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ASSESSMENT OF LEFT VENTRICULAR FUNCTION BY GATED BLOOD POOL SCAN WITH GATED SUPINE BICYCLE EXERCISE. A. Yoshida, Y. Suzuki, S. Tamaki, K. Kadota, F. Kambara, C. Kawai, N. Tamaki*, Y. Ishii*, K. Torizuka* Third Division, Department of Internal Medicine and Department of Nuclear Medicine*, Kyoto University. Kyoto

Ten control subjects (group I) and 24 patients with coronary artery disease (CAD) (13 with 1-vessel CAD: group II; 11 with 2- or 3-vessel CAD: group III) were studied for an assessment of left ventricular (LV) function by radionuclide angiography with graded exercise. In group I, LV ejection fraction (EF) increased gradually from 58.3 ± 5.8 to 71.5 ± 9.7% ($p<0.001$) at peak exercise (PEX). In group II, there was a slight increase in LVEF at PEX (50.3 ± 14.0 to 54.2 ± 13.8%: NS) and in group III, a slight decrease (59.1 ± 9.0 to 53.9 ± 8.4%: NS). Even in group II and III, LVEF increased gradually with mild exercise as the same way as in group I, but when angina was induced LVEF decreased on subsequent measurements. The relationship between peak systolic blood pressure and LV end-systolic count with thresholding background (P/V index) was evaluated in these groups. In group I, this index ratio of PEX/rest was high (3.11 ± 1.35), but less in group II (1.48 ± 0.66) and in group III (0.86 ± 0.28) with $p<0.01$. We conclude that serial measurements of LVEF and P/V index at rest and during exercise are useful in detecting CAD with active ischemia.

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EVALUATION OF LEFT VENTRICULAR EJECTION FRACTION(EF) AND SEGMENTAL WALL MOTION(SWM) BY RADIONUCLIDE ANGIOCARDIOGRAPHY(RACG) O.DOI,K.MITSUDO and M.SHIGEYASU Heart Disease Center and Department of Radiology, Kurashiki Central Hospital. Kurashiki

Left ventricular EF was measured by first-pass RACG.At first the importance of assigning proper end-systolic(ES)ROI was examined in a group of 41 patients with coronary artery disease(CAD).EF's obtained by using ES ROI encompassing ES image precisely were correlated best with those obtained by biplane left ventriculography(LVG). Then EF was calculated using this ES ROI in 115 CAD and 30 control.The results were correlated well with those of LVG (r 0.85)

The validity and accuracy of first-pass and multi-gated RACG for the evaluation of left ventricular SWM were assessed in 54 patients with CAD undergoing LVG.The images of RACG were displayed in cine-mode.According to AHA report,the left venticular outline was divided into seven segments.SWM was evaluated on a six grading scale as normal, slightly reduced,reduced,severely reduced, akinesis and dyskinesis.245of 378 segments (65 percent)had the same grade as SWM determined by LVG and 337 of378 segments were within one grade.RACG tended to underestimate the asynergy,especially of segment 2,6, and 7 and the detection of slightly reduced segments was also difficult for RACG.

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RARIONUCLEAR OBSERVATION ON HEMODYNAMICS DURING EXERCISE TEST. C. Noro, M. Shimizu, S. Hirano, R. Kikawada, K. Ishii*, K. Nakazawa* and T. Watanabe* Department of Internal Medicine and *Department of Radiology, Kitasato University School of Medicine. Sagamihara

Exercise test is one of the most reliable methods of clinical evaluation of the cardiac function. For the purpose of evaluating the cardiac function and the cardiac reserve, we studied hemodynamics during exercise in 15 normal subjects and 34 nonvalvular cardiac patients (Ischemic heart disease 8 cases, Myocardial infarction 18 cases, Essential hypertension 6 cases and Essential hypotension 2 cases) by radionuclear and mechanocardiographic methods. The exercise loading was performed by ergometer (0.5 and 1.0 watt/kg intermittently increasing load) in supine position, and we measured Ejection Fraction according to the multigate method (Tc-99m HSA) and analysed the cardiac wall motion before and during exercise. We measured Systolic Time Intervals simultaneously. From this study we conclude that, (1) for evaluating the cardiac reserve it is very useful to measure the Ejection Fraction during exercise, and in the patients with marked cardiac dysfunction ET/PEP and other Systolic Time Intervals did not show the cardiac function or the cardiac reserve, and (2) the abnormality of the cardiac wall motion is more conspicuous during exercise, and it is possible to show the abnormality quantitatively by means of measuring the regional Ejection Fraction.

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AN EVALUATION OF LEFT VENTRICULAR FUNCTION BY RI FIRST PASS METHOD IN CASE OF ISCHEMIC HEART DISEASE. H.MITSUYAMA, H.SATO, Y.NAKATA. K.KITAMURA, Department of Cardiology. M.TANAKA. K.NAGASE, Department of Radiology Juntendo University Tokyo.

Although ejection fraction and dv/dt which derived from equilibrium method have been used as the parameters of cardiac function, we studied these parameters by first pass method RAO30° with multicrystal Gamma Camera in case of ischemic heart disease; 59 myocardial infarction, 37 angina pectoris. We also analyzed time intervals on dv/dt curve. The mean values of each parameters were as follows; EF=51.6+17, -peak dv/dt=2.3+0.9, peak dv/dt=1.9+0.7, Time-S(ED to peak dv/dt)=0.19+0.05, Time-D(ES to peak dv/dt)=0.2+0.05, Time-S/D= 1.1+0.53.A significant correlation between ejection fraction and peak dv/dt was found.

The analysis of time intervals of dv/dt curve showed that Time-S was shortened and Time-D was lengthened in the cases of normal ejection fraction group and Time-S/D was decreased in cases with low ejection fraction. In conclusion, though there are some problems to caluculate these parameters by first pass method, clinically these are usefull to evaluation cardiac function.