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EVALUATION OF THE CARDIAC FUNCTIONAL IMAGING OF VARIOUS CONDUCTION ABNORMALITIES USING PHASE ANALYSIS. T.Takahashi, S.Katsuragawa, T.Yanagisawa, K.Nakai, K.Matsushita, A.Kawamura and M.Kato. Department of Radiology and 2nd Internal Medicine, Iwate Medical University, Morioka.

The phase image in the equilibrium gated blood-pool studies provided an accurate, non-invasive visual means of detecting a relative delay and a localizing abnormal contraction sequence in the affected ventricle for bundle branch block, RV pacemaker and WPW syndrome cases.

So that, we could classify these cases into 2 groups against normal cases, judging from the point of the mean phase differences (LV-RV), calculated together with the mean and SD of the phase distribution in each ventricle (LV, RV).

a) 1st group were cases of LBBB, type B of WPW and RV pacemaker, which indicated an abnormal LV contraction sequence and LV delay.
b) 2nd group were cases of RBBB and type A of WPW. There were characterized by an abnormal RV contraction sequence and RV delay.

Also, our data suggested that there was no significant correlation between SD of the phase distribution histogram within LV and LVEF, obtained from the RI cardiac blood-study, for these cases.

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THE ROLE OF PRELOAD RESERVE DURING DYNAMIC EXERCISE IN PATIENTS WITH MYOCARDIAL INFARCTION. BH.Kim, Y.Ishida, K.Yamamoto, Y.Tsuneoka, T.Hiraoka, M.Fukushima, M.Matsumoto, M.Inoue, H.Abe, K.Kimura, Y.Kusumi, Y.Nakamura. Osaka University School of Medicine. Osaka.

To evaluate the role of preload reserve during exercise (EX) under limited reserve of myocardial contractility, multi-gated radionuclide angiography was performed at rest and maximal EX in 10 normals (G-N) and 19 patients (pts) with myocardial infarction (MI). Nineteen pts with MI consisted of 2 groups, 5 with (G-M2) and 14 without (G-M1) effort angina. Myocardial contractility was estimated from P/V index, peak systolic pressure/end-systolic volume index. There was no significant difference in increases in cardiac index (CI) during EX between G-N and G-M1, but the increase in CI in G-M2 was less than in G-N. In G-N, P/V index significantly increased (4.6 ± 1.4 to 7.8 ± 1.4 mmHg/ml/m², $p < 0.001$) without significant increase in end-diastolic volume index (EDVI) (78 ± 12 to 85 ± 17 ml/m², NS). In G-M1, P/V index moderately increased from 2.8 ± 1.0 to 3.7 ± 2.2 mmHg/ml/m² with significant increase in EDVI (100 ± 28 to 117 ± 42 ml/m², $p < 0.01$). In G-M2, P/V index significantly decreased from 6.0 ± 0.8 to 4.5 ± 1.0 mmHg/ml/m² with substantial increase in EDVI during anginal attack (72 ± 10 to 92 ± 19 ml/m², $p < 0.05$). These results indicate that in pts with limited augmentation of myocardial contractility, increases in cardiac output required during EX is obtained by increases in preload (EDVI).

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EVALUATION OF LEFT VENTRICULAR FUNCTION DURING EXERCISE IN PATIENTS WITH OLD MYOCARDIAL INFARCTION USING MULTIGATED BLOOD POOL IMAGING. Y.Ohori, T.Kajiya, K.Minamiji, K.Fujitani, S.Nagahama, K.Maeda, H.Fukuzaki. The First Department of Medicine, Kobe University School of Medicine. Kobe.

To evaluate left ventricular function in patients with old myocardial infarction (OMI) during exercise, left ventricular ejection fraction response (Δ EF) to supine bicycle exercise obtained from multigated blood pool imaging was studied. 24 patients with OMI were divided into three groups. Some patients in group I (Δ EF $\geq 6\%$), none of whom had no anginal attack, had ST depression during exercise and they had significant increase in cardiac index (CI) and lesser elevation in pulmonary artery wedge pressure (PAWP). In contrast, most patients in both group II ($-6\% < \Delta$ EF $< 6\%$) and group III (Δ EF $\leq -6\%$), had anginal attack and ST depression during exercise and furthermore they had significant elevation in PAWP and lesser increase in CI. However there were no significance in any of the above variables during exercise between group II and group III. These above results indicated that patients with increase in Δ EF remained to be better left ventricular function, compared with patients with no change or decrease in Δ EF.

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CLINICAL SIGNIFICANCE OF EXERCISE RADIO-NUCLIDE ANGIOCARDIOGRAPHY IN PATIENTS WITH OLD MYOCARDIAL INFARCTION. -RELATION TO CORONARY ARTERIOGRAM-. S.Matsushita, H.Asanoi and T.Ikeda. Kanazawa University Department of First Internal Medicine. K.Nakajima, A.Tada, H.Bunko and K.Hisada. Kanazawa University Department of Nuclear Medicine. Kanazawa.

To assess the influences of infarct site on the left ventricular ejection fraction (LVEF), we performed radionuclide angiography at rest and during supine bicycle exercise in 23 patients with old myocardial infarction. There were 13 patients of anteroseptal and/or anterior infarction with single coronary artery disease (Group A), 6 of inferior or lateral infarction with single coronary artery disease (Group I.1), and 4 of inferior or lateral infarction with multiple vessel coronary disease (Group I.2).

In Group A, the LVEF remained unchanged from 42 ± 4 to 42 ± 4 % during exercise, while it rose from 48 ± 3 to 59 ± 4 % in Group I.1 and fell from 46 ± 3 to 42 ± 3 % in Group I.2. Δ LVEF (exercise LVEF minus rest LVEF) was -0.08 ± 0.7 % in Group A, 11 ± 2 % in Group I.1 and -4 ± 2 % in Group I.2.

Our study show that when increase of LVEF during exercise is reduced in patients with inferior or lateral myocardial infarction, it may suggest the existence of multi-vessel disease.