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EVALUATION OF THE DEGREE OF LUNG THALLIUM UPTAKE AND WASHOUT AFTER EXERCISE IN PATIENTS WITH CORONARY ARTERY DISEASE OR DCM. K.WATANABE, T.TSUDA, M.URUMA, I.KODERA, K.OJIMA, S.HAYASHI, Y.ARAI, A.SHIBATA (1st dep Med) and M.KIMURA, M.TAKEDA, I.ODANO, I.SAKAI (Radiology Niigata University)

Exercise induced increase in Tl lung uptake has been shown to correlate with left ventricular function. Tl activity of lung and myocardium was determined to calculate Tl lung/mediastinum (L/M) ratio. Relative changes in Tl activity from 10 min to 40min after Tl injection were expressed as a ratio of decrease in Tl (washout). L/M ratio at 40min were increased in 135 ± 18 , 135 ± 15 and $137 \pm 22\%$ ($p < 0.05$) of patients with angina pectoris, myocardial infarction and DCM more than control group ($121 \pm 16\%$). Correlative coefficient between ejection fraction and L/M ratio at 40min was $r = -0.49$, $p < 0.05$ and lung washout at 40min was $r = 0.43$, $p < 0.05$. But no significant difference in L/M ratio at 10min and 120min were present in patients with abnormal or normal ejection fraction. Increased lung uptake at 40min after exercise on Tl imaging suggests the development of left ventricular dysfunction. Evaluation of lung activity at 10min and 40min after exercise should be added to the routine interpretation of exercise Tl myocardial imaging studies.

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TL-201 LUNG UPTAKE IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION. K.Tanaka, S.Kimata, K.Hirosawa, K.Kusakabe, T.Shigeta, Y.Ito, T.Tanaka, M.Abe, Y.Obunai, H.Ueda. Tokyo Womens' Medical College, Sakakibara Memorial Hospital, Tokyo.

Thallium lung uptake images (TLI) in patients (pts) with acute myocardial infarction were estimated by comparing the counts in the right lower lung with maximal myocardial counts (thallium lung heart ratio: LHR). Patients were classified to G-0 ($0.6 > \text{LHR}$), G-1 ($0.8 > \text{LHR} \geq 0.6$) and G-2 ($\text{LHR} \geq 0.8$). Mean pulmonary artery wedge pressure (mPw) and Ejection fraction (EF) of G-0 (7 pts), G-1 (7 pts) and G-2 (9 pts) were 11.4 ± 4.2 , 16.9 ± 4.1 , 21.1 ± 4.7 mmHg and 51.4 ± 9.7 , 42.7 ± 6.7 , $23.5 \pm 5.6\%$ respectively. This classification was hemodynamically significant. Good correlation (mPw = $0.6 + 22 \text{LHR}$, $r = 0.74$ and $\text{EF} = 82.1 - 60.9 \text{LHR}$, $r = -0.86$) was obtained. The specificity of G-0 for mPw < 18 mmHg was 100% (10/10) and that of G-2 for $\text{EF} \leq 30\%$ was 100% (13/13). From various types of TLI it was noted that TL-201 did not accumulate uniformly over lung area and usually maximal TL-201 lung uptake was noted at basal zone of right lung. TL-201 lung uptake in the upper zone of lung might increase according to hemodynamic deterioration.

TLI were easily obtained after routine TL-201 myocardial imagings, i.e. an additional imaging yielded clinically useful information for separating high and low risk groups of pts with AMI.

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USEFULNESS OF THE EXERCISE-INDUCED PULMONARY Tc-99m RBC RADIOACTIVITY TO THE EVALUATION OF THE CARDIAC PERFORMANCE. H.Tomiya, Y.Yamazaki, M.Nakamura, T.Yamamoto, T.Fukuda, Y.Furukawa, Y.Udaka, M.Shimizu, T.Saito and Y.Inagaki. The 3rd Dept. of Int. Med., Chiba Univ. School of Med. N.Arimizu. Dept. of Radiology Chiba Univ. School of Med. K.Akezuma. Dept. of Radiology Chiba Univ. Hosp. T.Okubo and T.Kawamoto. Toshiba Medical.

The change of pulmonary blood volume (PBV) was estimated during the ergometric multi-stage exercise test in supine position from the radioactivity of the systemically administered Tc-99m labeled RBC. 5 normals and 9 patients with old anterior myocardial infarction (OMI) were studied. ROI was adjusted on the left whole lung field. Left ventricular ejection fraction (EF) was obtained by multi-gate method. Results: (1) EF at the peak exercise increased in normal group and decreased in OMI group, (2) increase of the PBV during exercise was larger in OMI group ($9.93 \pm 2.51\%$) than in normal group ($3.16 \pm 2.03\%$). We suggested that the exercise-induced pulmonary Tc-99m RBC radioactivity was useful for evaluation of the cardiac performance in OMI.

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THE EVALUATION OF CARDIAC FUNCTION IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION (AMI) WITH RADIO-ISOTOPE METHOD IN ICU. J.Yamazaki, H.Osawa, Y.Kawamura, I.Okuzumi, T.Muto, H.Nakano, M.Wakakura, T.Mgrishita, T.Saito, G.Kamijima, Y.Sasaki. 1st Dep. of Int. Med., 1) ICU, 2) Radiol., Toho Univ., Tokyo.

The effect of therapy in patients with AMI was assessed in 52 patients by analysis of Tl-201 myocardial scintigram and Tc-99m HSA gated pool image in a licensed nuclear medicine facility in ICU. All patients were classified into two groups as control patients untreated with urokinase (UK) and patients treated with UK. Between these groups, cardiac function and Tl-201 defect ratio were compared. Tl-201 defect ratio was obtained by circumferential profile method. Significant correlation ($r = -0.67$) was found between LVEF and Tl-201 defect ratio. In patients with antero-septal (A/S) AMI, the UK group demonstrated significantly reduced LVEF and Tl-201 defect ratio as compared with the control group. Patients with A/S AMI showed the reduction of LVEF, patients with inferior AMI showed the reduction of RVEF in acute period. We conclude that radio-isotope method in ICU can be helpful to know the cardiac function, the effect of therapy and the prognosis in patients with AMI.