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EVALUATION OF LEFT VENTRICULAR(LV) FILLING IN ATRIAL SEPTAL DEFECT(ASD) USING GATED-CARDIAC BLOOD POOL SCINTIGRAPHY :PRE- AND POSTOPERATIVE STUDIES. H.Nakagawa,H.Adachi,H.Sugihara,T.Nakagawa,Y.Kubota,S.Inagaki,H.Katsume,K.Okamoto,T.Miyazaki and H.Ijichi. Kyoto Prefectural University of Medicine, 2nd Department of Internal Medicine, RI, Kyoto.

To evaluate the influence of chronic right ventricular(RV) overload on LV diastolic filling, ECG-gated cardiac pool scintigraphy and Tl-201 myocardial perfusion imaging(MPI) were performed in 30 patients(pts) with secundum ASD and 22 normal controls. In 15 pts of ASD these study were repeated 3 months after surgical correction(Op). As RV uptake ratio and RV/IVS ratio calculated from MPI showed good correlation with PA systolic pressure and Qp/Qs, these were used as indices of RV overload. In ASD, LVEF showed slight decrease. LV diastolic indices, MFR and PFR significantly decreased and TPF prolonged. Significant correlation was found between RV uptake ratio and diastolic indices. After Op, RV/IVS ratio decreased. Although LVEF showed no change, LV diastolic filling significantly improved, and the degree of improvement correlated well with that of RV/IVS ratio. Thus in ASD, LV filling was disturbed in proportion to the degree of RV overload, and this impairment improved by its reduction after Op.

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EVALUATION OF LEFT VENTRICULAR RELAXATION BY USING BLOOD POOL IMAGING. S.Takaoka, N.Kuroiwa,T.Ohkubo,H.Tabuchi,K.Nakamura, and S.Hashimoto. Kagoshima university 2nd dept. of internal medicine, Kagoshima city.

Left ventricular isovolumic relaxation period(IRP) was studied by using multi gate blood pool imaging. Twenty four cases of hypertrophic cardiomyopathy(HCM) and 8 cases of normal patients were studied. Patients were diagnosed by coronary angiography, left ventriculography and ultrasound study. There was no difference between these two groups in age. Volume curve obtained by blood pool imaging was analyzed between the end diastole and the end of the rapid filling wave. Fourier function was applied to get the fitted curve, and then the differential function curve was obtained. In 32 cases, increase of left ventricular and differential volume curve was identified during IRP. The maximum value of differential volume curve during IRP (PFRR) was compared with other parameters. PFR & 1/3PFR showed lower value and TPF delayed in HCM. PFR & LVEF had no significant difference between two groups. There was marked difference between two groups in PFRR at relaxation. PFR & PFRR had good correlation with time constant T value. And the value of correlative coefficient showed higher in PFRR than PFR. The study of IRP by blood pool imaging suggests useful in evaluation of relaxation of cardiac function.

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RELATION BETWEEN DIASTOLIC ABNORMALITIES AND LEFT VENTRICULAR HYPERTROPHY IN HYPERTROPHIC CARDIOMYOPATHY T.Mori, K.Suda, M.Ohnishi, H.Shiotani, H.Yokota, K.Maeda and H.Fukuzaki. Kobe University School of Medicine, First department of Internal Medicine, Kobe

To investigate the relationship between cardiac function and left ventricular hypertrophy with and without Thallium-201 (Tl-201) perfusion defects, 16 patients with hypertrophic cardiomyopathy(HCM) were studied with list-mode radionuclide angiography(LMRNA), enhanced transmission computed tomography(TCT) and Tl-201 emission computed tomography(ECT). Rapid sequential scan of TCT, left ventricular mass(m) and volume(v) were measured. Results of LMRNA were analyzed for ejection fraction(EF), 1/3filling fraction(1/3FF) and time to peak filling rate/diastolic time(TPFR/DT). In 11 patients without Tl-201 perfusion defects on hypertrophoid regions, m/v correlated with EF($r=0.62, p=0.05$), 1/3FF($r=-0.87, p=0.01$) and TPFR/DT($r=0.70, p=0.01$). In 5 patients with Tl-201 perfusion defects on hypertrophoid regions, diastolic function assessed by 1/3FF and TPFR/DT were more markedly injured than the level determined by m/v in those without Tl-201 perfusion defects.

In conclusion, in the patients with HCM m/v is one of the major determinants of cardiac function, but in the patients with Tl-201 perfusion defects diastolic abnormalities were more marked.

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AGREEMENT OF STROKE VOLUME BETWEEN RIGHT AND LEFT VENTRICLES DURING EXERCISE, A STUDY WITH RN-ANGIOCARDIOGRAPHY. N.Yamamoto, K.Gotoh,Y.Yagi,S.Ohoshima,H.Takatsu, T.Tsukamoto,Y.Terashima,M.Iida,F.Deguchi, and S.Hirakawa.The 2nd Dept.of Int.Med.Gifu Univ.School of Med.Gifu.

It was possible to obtain stroke volume during exercise with multiple-gated equilibrium blood pool scintigraphy, $SV_E = (EDC_E - ESC_E) / ((EDC_E - ESC_E) \times AR / A \times SV_R)$, where SV_E represents the stroke volume(SV) during exercise, SV_R the stroke volume at rest obtained from the first pass RN-angiocardiology, EDC the extracorporeal counts of radioactivity from the ventricles during end-diastole, ESC the extracorporeal counts of radioactivity during end-systole and A the counts of radioactivity in 1ml blood obtained with a Well-counter.

With this method, we obtained the stroke volume of right and left ventricles separately and compared the stroke volume between right and left ventricles. As a result, it was found that there was a relation of $Y=0.80X+17.46$ ($r=0.88, n=29$) in terms of the stroke volume between left(Y) right(X) ventricles with a coefficient of variation of 0.13. Therefore, it was suggested that stroke volume of right and left ventricles could be obtained with a non-invasive method during the exercise. It was also found in this study that cardiac output of the left ventricle obtained with this method was very close to that obtained with thermodilution method (coefficient of variation=0.18).