

Usefulness of reinjection image for evaluating viable myocardium in the infarcted zone on exercise thallium-201 SPECT

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Reinjection images were obtained in 23 patients with myocardial infarction by the additional injection of 37 MBq of thallium-201 after obtaining 4 hour delayed images on exercise thallium-201 SPECT (TSPECT). A redistribution index (RI) was derived of the changes in perfusion defects between immediate and 4 hour delayed images as well as immediate and reinjection images on polar bull's eye maps. The RI of reinjection images ($46 \pm 27\%$) was significantly greater than that of 4 hour delayed images ($26 \pm 26\%$) in patients with myocardial infarction ($p < 0.01$). Significant redistribution after reinjection occurred in 4 of 9 patients (44%) without significant redistribution on 4 hour delayed images. Improvement in redistribution on reinjection images correlated significantly to the small extent of coronary artery disease and collateral development. The appearance of redistribution from 4 hour delayed imaging to reinjection imaging also might reflect the function of collateral development in the resting state in patients without significant redistribution on 4 hour delayed images. It has been demonstrated that underestimated viable myocardium on 4 hour delayed images in the infarcted zone can be better assessed on reinjection images. This reinjection technique is recommended in patients with no or partial redistribution on 4 hour delayed images.

Key words: reinjection, myocardial infarction, myocardial viability, exercise thallium-201 SPECT