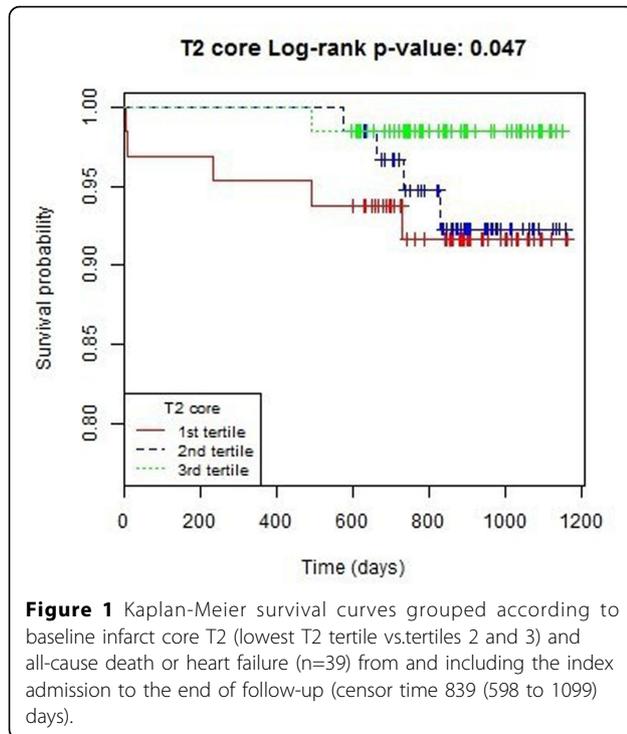
Infarct core revealed by native T2 was common and independently associated with all-cause death or heart failure hospitalization post-discharge.

## Funding

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