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CLINICAL STUDY ON THE RIGHT VENTRICULAR OVERLOADING USING THALLIUM-201 MYOCARDIAL SCINTIGRAPHY IN PATIENTS WITH COMBINED VENTRICULAR HYPERTROPHY. K.Owada, Y.Tsukahara, K.Ono, S.Suzuki, M.Takezawa, N.Awano, M.Kijima, Y.Miyazaki, T.Uchida and S.Kariyone. First Department of Internal Medicine, Fukushima Medical College, Fukushima.

Thallium-201 myocardial scintigraphy was performed in 60 patients with RVH and 38 patients with BVH. The RV free wall was visualized by scintigraphy in 75% with RVH and 55% with BVH. The mean values of right ventricular systolic pressure (RVSP) and right ventricular work index (RVWI) in the RV wall visualized cases of the BVH group were  $51 \pm 19$  mmHg and  $0.70 \pm 0.28$ , respectively. These values were significantly higher than those of the non-visualized cases. In the cases with BVH, the RV/IVS and RV/LV uptake ratio were correlated with RVSP and RVWI. But, the RV/total count ratio was closely correlated with RVSP ( $r=0.88$ ) and RVWI ( $r=0.72$ ). Secondly, the mean values of RV/LV systolic pressure ratio in the RV wall visualized cases of the BVH group was significantly higher than those of the non-visualized cases. The RV/IVS, RV/LV uptake ratio or RV/total count ratio were closely correlated with RV/LV systolic pressure ratio ( $r=0.89, 0.84$  and  $0.83$ ). Our results indicate that the RV/IVS uptake ratio or RV/total count ratio can be used as a good parameter for the estimation of right ventricular overloading in patients with combined ventricular hypertrophy (BVH).

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AUTOMATED MEASUREMENT OF SPATIAL DISTRIBUTION AND REGIONAL WASH-OUT RATIO IN STRESS THALLIUM-201 MYOCARDIAL SCINTIGRAPHY. A.Tada, H.Bunko, K.Nakajima

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To investigate the clinical usefulness of quantitative evaluation of circumferential profiles (CFP) of Thallium-201 myocardial early distribution (E-R) and wash-out ratio (W-R), original computer program was developed.

Stress and redistribution images were obtained in 48 cases with coronary artery disease (CAD) and 23 normal subjects (with normal coronary and normal volunteer). CFP curve of the early Tl-201 distribution and regional wash-out were created by automated each 60 points sampling with apex alignment.

Each images were divided to 3 segments correspond to LAD, Lcx and RCA. Sensitivity (Sn) and specificity (Sp) in the diagnosis of disease in individual coronary arteries were as follows.

	LAD	Lcx	RCA
Sn	34/41 83%	23/27 85%	18/20 90%
Sp	25/30 83%	30/44 68%	28/51 55%

When using early perfusion defect criteria alone, accurate diagnosis was made only 38% of 3 vessel disease, but wide spread wash-out abnormality was shown in 69% of 3VD. Regional wash-out abnormality was recognized not only with severe narrowing CAD, but also with mild narrowing CAD.

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THE WASHOUT RATE OF EXERCISE STRESS MYOCARDIAL SCINTIGRAM: A CLINICAL SIGNIFICANCE AND PROBLEM. T.Tsuda, K.Ojima, M.Uruma, S.Hayashi, Y.Aizawa, Y.Arai, A.Shibata, H.Hama and T.Mitani. The First Department of Internal Medicine, Niigata University School of Medicine and Kido Hospital, Niigata.

We analyzed quantitatively the myocardial thallium washout of exercise stress myocardial scintigram. Five minutes' myocardial images were obtained in LAO45° view immediately after exercise and 2.5 hour after the injection of thallium. Goris's background subtraction was employed and the circumferential profile curve was constructed by the computer from maximal count per pixel of 40 segments divided in 9° whose center was located at the left ventricular cavity. In each profile, washout rate (WR) was calculated as follows:  $WR = (\text{Early Count} - \text{Late Count} / \text{Early Count}) \times 100 (\%)$ . (Mean  $\pm$  2SD) of WR established from twelve normal subjects, was diagnosed as lower normal limit. In detection of multi-vessel disease, WR method showed good sensitivity (67%). In the nonstenotic segments, there was a fair and significant correlation between WR and the heart rate at the end point of exercise ( $r=0.40, P < 0.05$ ). But, in the stenotic segments, WR was not related to the grade of workload or coronary stenosis. We conclude that WR can be an index of regional myocardial thallium kinetics and be useful index in detection of multi-vessel disease.

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EVALUATION OF WASHOUT RATIO BY 201-TL SCINTIGRAM IN ISCHEMIC HEART DISEASE. I.Okuzumi, T.Mito, M.Wakakura, Y.Kawamura, H.Oosawa, J.Yamazaki, T.Morishita, and Y.Sasaki. 1) 1st Dept. of Int. Med., Toho Univ., 2) Dept. of Radiology, Toho Univ. Tokyo.

201-Thallium (Tl) up take and washout ratio were studied in 26 patients undergoing coronary angiography. Tl myocardial scintigrams were obtained after submaximal limited exercise, 1hr, and 3hr delay. Normal range of Tl uptake and washout ratio in each segment were measured from ANT, LAO and LAT projections in normal 6 cases. Angina pectoris with LAD lesion or RCA lesion demonstrated significant differences of washout ratio from normal cases. However, there is no significant difference of washout ratio between patients with myocardial infarction and normal cases. Between patients with severe stenosis (90%  $\leq$ ) and moderate stenosis (from 75 to 90%), significant difference of washout ratio was shown. Washout ratio of Tl was more accurate than only initial Tl uptake for detection of severity of coronary artery lesion.