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RADIONUCLEAR OBSERVATION OF SYSTEMIC HEMODYNAMICS DURING ERGOMETER EXERCISE TEST IN PATIENTS WITH MYOCARDIAL INFARCTION (PART 4). T. Mochizuki, C. Noro, M. Shimizu, S. Hirano, M. Kawano, T. Kawaguchi, R. Kikawada, K. Ishii* & K. Nakazawa*. Departments of Internal Medicine and Radiology*, Kitasato University School of Medicine, Sagami-hara.

In order to evaluate the relation between cardiac function of myocardial infarction (MI) and prognosis, systemic hemodynamics were studied in 89 patients with MI. The Ergometer exercise was given to them at the time of 36 ±17 days after the onset of MI. Left ventricular ejection fraction (LVEF), blood pressure as well as heart rate were measured at rest and during 0.5 and 1.0 w/kg exercise loads in the supine position by radionuclear multigate method. The patients with MI were classified into the following 4 groups; group I (n=20): LVEF at rest >45%, %ΔLVEF at 1.0 w/kg >3%; group II (n=14): >45%, <3%; group III (n=33): <45%, >3%; group IV (n=22): <45%, <3%. Three years-survival rates were 100% in group I, 85% in group II; 87% in group III and 91% in group IV. There were no significant differences among the 4 groups. However, if significant cardiac complications after MI (cardiac death, severe heart failure and reinfarction) were concerned, incidence rates of cardiac complications were 71% in group I, 7% in group II, 22% in group III and 43% in group IV. Therefore, group IV was found to have poorer prognosis than the other 3 groups.

In summary, the observation of LVEF at rest and during exercise is important to predict the prognosis of patients after MI.

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ASSESSMENT OF SEVERITY OF LV FUNCTION IN ISCHEMIC HEART DISEASE BY MULTIGATED RADIO-NUCLIDE ANGIOGRAPHY. Y.Koga*, A.Kojima*, Y.Takaki*, S.Nanakawa*, S.Yoshioka*, H.Takamoto*, Y.Hirota*, M.Takahashi*, K.Kugiyama**, H.Yasue**, K.Hayasaki***. * Department of Radiology, ** Department of Cardiology, Kumamoto University School of Medicine *** Department of Cardiology, Kumamoto Saiseikai Hospital, Kumamoto.

In order to assess the severity of left ventricular function, 33 patients of effort angina pectoris were divided into non-collateral AP group, jeopardized collateral (JC) AP group, non-JC AP group, and variant AP group in which spasm was induced in the organic stenotic lesion. Stress radionuclide angiography at rest and exercise with serial three data acquisitions (2 min, 6 min, 10 min after exercise) was performed and rest-exercise-recovery (R-E-R) curve of LV ejection fraction (EF) was observed.

Degree of decrease in LVEF at exercise was most prominent in variant AP, followed by JC AP group, non-JC AP group and non-collateral AP group in this order. It correlated with ischemic grade on stress Tl-201 myocardial emission CT. Rate of recovery of LV function did not always correlate with grade of (Rest-Ex) LVEF. Variant AP and non-collateral AP groups which are expected to have more rest coronary flow reserve, showed immediate recovery of LV function, but JC AP group which has little coronary flow reserve showed distinctly delayed recovery.

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EVALUATION OF LEFT VENTRICULAR FUNCTION AFTER PHYSICAL TRAINING USING EXERCISE STRESS RADIONUCLIDE VENTRICULOGRAPHY (RNV) IN PATIENTS IN THE RECOVERY PHASE OF ACUTE MYOCARDIAL INFARCTION (AMI). A.Sato, J.Tsuzuki, M. Tanabe, A.Suzuki*, H. Matsushima*, S.Yamamoto* and I.Sotobata*. Daido Hospital and *1st Dept. of Intern. Med., Nagoya Univ. Nagoya.

We studied left ventricular function in 28 patients in the recovery phase of AMI, who were performed RNV during supine bicycle ergometer exercise before and after physical training for a month. Left ventricular ejection fraction (LVEF) during exercise increased both before and after physical training. After physical training LVEF increased significantly at rest and at the load of 25w. Before physical training stroke volume index (SVI) increased only at the load of 25w., while after physical training SVI increased at the load of 25w. and 50w. respectively. After physical training, in the case of normal response of LVEF (ΔLVEF≥5%) left ventricular end-systolic volume index decreased at the load of 50w., and then in the case of abnormal response of LVEF (ΔLVEF<5%) left ventricular end-diastolic volume index increased at the loads of 25w. and 50w. In conclusion, after physical training SVI during exercise increased significantly, and that mechanism differs according to response types of LVEF at exercise.

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COMPREHENSIVE CARDIAC FUNCTION ANALYSES BY EQUILIBRIUM RADIONUCLIDE VENTRICULOGRAPHY R.Standke, G.Hör, F.D.Maul, R.P.Baum Division of General Nuclear Medicine Goethe-University, Frankfurt, FRG

We have evaluated a comprehensive approach of quantitated detection of regional functional ischemia by multiparameter analysis of left ventricular (=LV) time-activity curves. This fully automated method is based on subdivision of the LV region into 9 equiangular sectors. To assess the regional LV exercise response the global and 9 sectorial time-activity curves were noise filtered by approximation up to the 4th harmonic of the correspondent Fourier spectrum. Each curve was analyzed for pre-ejection period, time to/and peak ejection resp. filling rate, ejection fraction and phase of the first harmonic.

The standard values of all parameters were evaluated in 33 normals. These were opposed to the results of 21 patients with isolated critical LAD-stenosis. All pathological limits were defined according to a 95 % specificity against the normal group. The sensitivity to ischemia detection was 91 %. The functional impairment was localized correctly in 86 %.

The use of multiparameter analysis of the regional LV time-activity curve increases the sensitivity of exercise equilibrium radionuclide ventriculography while specificity remains unchanged