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A STUDY ON THE "REDISTRIBUTION" ON SPECT IMAGE OF MYOCARDIUM WITH Tl-201 AT REST IN PATIENTS WITH MYOCARDIAL INFARCTION. T.Tsukamoto, K.Gotoh, Y.Ohsumi, Y.Yagi, H.Takatsu, M.Arakawa, T.Tanaka, M.Yamaguchi, T.Takaya, T.Nagano, S.Hirakawa. The 2nd Dept of Int. Med. Gifu University School of Medicine, Gifu.

SPECT was performed in 25 patients with clinically evident myocardial infarction at least 2 weeks after the attack. SPECT image was constructed from the data obtained from the anterior aspect of heart, i.e., at the angle from LAO 45 to LPO 45 degree, at the points of time 10 minutes and 3 hours after intravenous injection of 4 mCi of Tl-201 at rest. Three different examiners investigated early and late images separately with visual assessment judged comprehensively as to the presence or absence of defect and low density area as well as the redistribution. As a result, redistribution was found in 5 patients. We obtained circumferential profile curve and washout ratio from these 5 patients and comparisons were made in detection of redistribution between circumferential analysis and visual assessment. It was found that circumferential analysis tended to detect redistribution of much greater area as compared with visual analysis. Furthermore, it was found that there was a good correlation between defect on SPECT and left ventricular wall motion abnormalities obtained with LVG and UCG (2-dimensional echocardiography). Some discussions were made on this point.

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RELATION BETWEEN THE INFARCT SIZE MEASURED BY THALLIUM SPECT AND HEMODYNAMICS DURING EXERCISE IN PATIENTS WITH OLD MYOCARDIAL INFARCTION

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To evaluate the influence of the infarct size on hemodynamics during exercise, we compared the infarct size measured by Tl SPECT with hemodynamic parameters during exercise in 40 patients with old myocardial infarction. The infarct size was defined as the degree of left ventricular myocardium of which profile curve fell 2 or more SDs below the circumferential profile curve of the myocardium in a series of normal subjects. According to the results of stress Tl myocardial scintigraphy, patients were classified into two groups with and without angina pectoris (AP). The infarct size and resting stroke work index correlated significantly in both groups. On the other hand, the infarct size and hemodynamics during exercise didn't correlate in patients with AP, but in patients without AP the infarct size well correlated with peak stroke work index ($r = -0.708$) and with peak pulmonary artery wedge pressure ($r = 0.627$). In conclusion, the infarct size can be accurately quantitated by the Tl SPECT and the infarct size relates not only with the resting cardiac function but also with hemodynamics during exercise in patients without AP.

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QUANTITATIVE ANALYSIS OF MYOCARDIAL ISCHEMIC AREA WITH STRESS Tl-201 MYOCARDIAL SPECT — EVALUATION BY ISCHEMIC MAP —. M.Sawai, Y.Sekiai, S.Murayama, A.Mikuniya and K.Onodera. 2nd Dept. of Int.Med., Hirosaki Univ., Hirosaki. K.Nishizawa. Dept. of Radiol., Hirosaki Univ., Hirosaki. K.Okamoto. Dept. of Int.Med., Hirosaki Municipal Hospital, Hirosaki. H.Kamata. Dept. of Radiol., Hirosaki Municipal Hospital, Hirosaki.

We devised the ischemic map for evaluating ischemic area in patients with ischemic heart disease using stress single photon emission computed tomography (SPECT). Seven short axial sections in left ventricle were reconstructed continuously from apex to base with SPECT, and circumferential profile curve was created in each section. Stress Tl-201 myocardial SPECT were obtained in patients with coronary artery disease and normal subjects. Circumferential washout curve were calculated for initial and delayed (3 hours after exercise) circumferential profile curve in cases of ischemic heart disease and normal cases. Ischemic area was defined as the area in which the circumferential washout curve in patients with ischemic heart disease below that of normal subjects. We conclude that this method with ischemic map may be useful in assessing non-invasively the extent of myocardial ischemic region.

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CLINICAL STUDY OF FALSE POSITIVE PERFUSION ABNORMALITY WITH Tl-201 MYOCARDIAL SPECT IMAGES.

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To clarify the cause of false positive perfusion abnormality with stress myocardial SPECT images, we studied 38 patients who had normal coronary arteriogram. The stress SPECT imaging data were acquired by a 180° rotation 10 minutes after the injection of Tl-201 at peak exercise. Total 36 views were obtained at 5° intervals requiring 25-sec acquisition time per view. The acquired data were reconstructed with convolution backprojection algorithm. No attenuation correction was utilized. Four segment (anterior, inferior, septal, lateral) in the sagittal and horizontal views were individually assessed, and perfusion abnormality was classified visually into four grades (0-3). Seventeen patients (45%) had mild or moderate defect at 19 segments (inferior 14, anterior 2, septal 2, lateral 1). There was no significant difference in exercise induced chest pain, ST depression, RPP, LV volume and LV wall thickness between 17 patients with defect (D+) and 21 patients without defect (D-). But false positive was seen more frequently in male than in female (77% vs 29%). Mean value of body surface area of D+ was significantly greater than that of D- ($1.64 \pm 0.13 \text{ m}^2$ vs $1.51 \pm 0.12 \text{ m}^2$). In conclusion, false positive of Tl-201 stress image is not rare phenomenon and influenced greatly by body size and sex.