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RADIONUCLEAR OBSERVATION ON HEMODYNAMICS IN PATIENTS WITH MYOCARDIAL INFARCTION DURING EXERCISE TEST. C. Noro, M. Shimizu, T. Mochizuki, S. Hirano, R. Kikawada, K. Ishij* and K. Nakasawa*. Departments of Internal Medicine and *Radiology, Kitasato University School of Medicine, Sagamihara.

For the purpose of evaluating the cardiac function, we studied hemodynamics during exercise in 7 normal subjects and in 13 patients with myocardial infarction (6 cases with anterior infarction and 7 cases with inferior infarction) by radionuclear and mechanocardiographic methods. The exercise loading was performed by ergometer (0.5 and 1.0 watt/kg intermittently increasing the load) in the supine position, and we measured whole and regional ejection fractions of the left ventricle according to the multigate method (Tc-99m HSA), and analysed the left ventricular emptying by the cardiac Fourier phase analysis and cardiac wall motion. We measured systolic time intervals simultaneously.

From this study we conclude that, (1) for evaluating the cardiac reserve it is very useful to measure ejection fraction during exercise, and (2) the changes in regional ejection fraction and the standard deviation of the phase distribution in the left ventricular emptying during exercise tests are very important for evaluating the cardiac function and the asynchrony of cardiac wall motion.

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ANALYSIS OF REGIONAL WALL MOTION IN MYOCARDIAL INFARCTION BY GATED BLOOD POOL IMAGING. M. Yamada, N. Ohgihara, H. Yoshida, M. Fukushima, K. Ohnishi, Y. Kobayashi, A. Katayama* and I. Tsukaguchi**. Cardiovascular Dept., *Radioisotope Center and **Dept. of Radiology, Osaka Prefectural Hospital. Osaka.

This study was aimed to assess regional wall motion abnormalities in cases of myocardial infarction (MI) using Tc-99m blood pool imaging. In assessment of regional wall motion, regional ejection fraction (R-EF) in three segments (septal, apical and lateral) calculated by microcomputer system (Technicare VIP 450) were examined. The relationship between R-EF and segments of asynergy in contrast angiography were examined. In anteroseptal MI, when segments 2 and 3 were akinetic, apical R-EF was reduced (apical R-EF 0.44 ± 0.05), and when segments 2, 3 and 6 were akinetic, apical and septal R-EF were reduced (septal R-EF 0.34 ± 0.04 ; apical R-EF 0.28 ± 0.02). In inferior MI, when segments 4 and/or 5 were akinetic, apical and lateral R-EF were reduced (apical R-EF 0.48 ± 0.03 ; lateral R-EF 0.57 ± 0.03), and when segments 4, 5 and 7 were akinetic, apical and lateral R-EF were markedly reduced (apical R-EF 0.28 ± 0.04 ; lateral R-EF 0.35 ± 0.05). When infarct size was small, R-EF in one segment was reduced, while when infarct size was large, R-EF in two or three segments were reduced. From these results, it is suggested that R-EF could be available for assessment of location (segments of asynergy) and size of infarction.

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HEMODYNAMIC EFFECT OF NITROGLYCERIN AND NIFEDIPINE IN OLD MYOCARDIAL INFARCTION: A RADIONUCLIDE ANGIOGRAPHIC STUDY. H. Yoshioka, T. Iwasaka, H. Koito, A. Sakai, M. Inada, S. Natsuzumi*, K. Matsumoto*, T. Shiraishi* and A. Kasahara*. The 2nd Department of Internal Medicine Kansai Medical University, Radiology*. Osaka.

We studied 37 patients with old myocardial infarction using radionuclide angiography to assess the hemodynamic effect of nitroglycerin (NTG) and nifedipine.

We applied 12mg of NTG-ointment in 23 patients. Systolic blood pressure (BPs) fell and end-diastolic volume (EDV), end-systolic volume (ESV), stroke volume (SV) and cardiac output (CO) decreased without any significant change in ejection fraction (EF) and heart rate (HR) after NTG. These results suggest the vasodilative effect of NTG in peripheral venous system.

Nifedipine (10mg) were given to 14 patients who showed a fall in syst and diast BP, decrease in total peripheral resistance and ESV, increase in HR, EF, SV and CO without any significant change in EDV. These results suggest the vasodilating effect of nifedipine in the resistance artery system.

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CLINICAL EVALUATION OF LEFT VENTRICULAR SEGMENTAL WALL MOTION : COMPARISON BETWEEN RI ANGIOCARDIOGRAPHY (RIACG), TWO DIMENSIONAL ECHOCARDIOGRAPHY AND CONTRAST LEFT VENTRICULOGRAPHY (LVG). H. Komatsu, Y. Ikuno, K. Akioka, M. Teragaki, M. Yasuda, H. Minamikawa, E. Inoue, K. Kotsumi, T. Yoshimura, H. Oku, K. Takeuchi, C. Tanaka, H. Ochi, Y. Onoyama, M. Omura, H. Ikeda, K. Hamada. Osaka City University. Osaka

In 45 patients including 23 with old myocardial infarction and 12 with angina pectoris, we compared the evaluation of left ventricular segmental wall motion (LVSWM) by RIACG and UCT with that by LVG with visual inspection. In RIACG, LVSWM was evaluated with cine display of RAO and LAO images. In UCT we employed long axis, short axis, RAO equivalent and LAO equivalent views. Left ventricular outline was divided into 7 segments according to AHA report and LVSWM was evaluated on a 4 grading scale as normal, hypokinesis, akinesis and dyskinesis. Regional ejection fraction (REF) by RIACG were calculated of 7 segments and compared with LVSWM by LVG. The results were as follows; 1) Abnormal segments on LVG were 89 segments and sensitivities of RIACG and UCT were 72% and 52%, respectively, 2) Normal segments on LVG were 226 and specificities RIACG and UCT were 96% and 97%, respectively, 3) Accuracy of RIACG and UCT were 90% and 84% respectively. 4) As compared with UCT, RIACG was more useful in the evaluation of LVSWM, especially in segment 3 and 7, 5) The more accentuated LVSWM abnormality on LVG, the smaller REF on RIACG became.