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CLINICAL SURVEY OF Tl-201 MYOCARDIAL SCINTIGRAPHY IN THE DIAGNOSIS OF THE RIGHT VENTRICULAR OVERLOAD IN VARIOUS RESPIRATORY DISEASES. J.Hirayama, H.Kanai, T.Fujii, S.Kusama and K.Yano. The 1st Dept. of Internal Medicine, Division of Radiology, Shinshu University Hospital. Matsumoto.

For evaluation of the right ventricular overloading, Tl-201 myocardial scintigraphy was performed in 343 patients with various respiratory diseases, and the correlation between the grades of RV visualization on Tl-201 scintigraphy and the clinical examinations was studied.

On intravenous administration of Tl-201 (74MBq), initial transit of the tracer through the heart and the subsequent static images were recorded in 30, 60 degree left anterior oblique, left lateral and frontal projections using a scintillation camera coupling to a small digital computer.

Results : (1) One hundred eleven of 343 patients (32.4%) showed visualization of the RV free wall. (2) The clinical findings of RV overloading were showed more frequently in marked positive visualization group than in low and negative ones. (3) There were less cases satisfied the ECG criteria of RVH in even if positive visualization groups. (4) The more increased was Tl-uptake on RV, the more reduced were the values of PaO₂ and %VC, and the more dilated was the right descending pulmonary artery on chest X-ray film.

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CLINICAL IMPLICATION OF THALLIUM-201 EARLY LUNG WASHOUT IN PATIENT WITH CORONARY ARTERY DISEASE. T.Kajiya, Y.Ohmori, K.Minamiji, K.Fujitani, S.Nagahama, K.Maeda, H.Fukuzaki. The First Department of Medicine, Kobe University School of Medicine. Kobe.

This study was undertaken to determine whether early change in lung radioactivity was related to severity of coronary artery disease (CAD) or LV dysfunction during exercise (Ex). Tl stress test and hemodynamic monitoring during Ex and at rest were performed in 19 patients (pts) with CAD and 9 normal subjects. Two sets of data were obtained at 5, 15 minutes after administration of Tl. Lung and myocardial washout (WO) were evaluated by percent decrease in radioactivity from 5 to 15 minutes after Ex. In normal subjects, lung WO was 94.5%, whereas in pts with CAD lung WO was 85.5%, pts with multivessel disease showed faster lung WO than that in those with single vessel disease (81.7% versus 87.9%). Furthermore pts with elevated pulmonary arterial wedge pressure (PAWP) during Ex (>25 mmHg) showed faster fall in lung radioactivity than those with lower PAWP (<25 mmHg) (82.4% versus 92.3%). There was no significant difference in myocardial WO between normal and CAD. It was concluded that lung Tl activity rapidly fall during early phase after Ex in pts with multivessel disease and Ex induced LV dysfunction and therefore, increased lung activity for evaluation of CAD should be estimated consistently early after Ex.

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STRESS THALLIUM-201 MYOCARDIAL PERFUSION IMAGING FOR EVALUATION OF RIGHT-VENTRICULAR MYOCARDIAL ISCHEMIA. H.Kataoka, S.Takaoka, T.Ohkubo, N.Kuroiwa, T.Ohshige, K.Nakamura and S.Hashimoto. Kagoshima University School of Medicine, Kagoshima.

We studied the clinical significance of stress Tl-201 myocardial imaging for evaluating the right ventricular ischemia. The pts fell into three distinct groups: normal control (NC) group (16 cases), those without angiographically documented coronary artery disease; non-RCA group (16 cases), those who had significant left coronary artery stenosis but were free of significant right coronary artery (RCA) stenosis; RCA group (26 cases), those with significant RCA stenosis. After the pts were exercised to 80-85% of the expected maximum heart rate, immediate and delayed (3 hrs) Tl-201 myocardial images in 30° and 60° LAO views were obtained. The right ventricular free wall (RVFW) findings on images were evaluated with regard to presence or absence of the defective Tl-201 uptake, degree of radioactivity and redistribution of Tl-201 into the RVFW. On immediate images, all pts in NC group and all except 3 in non-RCA group demonstrated continuous visualization of the RVFW. In RCA group, 5 had non-visualization and 11 showed partial visualization of the RVFW in 30° LAO view. In 60° LAO view, 6 showed non-visualization and 7 partial visualization of the RVFW. On delayed images in RCA group, 2 pts without inferior MI demonstrated redistribution of Tl-201 into the RVFW. Non- or defective visualization of the RVFW on image was associated with proximally located lesion, history of inferior MI and marked RCA stenosis without collateral channels. Collateral circulation seemed to protect the RVFW against the development of exercise-induced ischemia and affect the occurrence of redistribution of Tl-201 into the RVFW.

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EVALUATION OF EXERCISE INDUCED PULMONARY Tl-201 UPTAKE.

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To assess the clinical significance of increased lung Tl-201 activity on initial stress myocardial images in patients with ischemic heart disease, initial and 2-4 hour delayed Tl-201 images were recorded on Analog film and stored in scintipac 230 computer 5-10 minutes after supine bicycle ergometer stress testing in 33 patients (21 with CAD, 5 without CAD and 10 other heart disease). Increased Tl-201 lung uptake had recognized in patient with low C.O., low E.F. and long RV-LV peak to peak time. Tl-201 lung index (L/M) was elevated with CAD group compared with normal coronary artery group, 36.9±0.09%, 27.8±0.14% respectively. In conclusion, increased pulmonary uptake during exercise Tl-201 imaging suggests the development of exercise induced left ventricular dysfunction.