

Poster presentation

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Reproducibility of myocardial salvage index in acute myocardial infarction by cardiac magnetic resonance imaging - validation against an angiographic score

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Introduction

Myocardial salvage assessed by cardiac magnetic resonance imaging (MRI) is a new technique which might be used as a surrogate endpoint to reduce the sample size in studies comparing different reperfusion strategies in infarction. So far reproducibility of myocardial salvage has not been evaluated appropriately.

Purpose

The aim of this trial was to assess the reproducibility of myocardial salvage assessment and to validate it to an angiographic score.

Methods

In 20 patients with reperfused ST-elevation myocardial infarction breath-hold T2-weighted (area at risk [AAR]) and delayed enhancement (infarct size [IS]) images were acquired repeatedly on 2 consecutive days to assess myocardial salvage index (AAR-IS/AAR). Reproducibility, interobserver, and intraobserver variabilities were assessed and compared by Bland-Altman methods. In addition, the AAR at risk in % of left ventricle (%LV) determined by MRI was compared to an angiographic AAR score.

Results

The AAR determined by angiography was $31.0 \pm 10.0\%$ LV and by MRI $33.7 \pm 9.0\%$; the MRI IS was $18.2 \pm 7.5\%$ LV. The corresponding myocardial salvage index was $43.8 \pm$

22.5 (range 2.1-77.9). AAR difference (bias) between scan I and scan II was -0.5% LV and limits of agreement were ± 5.9 LV. The results for IS were $0.1 \pm 2.2\%$ LV limits of agreement. The resulting bias for myocardial salvage index was -1.7 with limits of agreement of ± 7.2 . Intra- and interobserver variability was low with a mean bias of -1.1 (limits of agreement ± 4.7) and 0.3 (limits of agreement ± 4.8), respectively.

Conclusion

Myocardial salvage index assessment by MRI is a reproducible and in comparison to angiographic scores an accurate tool in patients presenting with ST-elevation myocardial infarction. It might therefore serve as a valid surrogate endpoint to uncover advantages of new reperfusion strategies.