

## Summary

Left ventricular systolic dysfunction is one of the determinants of poor prognosis in patients with coronary artery disease. The prognostic effect of myocardial revascularization is limited to individuals with significant amount of dysfunctional viable myocardial tissue.

New method in the diagnosis of myocardial viability is contrast-enhanced magnetic resonance imaging (CE-MR). Paramagnetic contrast agent increasingly accumulates in the areas of acute necrosis and subsequent scar tissue.

The aim of the study was to compare CE-MR with single photon emission tomography using Thallium chloride (SPECT Tl). Both methods were compared both with regard to the segmental viability assessment and the improvement of global systolic function of the left ventricle after revascularization.

Forty patients with chronic coronary artery disease and left ventricular dysfunction were enrolled in the study. Systolic dysfunction was defined by ejection fraction (EF)  $\leq 45\%$ .

Before revascularization, myocardial viability was assessed by both methods and EF was measured by radionuclide ventriculography. Follow up examination of EF was performed at least four months after revascularization in 32 patients.

CE-MR was performed 10-15 minutes after the administration of a gadolinium based contrast agent using Inversion Recovery Turbo FLASH (fast low-angle shot) sequence. Four hours rest redistribution protocol was used for SPECT Tl.

Comparison of viability assessment was performed in 1360 segments. Agreement was noted in 1065 (78.3%) segments that resulted in kappa value 0.336. Discrepancies were observed in 96 SPECT Tl viable segments that were described as non-viable according to CE-MRI and in 199 SPECT Tl non-viable segments that were viable on CE-MRI study. Better agreement was observed when assessing the septal and anterolateral segments in comparison to segments localized in inferior and inferolateral wall.

In patients undergoing follow-up examination EF increased by  $5.5 (\pm 7.31) \%$  ( $33.6 \pm 8.57$  to  $39.2 \pm 9.68$ ), but relation between the amount of dysfunctional viable myocardium defined by both methods studied and the change in EF after revascularization was very weak and not statistically significant.