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NON-INVASIVE EVALUATION OF CORONARY HEMODYNAMICS BY TL-201 DOUBLE DOSE SCINTIGRAPHY. H.Sugihara, H.Adachi, S.Inagaki, H.Katsume, H.Ijichi, K.Okamoto, N.Tabata, K.Miyao, M.Murata, and H.Kotera. 2nd Dep. of Med. Kyoto Prefectural University of Medicine, Kyoto 2nd Red Cross Hospital. Kyoto.

We designed the method to obtain the rate of change of coronary blood flow (Δ Flow) and of coronary vascular resistance (Δ CVR) in two different conditions by TL-201 double dose scintigraphy. As we reported previously, the rate of change of myocardial blood flow distribution (Δ Fract) can be acquired from the rate of change of Tl myocardial uptake. And now we developed the method to obtain the rate of change of cardiac output (Δ CO) by Tl double dose, to calculate Δ Flow from both Δ CO and Δ Fract, and moreover to calculate Δ CVR from the change of mean blood pressure and Δ Flow. Stewart-Hamilton formula was applied to obtain Δ CO. The initial component of histogram on heart from Tl first injection was fitted into gamma function, and in the second injection subtracted component was fitted. The areas bounded by gamma functions were the first S1, and the second S2, Δ CO was calculated as $(R \times S1 / S2) - 1$ (where R was the dose ratio). When two doses were injected in same conditions, to verify the above rationale, Δ CO, Δ Fract, Δ Flow, and Δ CVR converged near zero. And there was good correlation between Δ CO by this method and by dye dilution method ($Y = 1.05 \times - 0.08$, $r = 0.945$).

Thus this method is useful to evaluate non-invasively and quantitatively coronary hemodynamics in various loading.

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RADIOISOTOPE STUDY IN DIAGNOSIS OF HYPERTROPHIC CARDIOMYOPATHY. H.Ohmine, T.Nishimura, M.Kimura, K.Hayashida, T.Uehara, T.Kozuka, S.Nagata*, H.Sakakibara*, Department of Radiology and internal medicine*. National cardiovascular center. Osaka.

Based on conventional myocardial scintigrams, 24 patients of hypertrophic cardiomyopathy were classified into four types. Patients of type I (n=8) had homogeneously thickened left ventricular wall with visualized sinus portion on the scintigram, which were corresponded with oval or spade shape of left ventricular cavity on contrast ventriculogram. Patients of type II (n=6) had extremely hypertrophic myocardium so that their ventricular lumen could not be detected. Most of them had kidney or banana shape and hour-glass shape of left ventriculogram. It was certified that mean LV mass of type I was significantly lower than that of type II ($p < 0.01$). Asymmetric septal hypertrophy and apical hypertrophy confirmed by echocardiography was also shown in patients of type III (n=4) and type IV (n=2), respectively. Patients of all types had subnormal levels of 1/3 mean filling rate (mFR) derived from LV volume curve of cardiac blood pool scan (type I=1.30, type II=1.18, type III=1.17, type IV=1.20/sec). We recognized that 1/3 mFR was the important diastolic index in diagnosis of hypertrophic cardiomyopathy.

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EVALUATION OF BI-VENTRICULAR HYPERTROPHY (BVH) AND RIGHT VENTRICULAR HYPERTROPHY (RVH) BY THALLIUM-201 MYOCARDIAL IMAGING COMPARED WITH VECTORCARDIOGRAPHY (VCG). Y.Saito, R.Abe, H.Nomura, M.Sakai, S.Ohnishi, K.Ebine, S.Yabuki, and K.Seki. The 3rd Department of Internal Medicine, Toho University School of Medicine (Ohashi Toho University Hospital). Tokyo.

Comparative study on the pattern of TL-201 myocardial scintigraphy and vectorcardiography (VCG) were performed simultaneously in 27 patients with bi-ventricular hypertrophy (BVH) and right ventricular hypertrophy (RVH).

TL-201 uptake in myocardial tissue is mainly depend on blood flow to the tissue and so, we measured RV/LV uptake ratio and RVd/LVd ratio in LAO view of TL-201 myocardial imaging. According to the classification of Chou's, we modified six patterns of horizontal plane in VCG, and compared with the each six pattern and the average of RV/LV, RVd/LVd ratio. TL-201 myocardial imaging was similar tendency to the assessment of the six patterns in VCG. Therefore, the assessment of the qualitative and quantitative analysis of RVH and BVH which were suggested volume overload or pressure overload, were observed in this comparative studies.

We concluded that our new method of RI-scintigraphy and VCG is useful to evaluate RVH and BVH in patients.

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DIAGNOSIS OF PULMONARY COMPLICATIONS IN PATIENTS WITH TRANSPOSITION OF GREAT ARTERIES (TGA) AFTER MUSTARD'S OPERATION BY TL-201 MYOCARDIAL IMAGING. T.Hiraoka, K.Yamamoto, Y.Tsuneoka, BH.Kim, Y.Ishida, M.Fukushima, M.Matsumoto, M.Inoue, H.Abe, K.Kimura*, T.Hiranaka**, Y.Shimazaki**, H.Hirose** and Y.Kawashima** 1st Dept. of Med., Div. of Nucl. Med* and 1st Dept. of Sug** Osaka Univ. Med. School, Osaka.

TL-201 myocardial images were reviewed in 10 patients (pts) with TGA after Mustard's operation. The visualization of the right ventricle corrected as systemic ventricle was strong in all pts, but that of left ventricle corrected as pulmonary ventricle was weak in most pts (7/10). In 2 pts with pulmonary hypertension (PH) and 1 pt with pulmonary stenosis (PS) with increased LV pressure, however, LV was strongly visualized similar to RV. To compare the TL-201 uptake in LV and RV walls quantitatively, we determined the ratio of radioactivities in LV and RV walls in LAO image after the processing of interpolative background subtraction. Results: In 7 pts with weak visualization of LV, the RV/LV ratio was higher (3.13 ± 0.40) than in 3 pts with strong visualization of LV (0.93 ± 0.08). This ratio also correlated well with that of RV and LV pressure (RVP/LVP) ($r = 0.94$, $p < 0.01$). Thus, the relative increase of TL-201 uptake in LV wall in pts with TGA after Mustard's operation suggests the possibility of predicting the presence of PH and PS complicating this disorder.