

Twenty-four-hour Tl-201 delayed scan underestimates myocardial viability in patients with acute myocardial infarction after percutaneous transluminal coronary angioplasty

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Background: Myocardial viability in area at risk of acute myocardial infarction (AMI) after reperfusion therapy may be underestimated by the 24-hour images due to reverse redistribution (r-RD).

Methods: Subjects were 37 AMI patients in whom Tc-99m pyrophosphate (PYP)/Tl-201 dual-isotope SPECT was positive. The 24-hour delayed scan was performed with only a Tl window. One month later, follow up rest Tl SPECT was performed to evaluate myocardial viability. In early (at PYP/Tl-201 dual-isotope SPECT), 24-hour, and one month follow up Tl studies, Tl uptake in the area of AMI was scored into four grades: 3 as normal to 0 as severely reduced. The scores were evaluated.

Results: Among the 37 AMI lesions, there were 16 r-RD, 3 RD, 16 fixed defect (FD) and 2 normal (positive PYP and normal Tl). Mean Tl scores were early; 1.4 ± 1.1 , 24-hr; 0.9 ± 0.9 and one month; 1.3 ± 1.1 . The 24-hour Tl score was lower than the early and one month Tl scores ($p < 0.01$).

Conclusion: Reverse redistribution is frequently observed in an area at risk where PYP SPECT was positive. Nuclear medicine physicians should be aware of the existence of frequent r-RD in Tl scan to avoid the underestimation of myocardial viability in the acute phase after PTCA.

Key words: thallium-201, myocardium, viability, reverse redistribution