

## Summary

# Is the Cardiac Function Improvement after PTCA Predictable by the Quantitative Indices from Exercise Stress $^{201}\text{Tl}$ Myocardial SPECT, in Patients with Old Myocardial Infarction?

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**[Purpose]** We examined whether the improvement of left ventricular function after percutaneous transluminal coronary angioplasty (PTCA) in patients with one diseased vessel can be predicted by the quantitative indices from exercise stress  $^{201}\text{Tl}$  single photon emission computed tomography (SPECT) and radio-nuclide angiography (RNA) before PTCA.

**[Methods]** Exercise stress  $^{201}\text{Tl}$  myocardial SPECT and RNA were performed before and after PTCA in 28 patients with old myocardial infarction (OMI). The patients were divided into two groups according to the results of coronary angiogram performed at 3 to 6 months after PTCA; patency was confirmed in 22 patients (Group P) and restenosis was observed in the remaining 6 patients (Group S).

**[Results]** In Group P, the count ratios defined as  $^{201}\text{Tl}$  uptake in the PTCA region divided by the uptake in the normal region were significantly improved at 1 week and 3 to 6 months after PTCA in the initial image.

$^{201}\text{Tl}$  washout rates in the normal regions were significantly increased at 1 week after PTCA in Group

S, and these rates in the PTCA regions were significantly increased at 1 week after PTCA in Group P.

Left ventricular ejection fractions (LVEF) obtained from RNA were significantly improved 1 week and 3 to 6 months after PTCA in Group P.

The changes of LVEF between pre-PTCA and 3 to 6 months after PTCA (LVEF) were significantly correlated with the count ratios of both initial and delayed SPECT images in Group P ( $r = 0.652$ ;  $p < 0.01$ ,  $r = 0.645$ ;  $p < 0.01$  respectively).

From the multiple regression analysis using step-wise methods, the count ratio in delayed image and the LVEF before PTCA were selected as independent predictive variables for LVEF (multiple correlation coefficient = 0.776).

**[Conclusion]** Thus, the improvement of LVEF after PTCA may be predictable by the count ratio in the delayed SPECT image and LVEF before PTCA when the treated vessel is persistently patent.

**Key words:** PTCA,  $^{201}\text{Tl}$  SPECT, Myocardial viability, LVEF, OMI.