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CAN MYOCARDIAL SALVAGE INDEX ASSESSED BY GATED SPECT PLAY A ROLE FOR PREDICTING THE FUNCTIONAL OUTCOME OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION?

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BACKGROUND-AIM

Myocardial salvage index (MSI) is a marker of myocardial tissue reperfusion in acute myocardial infarction (MI), submitted to primary percutaneous coronary intervention (PCI) and it can be estimated by comparing functional and perfusion abnormalities using 99mTc-sestamibi gated single photon emission computed tomography (SPECT). MSI may be a good surrogate end point for mortality. Since gated SPECT is already performed to assess infarct size and infarct severity after MI the aim of our study was to evaluate which is the relationship between MSI and functional evolution in patients with MI.

METHODS

We analyzed 120 patients with acute MI, enrolled in various protocols aimed to compare different approaches for primary PCI. Early (before hospital discharge) and follow-up (approximately 6 months) gated SPECT examinations were performed to assess infarct size, MSI and functional outcome. Patients were categorized into 2 groups defined by the median infarct size and median MSI respectively. We compared the left ventricular end-diastolic (ED), and end-systolic (ES) volumes (V), and ejection fraction (EF) evolution in the groups identified by the medians.

RESULTS

The median infarct size and MSI were 13.75% and 59%, respectively. Patients with over-median infarct size had significantly lower EF at early (41 ± 11% vs. 52 ± 9%, $p<0.0001$) and follow up (46 ± 11% vs. 56 ± 9%, $p<0.0001$) gated SPECT, but there was no difference in the delta EF or in the delta EDV or ESV between early and follow up imaging. Conversely, patients with over-median MSI had significantly higher EF (55 ± 9% vs. 47 ± 12%, $p<0.0001$) in follow up gated SPECT only, but showed significantly larger EF improvement (+ 7 ± 9% vs. +2 ± 9%, $p<0.01$) and better EDV (–3 ± 19 ml vs. +8 ± 27ml, $p<0.05$), and ESV (–7 ± 12 ml vs. +2 ± 25 ml, $p<0.01$) evolution than patients with lower MSI.

CONCLUSION

This study demonstrates that MSI assessed by gated SPECT can help predicting left ventricular functional evolution in acute MI after primary PCI. Our results could suggest the use of MSI in clinical practice to identify high-risk patients, who could benefit from closer follow up.