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Estimation with Tc-99m tetrofosmin SPECT of salvaged myocardial mass after emergent reperfusion therapy in acute myocardial infarction

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Objectives: The purpose of this study was to validate a new quantitative index of salvaged myocardial mass calculated from Tc-99m tetrofosmin SPECT for evaluating the therapeutic effect of emergent reperfusion therapy in acute myocardial infarction (AMI). ***Methods:*** Tc-99m tetrofosmin SPECT was performed before and after emergent percutaneous transluminal coronary angioplasty (PTCA) in eight patients with AMI. In the pre-PTCA study, Tc-99m tetrofosmin was injected before emergent PTCA. Two weeks after the PTCA, post-PTCA study was performed. As a quantitative index of salvaged myocardial mass, salvaged myocardial volume (SMV) was defined as the difference of myocardial functional volume between the SPECT studies before and after the PTCA. To investigate the clinical significance of SMV, SMV was compared with the grade of therapeutic efficacy determined visually from pre- and post-PTCA SPECT images and clinical parameters, namely peak creatine phosphokinase level (pCK) and the time from the onset of the AMI to reperfusion (RPT). ***Results:*** SMV showed a significant correlation with the visual grade of therapeutic efficacy ($r = 0.737$, $p < 0.037$) and a trend toward significant correlation with pCK ($r = -0.622$, $p < 0.1$). SMVs in early- and late-reperfusion groups (RPT ≤ 6 hr and RPT > 6 hr) were 30.0 ± 14.0 and -6.2 ± 25.5 m*l*, showing a greater mean SMV value in the early-reperfusion group ($p < 0.07$). ***Conclusion:*** SMV could be used as a quantitative index of salvaged myocardial mass for evaluating the therapeutic effect of emergent reperfusion therapy.

Key words: Tc-99m tetrofosmin, salvaged myocardium, PTCA, AMI