

Technetium-99m Sestamibi for the Assessment of Myocardial Salvage Following Reperfusion Therapy in Acute Myocardial Infarction

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Abstract

Introduction: Reperfusion therapy with either thrombolysis or angioplasty has been shown to be beneficial in acute myocardial infarction. Tc-99m sestamibi is a myocardial tracer that can be used to assess myocardial salvage because of its property of very limited redistribution. **Materials and Methods:** To assess the feasibility of this technique locally, Tc-99m sestamibi was injected before and after reperfusion therapy with angioplasty (n = 11) or streptokinase (n = 18) in 29 patients with acute myocardial infarction (anterior = 25, inferior = 4). Single-photon emission computed tomography (SPECT) was performed within 4 hours of reperfusion and repeated 5 to 7 days later. **Results:** Initial perfusion defect size ranged from 6% to 78% (mean 36.3 ± 18.7%), and final defect size from 0% to 50% of the left ventricle (mean 23.7 ± 14.8%, P < 0.001). Patients with proximal left anterior descending artery (LAD) lesions had larger defects compared to those with mid LAD lesions (mean defect size 52% for pLAD versus 28% for mLAD, P < 0.013). However, there were wide variations in initial defect size (myocardium at risk) for a given infarct-related artery location. The mean decrease in defect size was 12% in the 28 patients with patent arteries compared to only 2% in the patient with an occluded artery (47% to 45%). There was no significant difference in amount of salvage between patients who had thrombolysis (mean 13%, P = 0.0003) and patients who had percutaneous transluminal coronary angioplasty (PTCA) (mean 12%, P = 0.005). **Conclusions:** Assessment of myocardial salvage is feasible using Tc-99m sestamibi SPECT imaging. It allows for quantitation of myocardium at risk and the amount of myocardial salvage, which is not possible by angiography alone.

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