
This study was designed to determine whether stress-induced thallium(Tl) defects can resolve early after Tl injection and to evaluate the incidence and the mechanism of early redistribution (ER). We studied 40 patients(pts) with coronary artery disease undergoing stress Tl scans. One first scan (Ex1) began immediately after exercise and the second (Ex2) began 15 min later in the LAO projection. Significant resolution of Tl defects from Ex1 to Ex2 was judged as positive ER. There were 8 pts(20%) with ER and all of these defects showed further "fill in" on delayed image. Although there was no significant correlation between work load, RFP and ER, there was significantly less frequently of history of OMI. All but one of pts with ER showed ischemic ST change on exercise and recovery of ST depression was faster in pts with ER than those without ER. In addition, 7 of 8 pts with ER have been collateralized from non-diseased vessels. In summary, (1) ER of stress-induced Tl defects occurs in 20% of pts. (2) The mechanism of ER is considerably related to restoration of myocardial blood flow in the transient ischemic region from non-jeopardized collateral vessels. (3) To diagnose angina pectoris, TI imaging immediately after exercise is of great usefulness.

QUANTITATIVE ESTIMATION OF THE RIGHT VENTRICULAR OVERLOAD ON Tl-201 MYOCARDIAL SCINTIGRAPHY IN PATIENTS WITH VARIOUS RESPIRATORY DISEASES. J. Hirayama, T. Fujii, S. Kusama, K. Hirano, K. Yano and M. Takizawa. The 1st Dept. of Internal Medicine, Division of Radiology, Shinshu University Hospital, Matsumoto.

For evaluation of the right ventricular (RV) overload, Tl-201 myocardial scintigraphy was performed in 10 patients with various respiratory quantitative assessment of it was studied to compare these results with autopsy findings. On intravenous administration of Tl-201, initial transit of the tracer through the heart and the subsequent static image were recorded in 30 degree left anterior oblique position using a scintillation camera coupling to a small digital computer. The radioactivity of total injected dose of Tl-201(T) was calculated from the radio-nuclide angiocardiogram, and that of RV (R) and LV plus ventricular septum (L) was done from the static image, on which the angiocardiogram showing RV was superimposed. By these procedures, RV or LV uptake ratio of Tl-201 was calculated by ratio R or L to T. (Rt/Lt) At autopsy, the weight of RV free wall, LV one and septum was measured by the method of Fulton et al., respectively (Ra, La, Sa) and the thickness of RV and LV were measured. (Rw, Lw). Risults 1) Rt/Lt ratio was well correlated with La+Sa/Ra ratio. 2) There was a higher correlation between Rt and Ra than between Rt and Rw.


Tl-201 myocardial perfusion scintigraphy, which was useful method for evaluation of RVH, has been discussed. From the thallium activity in left ventricle (plus ventricular septum) and right ventricle, we determined the thallium activity ratio of left to right ventricle (TAR). We compared TAR with pulmonary hemodynamics and with left to right ventricular mass ratio measured at autopsy, and obtained the following results. The TAR was correlated significantly pulmonary artery mean pressure, and ventricular mass ratio.

The comparison of validity of several ECG criteria of RVH with TAR in 250 patients with chronic pulmonary disease, the sensitivity of WHO, Milnor and Roman's ECG criteria of RVH was 61%, 58% and 55% respectively. These results suggested that these ECG criteria were less sensitive than Tl-201 scintigraphy for evaluating RVH in patients with chronic pulmonary disease.


This study was undertaken to detect the clinical significance of exercised Tl-201 myocardial scintigraphy in estimating right ventricular ischemia, collateral circulation, and patency of A-C bypass grafts.

Subjects were divided into two groups according to coronary arteriograms. (1) 12 patients who have significant stenose over 50% narrowing in right coronary artery (RCA group), (2) 15 patients without any significant stenosis in right coronary artery (non-RCA group).

Early Tl-201 images were obtained 5 minutes after the end of exercise, and delayed images after 4 hours. Evaluation of right ventricular free wall was made by counting number in ROI set on upper right ventricular wall; RV(u), lower right ventricular wall; RV(l), and maximal point in left ventricular wall; LV(p).

In non-RCA group we could not find significant difference of RV(u)/LV(p) or RV(l)/LV(l) between early image and delayed image, although RV(u)/LV(p) and RV(l)/LV(l) decreased in delayed image in RCA group. In patients who have collateral circulation to RCA or A-C bypass operation to RCA, the same tendency as that in non-RCA group was found.

Exercised Tl-201 myocardial scintigraphy was useful to detect ischemic change due to right coronary artery disease.