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RADIONUCLIDE STUDY OF ACUTE MYOCARDIAL INFARCTION (AMI).

N. Takao, H. Ueda, M. Abe, T. Tanaka, Y. Itoh, Y. Shimizu, T. Hayashi, M. Matsuda. Sakakibara Heart Institute, Tokyo, A. Asahara, Central Hospital of Jpn. Nat. Railways, Tokyo.

Radionuclide ventriculography was evaluated sequentially in 71 patient(pts) with AMI(42 anterior, 26 inferior, 3 lateral). The mean ejection fraction(EF) of a first AMI was lower in pts with anterior(0.43) than in those with inferior(0.51)($p < 0.02$). In respect to precordial ST depression in pts with inferior AMI, there was no difference in mean EF between the two subgroups. During the hospital course, one or more complications (congestive heart failure, cardiac rupture, ventricular fibrillation) developed in 14 pts. The left ventricular EF was significantly lower in pts with complication than in pts without (0.47 vs 0.36). The initial EF was not lower in nonsurvivor than in survivor. Sequential Tl-201 scan revealed initial defect in 24/25 pts with AMI. Of 87 segments with initial defect in early stage, 65 remained unchanged 4 weeks later. The segment which showed redistribution, reverse redistribution or persistent defect in early stage developed to various pattern in late stage. In relation with improvement of EF, there was no difference in number of coronary vessels involved or pts with & without redistribution. The amplitude image & phase image contribute to diagnosis of extent and location, especially right ventricular involvement of AMI.

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QRS SCORING, Tl-201 MYOCARDIAL IMAGING AND Tc-99m VENTRICULOGRAPHY IN ACUTE MYOCARDIAL INFARCTION.

N. Kanemoto, C. Imaoka, E. Kinoshita, M. Ide, Y. Suzuki and Y. Goto. Tokai University, Isehara.

Left ventricular function and infarct size were evaluated noninvasively by 12 leads electrocardiography (ECG), Tl-201 imaging (TLI) and ECG gated radionuclide ventriculography (RVN) examined from 5 to 14 days after the initial attack in 36 patients (pts) with acute transmural myocardial infarction. Ages ranged from 32 to 77 years with a mean of 60. The subjects were divided into 2 groups according to the site of infarct: anterior and inferior.

Parameters obtained were left ventricular ejection fraction (EF) from RVN, QRS score described by Palmeri et al and total myocardial perfusion index (TMPI), lung uptake of Tl-201 (LU) from TLI.

Significant negative correlation was obtained between EF and QRS score ($r = -0.784$, $p < 0.01$), better in pts with inferior MI than those with anterior. Also significant relationship was noted between TMPI and QRS score ($r = 0.636$, $p < 0.01$). LU had a specificity of 93% and a sensitivity of 71% for predicting EF $< 30\%$ and 79% and 86% respectively for TMPI < 30 .

These data suggest that left ventricular function and infarct size will be detected by QRS score.

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Tl-201 SCINTIGRAPHY IN SUBENDOCARDIAL INFARCTION.

Y. Yamazaki, I. Ishibashi, T. Sano, Y. Furukawa, M. Shimizu, Y. Ueda, K. Tomiya, K. Takeda, A. Nakayama, T. Saito and Y. Inagaki. The 3rd Dept. of Int. Med. Chiba Univ. School of Med. N. Arimizu. Dept. of Radiology Chiba Univ. School of Med.

Eighteen patients with electrocardiographically diagnosed subendocardial infarction underwent resting Tl-201 scintigraphy (6 views of planar image) and cardiac angiography. Patients were selected to meet following criteria; 1. ST segment depression of the ischemic type and/or T wave inversion persistant at least 24 hours. 2. No evidence by ECG of transmural infarction. 3. No evidence by UCT of hypertrophy. 4. No history of myocarditis.

As results, scintigraphically 10 pts were positive, and the findings of scintigram had the good correlation to that of LVG and CAG. Between scintigraphically positive group and negative group, there were no significant difference in past history, percentage of positive enzymatic change on acute stage, and localization of abnormality in ECG. We concluded that electrocardiographically diagnosed subendocardial infarction included both scintigraphically positive and negative group. Then we suggested that there were qualitatively two different diseases in electrocardiographically diagnosed subendocardial infarction.

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CLINICAL ASSESSMENT OF THE RELATION BETWEEN EARLY Tc-99m-PYP SCAN AND EARLY RECANALIZATION IN ACUTE MYOCARDIAL INFARCTION.

M. Kondo, M. Takahashi, N. Kume, K. Hase and Y. Shimono. Shimada City Hospital, Shimada.

Most reports indicate that Tc-99m-PYP scans do not become positive for at least 12 hrs. after onset of AMI. The present clinical study was designed to examine the hypothesis that the infarct-avid scans would become positive earlier in patients with successful recanalization than those without recanalization. 16 patients were performed emergency CAG and UK infusion. Tc-99m-PYP (20mCi) was injected intravenously at 5.8 hrs. (range 4.5 - 8.0) after onset. 12 of 13 patients with successful recanalization showed positive scans. In contrast, 3 patients without successful recanalization showed negative scans (sensitivity: 92%, specificity: 100%). Improved changes to late stage from acute stage in thallium-201 defect score and regional EF were observed in patients with positive early PYP scans, but not in patients with negative early PYP scans. The present study suggests that positive early PYP scans may indicate the "reperfusion necrosis" with successful recanalization and that "reperfusion necrosis" tissue and ischemic but viable tissue may coexist in myocardial segments with early PYP scan.

In conclusion, early Tc-99m-PYP scan may be a noninvasive technique for the detection of successful recanalization by thrombolysis therapy in very early stage of AMI.