



ORAL PRESENTATION

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Myocardium at risk by magnetic resonance imaging: head-to-head comparison of T2-weighted imaging and early gadolinium enhanced steady state free precession

Joey F Ubachs^{1*}, Peder Sorensson², Henrik Engblom¹, Marcus Carlsson¹, Stefan Jovinge³, John Pernow², Hakan Arheden¹

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Background

The ultimate goal of acute reperfusion therapy in patients suffering from acute coronary occlusion is to accomplish as much myocardial salvage as possible. In order to determine the myocardial salvage index, the extent of infarction needs to be related to the myocardium at risk (MaR). Thus, the ability to assess both infarct size and MaR is of central clinical and scientific importance, especially when designing clinical trials aimed at evaluating the cardioprotective efficiency of different acute interventions. The aim of the present study was to explore the relationship between T2-weighted cardiac magnetic resonance (CMR) and early gadolinium enhanced steady state free precession (EGE) CMR for determination of MaR in patients with acute myocardial infarction.

Methods

Twenty-one prospectively included patients with first-time ST-elevation myocardial infarction underwent CMR 1 week after primary percutaneous coronary intervention. T2-weighted images, for assessment of MaR, were acquired before injection of a gadolinium-based contrast agent. After contrast injection, EGE images were acquired for assessment of MaR and late gadolinium enhancement images were acquired for assessment of infarct size.

Results

Myocardium at risk by T2-weighted imaging and EGE was $29 \pm 11\%$ and $32 \pm 12\%$ of the left ventricle, respectively. Thus, MaR with T2-weighted imaging was slightly smaller than MaR by EGE ($-3.0 \pm 3.9\%$; $p < 0.01$). There was a significant correlation between the two MaR measures ($r^2 = 0.89$, $p < 0.01$). Furthermore, no significant difference in the myocardial salvage index, calculated using T2-weighted imaging and EGE for MaR ($56 \pm 22\%$ vs $58 \pm 23\%$, $p = 0.18$), was found.

Conclusions

There is a strong agreement between MaR assessed by T2-weighted imaging and MaR assessed by EGE in patients with reperused acute myocardial infarction 1 week after the acute event. Thus, both methods can be used to determine MaR and myocardial salvage at this point in time.

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Author details

¹Department of Clinical Physiology, Lund University, Skåne University Hospital, Lund, Sweden. ²Department of Medicine, Karolinska Institutet,

¹Department of Clinical Physiology, Lund University, Skåne University Hospital, Lund, Sweden

Full list of author information is available at the end of the article

Karolinska University Hospital, Stockholm, Sweden. ³Department of Cardiology, Lund University, Skåne University Hospital, Lund, Sweden.

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