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EVALUATION OF 24 HOURS DELAYED Tc-99m PYROPHOSPHATE SCAN FOR ACUTE AND OLD MYOCARDIAL INFARCTION.  
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Previously we reported that some patients of old myocardial infarction showed persistent positive Tc-99m pyrophosphate (Tc-PYP) myocardial scan, and persistent positive finding may be reflect multiple vessel disease and poor prognosis. However, assessment of diffuse and minimal concentration of activity in the case of old myocardial infarction (OMI) became into questions. Now to distinguish cause of diffuse activity on the myocardial region, myocardial uptake from blood pool activity.

We performed sequential early (2 hours after injection) and delayed (24 hours) Tc-PYP scan for 27 patients and 38 examinations. Scintigrams were graded on a scale from 0 to 4, and also clarified as localized or diffuse uptake. Myocardial scans from grade 2 focal to grade 4 were considered abnormal, grade 0 and 1 were considered negative, grade 2 diffuse was considered equivocal.

The result of 2 hours image of 20 examination of OMI were 45% positive, 55% equivocal. And in the 24 hours image of OMI 10% were positive 20% were equivocal. Those patients demonstrated positive or equivocal accumulation in the 24 hours delayed Tc-PYP scan, represent larger myocardial infarction and lower LVEF than that of patients whose delayed image were negative.

When there is persistently uptake of Tc-PYP in the delayed image of OMI, myocardial damage may be present.

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VALUE AND LIMITATIONS OF Tc-99m PYROPHOSPHATE MYOCARDIAL SCINTIGRAPHY IN ACUTE INFEROPOSTERIOR MYOCARDIAL INFARCTION.  
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Usefulness of Tc-99m pyrophosphate (PYP) myocardial scintigraphy for the diagnosis of concomitant right ventricular (RV) infarction and involved vessels was evaluated in 104 patients (pts) with acute inferoposterior infarction. When discrete and 2+ or more myocardial uptake considered positive, 71 pts (68.3%) had positive PYP uptake.

Although 21 pts (35.6%) of 59 pts with RCA disease had positive RV uptake, there were 11 pts who showed no RV PYP uptake despite the presence of positive hemodynamic criteria for RV infarction; 10 pts of these 11 pts had no LV uptake of the tracer. Of 40 pts with RCA disease and positive LV uptake, 52.5% of pts showed positive RV uptake of the tracer. Moreover, based on the location of PYP uptake, differentiation between RCA and CX disease was possible with good sensitivity and specificity.

Thus, it was concluded that PYP imaging in acute inferoposterior infarction is useful for the detection of RV involvement and differentiation of the diseased vessels.

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ESTIMATION OF VIABILITY IN MYOCARDIAL INFARCTION BY Tc-99m PYROPHOSPHATE SCINTIGRAPHY.  
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This study was done to evaluate viability at the site of myocardial infarction (MI). Uptake and extent of Tc-99m pyrophosphate scintigraphy (PYP scan) was compared with myocardial perfusion by stress Tl-201 scintigraphy (Tl scan). Positive PYP scan was 28 of 44 cases (86.4%) of acute MI; 23 cases of nontransmural MI (NTM) and 15 cases of transmural MI (TM). Parkey +4 showed 13/23 (57%) in NTM and 12/15 (80%) in TM; Parkey +3 showed 7/23 (30%) in NTM and 2/15 (13%) in TM; Parkey +2 showed 3/23 (13%) in NTM and 1/15 (7%) in TM. As 23 cases of Parkey +4 group were compared with myocardial perfusion (normal perfusion NP, transient defect TD, persistent defect PD) of Tl scan, 6/13 (46%) in NTM showed NP; 2/13 (15%) in NTM and 5/12 (42%) in TM showed TD; 5/13 (39%) in NTM and 7/12 (58%) in TM showed PD. As Parkey +4 group was classified into small group (less than one third of infarct size) and larger group (more than one third of infarct size), smaller group (3/6 in NTM) and larger group (3/7 in NTM) showed NP; smaller group (2/6 in NTM and 3/3 in TM) and larger group (3/7 in NTM and 4/9 in TM) indicated PD. In conclusion, infarct size did not correlated with myocardial perfusion in chronic phase. To evaluate myocardial perfusion at the site of infarction, stress myocardial scan was mandatory.

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INFARCT SIZE ESTIMATED BY Tc-99m PYP MYOCARDIAL IMAGING AND LV FUNCTION OBTAINED FROM GATED POOL SCAN.  
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In patients with acute MI, we compared the infarct size estimated by Tc-99m PYP myocardial imaging with that obtained by cardiac CT. Tc-99m PYP myocardial scintigraphy was studied in four projections and the largest area of PYP uptake (PYP area) was used as indexes of infarct size. Cardiac CT scans (8 mm deep) of LV were performed from LV apex to base to determine the infarct size. In 15 patients with anterior MI, PYP area correlated well with the infarct size obtained by cardiac CT ( $\gamma=0.78$ ,  $p<0.001$ ). LV volume curves in 18 patients with acute MI were obtained from multigated blood pool imaging with Tc-99m RBC. As systolic phase indexes, LVEF and 1/3 ER mean were calculated and as diastolic phase indexes, 1/3 FF, 1/3 FR-mean, 1/3 FR-max and FR max were calculated. PYP area correlated well with LVEF ( $\gamma=-0.80$ ,  $p<0.001$ ), 1/3 FF ( $\gamma=-0.75$ ,  $p<0.001$ ) and other diastolic phase indexes. We concluded that Tc-99m PYP myocardial imaging was useful for estimation of infarct size and evaluation of LV function.