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QUANTITATIVE ANALYSIS OF EXERCISE STRESS THALLIUM-201 SCINTIGRAPHY IN ISCHEMIC HEART DISEASES.

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In order to evaluate the size and degree of ischemic area, three indices of exercise stress Thallium-201 scintigraphy were investigated in 5 normal cases (N), 6 patients with angina pectoris (AP) and 3 patients with old myocardial infarction (MI). Myocardial images were obtained in LAO view at 10 minutes (EX) and 2 hours (DE) after the injection during exercise. LV area (LVA) was number of matrix in LV image. LV uptake index (LVUI) was percentage of radioactivity on LV myocardial area to total injected radioactivity. Uptake ratios (UR) were radioactivity per 10 matrix anteroseptal region, inferior wall or posterolateral wall to total injected radioactivity. In normal cases, LVUI/LVA (EX) is 2.09 ± 0.11 , LVUI/LVA (DE) is 1.53 ± 0.27 on average, UR (EX) is 0.255 ± 0.023 and UR (DE) is 0.184 ± 0.025 , respectively. In the cases with angina pectoris, the differences between the values of EX and DE on LVUI/LVA and UR were lower than those in the cases of normal and myocardial infarction. It was concluded that LVUI/LVA and UR on EX and DE, and the differences between the value of EX and DE were useful parameters for the estimation of size and degree in ischemic area.

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USEFULNESS OF STRESS TL-201 MYOCARDIAL SCINTIGRAM IN EVALUATING CORONARY ARTERY DISEASE. I. Okuzumi, M.Wakakura, H.Nakano, T.Muto, Y.Kawamura, J.Yamazaki, T.Morishita, Y.Yabe and Y.Sasaki. Toho University School of Medicine, Omori, Tokyo.

Stress TL-201 scintigram by bicycle ergometer exercise was performed in 33 patients with angina (all of them had significant single vessel disease, Group I 99% lesion, Group II 98-90% lesion, Group III 90% lesion) and 6 normal volunteers. Thallium images were obtained immediately after exercise and 3 hours later, and then initial thallium uptake ratio (IUR) and washout ratio (W-R) were calculated by circumferential profile method. Availability of W-R and IUR in detecting coronary lesion and evaluating the grade of coronary stenosis was studied based on normal range (mean $\pm$ 2SD) led from normal subjects. Significant differences were recognized between W-R and the grade of coronary stenosis. But there was a similar tendency between IUR and the grade of coronary stenosis. On the other hand, diagnostic sensitivity of W-R and IUR was equal in severe coronary stenosis (90% in Group I, 72.7% in Group II). Diagnostic sensitivity was improved to 100% using IUR and W-R at the same time. But in Group III, diagnostic sensitivity of IUR was 50% and that of W-R was 17%. It was concluded, in severe coronary stenosis using W-R in addition to IUR was useful to improve diagnostic sensitivity, but in mild stenosis these parameters were not so useful.

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EVALUATION OF SEVERITY FOR CORONARY ARTERY LESION WITH WASHOUT RATE (WR) IN EXERCISE MYOCARDIAL SCINTIGRAPHY. T.Tsuda*, K.Ojima*, M.Uruma*, K.Kodera*, S.Hayashi*, K.Watanabe*, Y.Aizawa*, Y.Arai*, A.Shibata*, M.Kimura*, I.Odano*, K.Sakai*, H.Hama*** and T.Mitani***. *The First Department of Internal Medicine and ** the Radiology in Niigata University School. ***Kido Hospital, Niigata.

The quantitative estimation of exercise myocardial scintigraphy (EMS) has been increased the diagnostic value of coronary artery lesions, but it has not been used for the evaluation of their severities. In this study, the relationship between their severities and WR with EMS was discussed. The objects had stenosis in proximal region of left anterior descending artery and were classified to three groups. Group I were seven patients who had less than 50% stenosis in AHA criteria, Group II were seven who had 75% stenosis and Group III were nine who had more than 90% stenosis. Twelve normal persons were selected as control. WR of anteroseptal wall in LAO45° view was evaluated. The values of WR were 27.3 ± 10.2 (Mean $\pm$ SD) in control, 14.4 ± 13.8 in Group I, 11.6 ± 10.7 in Group II and 7.5 ± 10.2 in Group III, respectively. As stenosis was more severe, WR showed significantly lower value, compared with control ($P < 0.05-0.001$). There was significant difference in WR between Group I and III ($P < 0.05$) and between Group II and III ($P < 0.05$), respectively. We conclude that WR is effective index in evaluation of severity for coronary artery lesions.

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THE NONINVASIVE IDENTIFICATION OF LEFT MAIN CORONARY ARTERY DISEASE BY STRESS TL-201 MYOCARDIAL SCINTIGRAPHY. S.Wakasugi, N.Shibata, T.Kobayashi, Y.Fudemoto, Y.Hasegawa and S.Nakano. The Center for Adult Diseases, Osaka.

To evaluate the usefulness of stress TL-201 myocardial scintigraphy for identifying left main coronary artery disease (LMCD), the results of scintigraphy were compared in 22 patients with 50% or more narrowing of the left main stem (LM) and 56 patients with 75% or more narrowing of the major coronary arteries but without involvement of LM. As the result of quantitative evaluation by circumferential profile method, the perfusion pattern of extensive defect in the anterolateral segment, simultaneous defect in the high anteroseptal and high posterolateral segments and the absence of abnormal accumulation of TL-201 in the base of the heart was defined as the specific pattern (left main pattern) for identification of LMCD with severe stenosis of more than 90%. Washout abnormality of TL-201 in LMCD was not dependent on severity of narrowing of LM as perfusion pattern, but dependent on severity of downstream coronary arterial narrowings and involvement of right coronary arterial lesion.