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IS THE POSITIVE EARLY Tc-99m-PYP SCINTIGRAM A REFLECTION OF REPERFUSION INJURY ?

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Tc-99m-PYP (PYP) scintigrams of 39 patients (pts) receiving coronary thrombolysis were evaluated. Intravenous PYP scintigraphy was done at 2.8-8 hours after the onset of AMI (early scintigram). Twenty seven (79%) of 33 pts with recanalization showed positive scintigrams (G-I) and 6 showed negative (G-II). All 6 patients with no recanalization showed negative scintigrams (G-III). In repeated PYP scintigraphy at 13-78 hours after AMI (late scintigram), only one of 5 pts in G-II and 4 of 5 pts in G-III had positive scintigrams. Pts in G-II had significantly smaller Tl-201 defect score on chronic stage, and significantly lower peakings in CK and MB-CK release than those of pts in G-III.

The rapidly recanalized flow was the prominent angiographic finding in pts with early PYP uptake. Sudden restoration of a large blood flow to the nonperfused myocardium results in a massive calcium overload and cause contraction band necrosis. PYP uptake in a very early stage of AMI may directly reflect the reperfusion necrosis. We suggest that the recanalization may follow both the salvage of the ischemic myocytes and acceleration of the cells death, depending on the degree of the ischemic damage of cells membrane before reflow.

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EFFECTS OF EARLY REPERFUSION ON Tc-99m PYROPHOSPHATE MYOCARDIAL UPTAKE IN ACUTE MYOCARDIAL INFARCTION. K. Minamiji, T. Kida, A. Takarada, M. Takeuchi, M. Fujino, H. Kurogane and Y. Yoshida. Himeji Cardiovascular Center, Himeji.

The intensity and prognostic significance of Tc-99m pyrophosphate (PYP) myocardial uptake was analyzed in 194 patients (pts) with conventional treatment (G-I) and 129 pts who underwent PTCA and/or PTCA during an acute infarct (G-II). The pts of G-II were subdivided into 3 groups: 79 pts with successful PTCA or PTCA (G-IIA), 36 pts with unsuccessful PTCA or PTCA (G-IIB) and 14 pts with early spontaneous reopening of infarct vessel. The intensity of myocardial PYP uptake was graded as 0-5+ according to modified Parkey's classification (5+=far more intense activity than adjacent bone activity). In contrast to none of G-IIB and G-IIC and 1% of G-I, 10% of IIA had 5+ PYP myocardial uptake. In G-IIA, worsening of left ventricular ejection fraction at pre-discharge radionuclide study or cardiac death was more frequent in pts with 5+ uptake and 4+ uptake (100% and 65%), compared with pts with 3+ uptake and with 2+ or less uptake (41% and 32%).

Early reperfusion results in massive myocardial PYP uptake which is rare in conventional treatment and the intensity of uptake has prognostic value for predicting successful PTCA and/or PTCA.

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EVALUATION OF SEQUENTIAL EARLY AND DELAYED MYOCARDIAL Tc-99m PYROPHOSPHATE SCANS FOR ACUTE AND OLD MYOCARDIAL INFARCTION. A. Tada, S. Matsushita*, T. Takana and I. Tatuno. Department of Radiology and Internal Medicine*, Kanazawa National Hospital, Kanazawa

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 after injection) Tc-Pyrophosphate (PYP) scans for 57 patients, 80 examinations. And this study compares left ventricular function and defect size of Tl-201 myocardial perfusion scan in patients with and without delayed persistent abnormal activity.

The result of early scan of 27 patients of AMI, 23 of 27 were positive, 3 were equivocal. In the 24 hours delayed scan of AMI, 10 cases became positive, but 4 were equivocal, 13 were negative. Therefore 10 cases of AMI revealed positive activity in the early and delayed scans, 9 cases revealed positive in the early scan but became negative in the delayed scan. Those patients demonstrated positive accumulation in the 24 hours delayed Tc-PYP scan, represent larger myocardial defect and lower LVEF than that of patients whose delayed scan were negative.

We had considered that in the AMI patients if positive abnormal uptake diminished in the delayed scan, subendocardial infarction was most possible. But, in this study there is no difference of positive ratio in the delayed scan between subendocardial infarction and transmural infarction.

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RELATIONSHIP BETWEEN SCINTIGRAPHIC MEASUREMENT AND PROGNOSIS AFTER ACUTE MYOCARDIAL INFARCTION. A. Suzuki, S. Sato, H. Matsushima, S. Yamamoto, I. Sotobata, T. Watanabe, H. Itazu. Nagoya University School of Medicine and National Nagoya Hospital, Nagoya.

We evaluated the value of scintigraphic parameters of infarct size and left ventricular function in predicting the early and late prognosis after acute myocardial infarction (AMI). Infarct, perfusion and blood pool scintigraphy were performed in 58 patients during hospitalization. Tc-99m PYP area (PYP area) and Tl-201 myocardial uptake ratio (MUR) were calculated as indexes of myocardial infarct size. LVEF was evaluated by first-pass method using Tc-99m PYP in acute phase of AMI. The patients were divided into three groups (mild, moderate and severe) according to these scintigraphic parameters and were correlated with the prognosis during a mean follow up of 23 months. The maxCK was correlated with MUR, LVEF and PYP area. The latter was significantly greater and the former two were significantly lower in nonsurvivors and patients with heart failure (CHF). Scintigraphic severity was also related to death and CHF. Survival curve for the severe group was statistically different from the other two groups. Early scintigraphic parameters appeared to be useful for determining early and late prognosis after AMI.