

Poster presentation

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Growth-differentiation factor-15 as predictor of mortality in acute reperfused ST-elevation myocardial infarction: Insights from cardiovascular magnetic resonance

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Introduction

Levels of growth differentiation factor (GDF)-15, a stress-responsive member of the transforming growth factor- β cytokine superfamily, predict outcomes in cardiovascular disease. However, the exact pathophysiological mechanisms of GDF-15 in the cardiovascular system and in acute ST-elevation myocardial infarction (STEMI) are not well defined. Cardiovascular magnetic resonance (CMR) imaging might be an imaging tool to further elucidate the underlying mechanisms by reflecting myocardial necrosis and microvascular obstruction (no reflow) with subsequent adverse infarct healing, adverse LV remodelling as well as poor prognosis.

Purpose

To determine the relation between GDF-15 and infarct size as well as microvascular obstruction assessed by CMR imaging and to evaluate the prognostic value of GDF-15 in a high-risk STEMI population.

Methods

GDF-15 levels were determined by an enzyme-linked immunoabsorbent assay in 238 consecutive patients undergoing primary percutaneous coronary intervention (PCI) in STEMI <12 hours after symptom onset. Patients were categorized into 2 groups defined by the median GDF-15 value on admission. All patients underwent CMR for assessment of infarct size and microvascular obstruction.

The primary clinical endpoint was mortality within 6 months after the index event.

Results

Reperfusion in STEMI using primary PCI resulted in a significant GDF-15 level increase. Elevated GDF-15 levels on admission were a strong predictor of mortality at six months follow-up (19 versus 1 death, $p < 0.001$). GDF-15 levels on admission were not associated with other established prognostic markers in STEMI patients including infarct size, microvascular obstruction, pain-to-balloon time, TIMI-flow before and after PCI as well as ST-resolution.

Conclusion

GDF-15 is a new, strong predictor of mortality in patients with STEMI reperfused by primary PCI that provides prognostic information beyond established CMR parameters of clinical outcome. Thus, our study provides further insights into the pathophysiological mechanisms of GDF-15, supporting the hypothesis that GDF-15 integrates information from different disease pathways in acute STEMI and reflects unique additional prognostic information.