

Evaluation of myocardial viability following acute myocardial infarction using ^{201}Tl SPECT after thallium-glucose-insulin infusion—Comparison with ^{18}F -FDG positron emission tomography—

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Objective and Methods: The aim of this study was to evaluate myocardial viability in patients after acute myocardial infarction (AMI). We compared ^{201}Tl SPECT after ^{201}Tl with GIK (10% glucose 250 ml, insulin 5 U and KCl 10 mEq) infusion (GIK- ^{201}Tl) with resting ^{201}Tl and $^{99\text{m}}\text{Tc}$ -pyrophosphate (PYP) dual SPECT, positron emission computed tomography (PET) using ^{18}F -fluorodeoxyglucose (^{18}F -FDG) in 21 patients with their first AMI, who all underwent successful reperfusion. GIK- ^{201}Tl SPECT, ^{201}Tl and $^{99\text{m}}\text{Tc}$ -PYP dual SPECT were done within 10 days after admission and ^{18}F -FDG-PET was performed at 3 weeks. GIK- ^{201}Tl SPECT was obtained after 30 min of GIK- ^{201}Tl infusion. ^{18}F -FDG (370 MBq) was injected intravenously after oral glucose (1 g/kg) loading, and then PET was obtained. PET and SPECT images were divided into 20 segments. Regional tracer uptake was scored using a 4-point scoring system (3 = normal to 0 = defect), and summed to a regional uptake score (RUS). Regional area means the infarcted area in which $^{99\text{m}}\text{Tc}$ -PYP accumulated. The number of decreased uptake segments (ES) was then determined. The infarcted area was defined as the area of $^{99\text{m}}\text{Tc}$ -PYP uptake. **Results:** The ESs for the GIK- ^{201}Tl and ^{18}F -FDG-PET images were significantly lower than the number of $^{99\text{m}}\text{Tc}$ -PYP uptake segments. The RUS for GIK- ^{201}Tl was higher than that for resting- ^{201}Tl imaging and similar to those for ^{18}F -FDG-PET. **Conclusions:** In the detection of myocardial viability following AMI, GIK- ^{201}Tl imaging is useful with findings similar to those of ^{18}F -FDG-PET.

Key words: GIK- ^{201}Tl , stunned myocardium, acute myocardial infarction, ^{18}F -FDG-PET