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DOUBLE DOSE THALLIUM-201 SCINTIGRAPHY APPLIED TO SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY. Y. Kubota, H. Adachi, H. Sugihara, S. Inagaki, H. Nakagawa, H. Katsume, K. Okamoto, D. Miyazaki and H. Ijichi. Kyoto Prefectural University of Medicine, Kyoto.

We applied double dose thallium-201 (Tl) myocardial scintigraphy to single photon emission computed tomography (SPECT) during exercise. The first dose Tl was injected during peak exercise, and the data acquired for 12 minutes' SPECT images were reconstructed. The second Tl dose was injected at resting state, and rest SPECT images were reconstructed by the subtraction of the first exercise data from the second rest data. As the initial distribution of Tl in tissue is depended on the blood flow, the change of Tl uptake in myocardium is analogous to the change of blood flow distribution in the myocardium. We calculated the global and regional change ( $\Delta$ FRACT) of Tl uptake in peak exercise and resting state.  $\Delta$ FRACT was lower in IHD than in normal (N) group and  $\Delta$ FRACT was more reduced in two- or three-vessels' disease. There was a good correlation between  $\Delta$ FRACT and the changes of pressure rate product ( $\Delta$ PRP) in both N and IHD. The ratio of global and regional  $\Delta$ FRACT and  $\Delta$ PRP was decreased in IHD. These results indicate that coronary reserve is reduced in the whole and regional myocardium in the patient with IHD, and that this quantitative evaluation of regional ischemia is feasible through Tl double dose method applied to SPECT.

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CLINICAL STUDY ON THE ANALYSIS OF THALLIUM-201 MYOCARDIAL SCINTIGRAPHY USING MULTIGATE METHOD IN HYPERTROPHIC CARDIOMYOPATHY (HCM). K. Owada\*, S. Suzuki\*, E. Katono\*, Y. Miyazaki\*, K. Ono\*, K. Kobayashi\*\*, T. Uchida\* and S. Kariyone\*. First Dept. of Internal Medicine\* and Dept. of Nuclear Medicine\*\*, Fukushima Medical College, Fukushima.

Dynamics of myocardium was observed in 12 normal cases and 12 patients with HCM by means of analysing thallium-201 myocardial scintigraphy with multigate method. Patterns of myocardial scintigram were divided into 20 frames by R-R interval. In LAO view, left ventricular wall was divided into 8 regions, and the changes of radioactivity in each region of 20 frames were analysed. The indices of amplitude (percent wall thickness), TPC (time to peak contraction) and TES (time to end-systole) were examined.

The percent values of amplitude in HCM group decreased significantly than those in control group, especially at regions of septal and inferior wall. The mean values of TPC (msec) in HCM group tended to be shorter at septal wall than that of control group, but the mean values of TES (msec) were ranged within normal value. These indices changed significantly in the cases with remarkable septal hypertrophy than in the others.

From these results, it was suspected that hypertrophic region of myocardium in HCM might have abnormal contraction.

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QUANTIFICATION OF RIGHT VENTRICULAR WALL USING STRESS SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY (SPECT) WITH THALLIUM-201. H. Akanabe, M. Oshima, S. Sakuma, S. Yamamoto, N. Kawai and I. Sotobata. Nagoya University, School of Medicine, Nagoya

In order to evaluate the size and the degree of ischemia in right ventricular wall (RVW), stress SPECT with Tl-201 during exercise were performed in normal subjects and patients with right coronary artery disease (CAD). Tomographic images were reconstructed from the data collected by rotating two gamma cameras, and short axis images of RVW and left ventricular wall (LVW) (apex, middle and base images) were selected. RVW and LVW were flagged by manual. Each ventricle was divided into 36 parts at every 10 degree, and circumferential profile curves of RVW and LVW in each image were created. Circumferential profile curve that is RV-LV curve were calculated as a percent counts of maximum counts in left ventricle. The normal range was calculated as mean  $\pm$  2 standard deviation of RV-LV curves of normal subjects. The size and the degree of ischemia of RVW were evaluated from RV-LV curves. Results were compared with coronary arteriography and ECG.

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Usefulness of ECG Gated  $^{201}\text{Tl}$  Myocardial SPECT in HCM.

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ECG gated  $^{201}\text{Tl}$  myocardial SPECT was performed in the normal subjects and patients with HCM, and the thickness of the septum and posterior wall was measured and studied in comparison with the values measured in the echocardiography. Furthermore, the volume of the myocardium of the left ventricle was also computed. A short axis image of left ventricle was reconstructed from a transverse image and the diastolic image thereof was used to measure the thickness of the septum and the posterior wall. Comparison with the echocardiography revealed a correlation: the septum  $r=0.86$ , posterior wall  $r=0.73$ , septum/posterior wall ratio  $r=0.80$ . Measuring the thickness of the wall by ECG gated  $^{201}\text{Tl}$  SPECT was considered useful. The low correlation of the posterior wall was presumably attributed to the question of absorption of RI and also to the question that the site of measurement is not necessarily the same for echocardiography and SPECT. The volume of the left ventricular myocardium was measured from the diastolic short axis image and the values measured were studied in comparison with the systolic and diastolic cardiac function computed by the cardiac pool scintigraphy.