

Prognostic value of infarct transmurality determined by contrast-enhanced cardiac MRI after STEMI

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Background/Aims: The long-term prognostic significance of maximal infarct transmurality evaluated by contrast-enhanced cardiac magnetic resonance (CE-CMR) in ST-segment elevation myocardial infarction (STEMI) patients has yet to be determined. This study aimed to see if maximal infarct transmurality has any additional long-term prognostic value over other CE-CMR predictors in STEMI patients, such as microvascular obstruction (MVO) and intramyocardial hemorrhage (IMH).

Methods: The study included 112 consecutive patients who underwent CE-CMR after STEMI to assess established parameters of myocardial injury as well as the maximal infarct transmurality. The primary clinical endpoint was the occurrence of major adverse cardiac events (MACE), which included all-cause death, non-fatal reinfarction, and new heart failure hospitalization.

Results: The MACE occurred in 10 patients over a median follow-up of 7.9 years (IQR, 5.8 to 9.2 years) (2 deaths, 3 nonfatal MI, and 5 heart failure hospitalization). Patients with MACE had significantly higher rates of transmural infarction, infarct size (IS) > 5.4 percent, MVO, and IMH compared to patients without the MACE. In stepwise multivariable Cox regression analysis, the transmural extent of infarction defined as 75 percent or more of infarct transmurality was a strong predictor of the MACE after correction for MVO and IMH [hazard ratio 8.7, 95% confidence intervals (CIs) 1.1-71; P= 0.043].

Conclusions: In revascularized STEMI patients, post-infarction CE-CMR-based maximal infarct transmurality is a strong independent long-term prognosticator. Adding maximal infarct transmurality to CE-CMR parameters like MVO and IMH could thus identify patients at high risk of long-term adverse outcomes in STEMI.

Fig. 1

