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THE EVALUATION OF CARDIAC FUNCTION IN PATIENTS WITH DILATED CARDIOMYOPATHY AT REST AND DURING EXERCISE : DIFFERENCE BETWEEN DILATED CARDIOMYOPATHY AND OLD MYOCARDIAL INFARCTION. M.Ohnishi,K.Suda,T.Mori,Y.Kanoh,H.Shiotani,Y.Yokota,K.Maeda,H.Fukuzaki,Kobe University School of Medicine,Hyogo.

In this study we elucidated the characteristics of left ventricular systolic dysfunction using phase analysis method in pts with dilated cardiomyopathy (DCM). For this purpose 16 pts with DCM, 17 pts with old myocardial infarction (OMI) and 8 aged matched control subjects underwent equilibrium radionuclide ventriculography. The response to exercise was analyzed in DCM. Left ventricular ejection fraction (LVEF) and phase standard deviation (SD) were employed for analyzing systolic function. (Result) LVEF was lower in DCM and OMI than in control group, and SD was greater in DCM and OMI than in control group. LVEF was similar between in DCM and OMI (37.5% vs 37.2%), whereas SD was smaller in DCM than in OMI (29° vs 36°), respectively. Furthermore, SD in DCM with LVEF  $\geq$  40%, was smaller than in OMI with LVEF  $\geq$  40%, while it was similar in DCM and OMI with LVEF  $<$  40%. During exercise LVEF was increased and SD was decreased markedly in DCM with LVEF  $>$  40%, whereas they were unchanged in DCM with LVEF  $<$  40%. It is concluded that SD in DCM pts is smaller than OMI pts in cases with LVEF  $>$  40%, and such DCM pts shows decreasing SD response to exercise as well as increasing LVEF response which indicates fair systolic ventricular function reserve compared to DCM pts with LVEF  $<$  40%.

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EFFECTS OF DRUGS ON THE CARDIAC PERFORMANCE IN PATIENTS WITH ISCHEMIC HEART DISEASE-USING FUNCTIONAL IMAGE ANALYSIS IN MULTISTAGE EXERCISE TESTING. Y.Yamazaki, A.Karaki,N.Kai,K.Noda,Y.Furukawa,M.Shimizu,K.Makita,H.Tomiya,T.Saito,Y.Inagaki. The 3rd Dept. of Int. Med. Chiba Univ. School of Medicine.

To evaluate the effect of drugs on the cardiac performance, the exercise testing were performed twice a patient at drug free and TNG administration in 11 (group T), propranolol in 9 (group P) patients with effort angina pectoris. GBPS had done before, during and after multistage bicycle ergometry in supine position, and from these images we analyzed the change of LV ejection fraction (EF), SD value of LV phase angle (SD), and another cardiovascular hemodynamic parameters including PA mean pressure. EF initially increased following the decrease at the late stage during exercise in group T. In group P, EF decreased at rest, but did not decrease during exercise. SD value showed a little increase by exercise in the drug free state, more increase at rest and exercise in group T, and depression of increase by exercise in group P. PAm increased by exercise in the drug free state, decreased at rest and exercise in group T, and increased at exercise in group P. These data shows that not only the global function but also the change of regional wall motion were important in evaluation of drug effects on cardiac function.

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EVALUATION OF LEFT VENTRICULAR FUNCTION IN PATIENTS WITH DILATED CARDIOMYOPATHY BY MULTIGATED BLOOD POOL IMAGING. Y. Kawamura, N. Yonemaru and T. Masuoka. Nihon Kohkan Hospital, Kawasaki.

Multigated blood pool study was performed to evaluate global and regional left ventricular function in 9 cases of normal persons, 13 cases with dilated cardiomyopathy (DCM) and 9 cases with old myocardial infarction (MI). In patients with DCM, standard deviation (SD) of left ventricular phase histogram ( $26.1 \pm 14.3$  degree) was significantly larger and left ventricular ejection fraction (EF,  $39.1 \pm 8.8\%$ ) and 1/3 filling fraction (FF,  $12.4 \pm 7.6\%$ ) were significantly smaller than those of control group. Regional EF was obtained by dividing the LV into 6 segments. In the control group regional EF was greater than 60% in all segments. In the DCM group regional EF was smallest in the apical segment. Response to dobutamine drip infusion ( $5 \mu\text{g}/\text{kg}/\text{min}$ ) was examined. LVEF increased from  $39.1 \pm 8.8\%$  to  $49.5 \pm 10.8\%$  in the DCM group. The increase of EF correlated with the level of rest EF. In the MI group, EF increased from  $38.9 \pm 11.8$  to  $47.8 \pm 12.7\%$ . The response of EF to dobutamine drip infusion was not different between the DCM group and the MI group.

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EVALUATION OF CARDIAC RESPONSE TO EXERCISE IN THE PATIENTS WITH DEPRESSED CARDIAC FUNCTION. S.UMEZAWA\*, H.FUJIWARA, M.HIRAI, N.SEKI\*\*, K.TANIGUCHI\*\*\*, M.HIROE\*\*\*\*. \* YOKOSUKA KYOSAI HOSP. \*\* TSUCHIURA KYODO HOSP. \*\*\* TOKYO MEDICAL & DENTAL UNIVERSITY. \*\*\*\* TOKYO WOMEN'S MEDICAL COLLEGE.

We performed exercised radionuclide angiography in 18 patients with OMI and compared the hemodynamic responses to exercise between Gr-A (n=7, EF  $\geq$  40%) and Gr-B (n=11, EF  $<$  40%). We got EDV by the formula of Dehmer et al and calculated cardiac output (CO), and then used m-BP/CO as a parameter of systemic vascular resistance (SVR) and SBP/ESV as a parameter of contractility. EF increased significantly after exercise in Gr-A, while it remained unchanged in Gr-B. SVR remained still lower after exercise than at rest in Gr-A, but in Gr-B, it increased significantly soon after exercise. After administration of ISDN and nifedipine, EF and SBP/ESV increased significantly in Gr-A. In Gr-B, only after nifedipine EF increased significantly but without increase of SBP/ESV. And m-BP/CO remained lower after exercise as well as during exercise. These findings suggest that the cardiac response to exercise is dependent mainly on SVR in the patients with depressed cardiac function, and after-load reduction by nifedipine is much more effective in such cases.