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HUMAN MYOCARDIAL IMAGING WITH TC-99m ISONITRILE. N.Tamaki, K.A.McKusick, B.L. Holman, P.Rigo, V.Sporn, A.G.Jones, A. Davison, G.DuPras, R.Taillefer. Harvard Medical School, Boston and Dupont Diagnostic Imaging Division, N.Billerica, MA, U.S.A.

Tc-99m isonitriles each demonstrate different kinetics in lung, liver and heart. Tc-tertiary butyl isonitrile (TBI) has high liver uptake, and high lung uptake with clearance that may obscure interpretation. Tc-carbomethoxyl isopropyl isonitrile (CPI) has less lung and liver uptake than TBI, and clears from liver and heart where TBI does not.

In swine, Tc-methoxy isobutyl isonitrile (MIBI) has less initial lung and liver uptake and more rapid biliary clearance, but slower heart washout than CPI. Kinetics of MIBI were studied in 4 adult volunteers and clinical potential was assessed in 10 CAD patients with exercise Tl-201 ischemia who were reexercised to same level and imaged in the same manner after 4-20mCi MIBI at peak exercise and at rest.

Blood level 5 min. was 4.5% after exercise and 4.9% at rest. Urine clearance 0-2 hrs was 18%. Low lung uptake, rapid biliary excretion, and good heart to lung contrast 3.3/1 without redistribution was seen. MIBI/Tl interpretation was same in 9 patients, but not in 1 who, put on beta blockade between Tl and MIBI stress tests. Because of the kinetics MIBI has unique characteristics appropriate for myocardial imaging in detection and management of CAD.

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EVALUATION OF CHANGES OF REGIONAL RADIOACTIVITY IN MYOCARDIUM BY STRESS Tl-201 SCINTIGRAPHY IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY. S.Suzuki, K.Owada, T.Saito, M.Sato, Z.Yamada, E.Katouno, A.Fujino, M.Komatsu, K.Ono, T.Uchida and S.Kariyone. First Department of Internal Medicine, Fukushima Medical College.

Defect of image and redistribution in its area are reported in patients with Hypertrophic Cardiomyopathy (HCM) on exercise stress Tl-201 scintigraphy. Serial images according to time were studied in 5 cases of HCM, 6 normal control (C) and 11 cases of coronary artery diseases (CAD). Uptake Ratio (UR) is defined as the radioactivity 10 matrix (64X64) in anteroapical, inferior and posterolateral region against total injected radioactivity at first pass on chest after Tl-201 injection. The serial images were obtained in LAO view at 5, 15, 30, 60 and 120 minutes after Tl-201 injection at one minute before stop exercise. Serial UR of thickened region (HCM) were between UR(C) and UR(CAD). Decreasing gradient of UR (HCM) was smaller than UR(C) and was similar to UR(CAD). During 30 min after exercise, differences of UR (HCM) were larger than at 60 and 120 min. These results may suggest that kinetics of Tl-201 after exercise in HCM is different from normal myocardium and that of CAD.

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EVALUATION OF EXERCISE-INDUCED ST DEPRESSION IN NON-INFARCT-RELATED LEADS IN OLD MYOCARDIAL INFARCTION WITH RIGHT CORONARY ARTERY DISEASE. T.Ohkubo, S.Takaoka, H.Tabuchi, K.Nakamura and S.Hashimoto. 2nd Dept of Int Med, Kagoshima Univ, Kagoshima.

To differentiate single from multi vessel disease of inferior myocardial infarction due to right coronary artery disease with exercise-induced precordial ST segment depression. 28 patients were performed stress Tl-201 myocardial imaging and radionuclide ventriculography. Patients were divided into 2 groups. Group I consists of 18 patients without significant stenosis at left coronary artery (LAD), and group II, 10 patients with significant stenosis at LAD.

In radionuclide ventriculography, no significant difference was found on LV ejection fraction at rest between two groups, however it showed significant decrease in group II compared to group I, during exercise. (47 ± 7.6 vs 39.1 ± 14.3 $P < 0.05$)

On Tl-201 myocardial imaging, a reversible defect in the myocardium distant from the infarcted area occurred significantly more in group II patients than in group I patients. (70% vs 0% , $P < 0.01$)

Although both exercise ECG and exercise radionuclide ventriculography had limited clinical value for predicting multivessel disease, stress Tl-201 myocardial imaging is highly accurate for predicting multivessel disease.

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CORRELATION BETWEEN EXERCISE INDUCED ST-T CHANGE AND RESIDUAL MYOCARDIAL ISCHEMIA: QUANTITATIVE ASSESSMENT BY CIRCUMFERENTIAL PROFILE ANALYSIS. T.Shimonagata, T.Nishimura, T.Uehara, K.Hayashida, S.Hamada, K.Kihara, M.Saito and T.Sumiyoshi. National Cardiovascular Center, Suita, Osaka.

Stress thallium scan was performed in 67 patients with prior myocardial infarction (LAD single vessel disease) and quantitative assessment of myocardial ischemia was generated by circumferential profile analysis. Exercise induced ST-T change was compared with thallium ischemic score (TIS) derived from circumferential profile analysis to evaluate how ST-T change reflect residual myocardial ischemia. TIS was derived by summing the area between the initial and 4 hr redistribution profiles for each of three projections (ANT, LAO 45, 70). ST-T change were divided into five groups; concave ST elevation with prominent T wave (Group 1), convex ST elevation (Group 2) in leads of infarcted area, horizontal or sagging ST depression (Group 3), slow rising ST depression (Group 4) in other precordial leads and no ST-T change (Group 5). TIS was 70 ± 34 , 32 ± 14 ($p < 0.01$) for group 1, 2 and 78 ± 39 , 40 ± 15 ($p < 0.05$) for group 3, 4, respectively. On the other hand, angiographic dyskinesis was 17% , 52% for group 1, 2 and 10% , 17% for group 3, 4, respectively. In conclusion, not only ST depression in precordial leads but also concave ST elevation with prominent tall T wave reflect residual myocardial ischemia.