

ORAL PRESENTATION

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Time-dependency, predictors and impact on outcome of infarct transmuralities assessed by magnetic resonance imaging in patients with ST-elevation myocardial infarction reperfused by primary percutaneous intervention

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Introduction

Previous studies identifying predictors for transmural infarction in patients with ST-elevation myocardial infarction (STEMI) reperfused by primary percutaneous intervention (PCI), especially analyzing the time-dependency of transmural infarction, achieved inconsistent results and are limited due to small and highly-selected study samples. Furthermore it remains unclear whether transmural infarction assessed within the acute phase of STEMI is associated with adverse clinical outcome.

Methods

STEMI patients reperfused by primary PCI (n=322) within 720 min after symptom-onset underwent contrast-enhanced magnetic resonance imaging (MRI) at a median of 3 days after the index event (interquartile range [IQR 2;4]). Patients were subcategorized into tertiles according to time-to-reperfusion: lower tertile (< 175 min), middle tertile (175-320 min) and upper tertile (> 320 min). Infarct transmuralities were assessed by a score with late-enhancement grading as <25%, 25-50%, 51-75% and >75% transmuralities analyzing all 17 left ventricular segments. Transmural infarction was assumed if the hyperenhancement extended 75% of wall thickness in at least one segment. Clinical follow-up was performed after a median of 20 months (IQR 13;29).

The primary endpoint was defined as a composite of death and congestive heart failure.

Results

Overall, transmural infarction occurred in 50.6% (n=157) of all patients. The infarct transmuralities score progressed significantly with increasing ischemic time (2.7 [IQR 2.1;3.1] for <175 min, 3.0 [IQR 2.4;3.4] for 175-320 min and 3.2 [IQR 2.8;3.5] for >320 min; p<0.001).

Using multivariable logistic regression analysis including parameters such as post-PCI TIMI-flow, ST-segment resolution and maximum creatine kinase levels, time-to-reperfusion was identified as the only independent predictor for transmural infarction (odds ratio 1.02, 95%CI 1.01-1.03, p=0.03).

Furthermore, in Cox regression analysis neither the presence of transmural infarction nor the transmuralities score were associated with the occurrence of the primary composite endpoint (presence of transmural infarction: hazard ratio [HR] 1.22, 95%CI 0.53-2.79, p=0.64 / transmuralities score HR 1.07, 95%CI 0.73-1.58, p=0.74).

Conclusion

In STEMI patients reperfused by primary PCI time-to-reperfusion is the only independent predictor for

transmural infarction. However, infarct transmurality is not associated with the occurrence of death and congestive heart failure.

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