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INDEPENDENCY OF REGIONAL MYOCARDIAL THALLIUM CLEARANCE ON CORONARY BLOOD FLOW

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To study whether regional(r) myocardial(M) Tl clearance(Cr) is dependent on coronary blood flow(CBF) or not, 8 patients with normal coronary arteriograms were studied on r-M Tl kinetics counting of sequential Tl activity in the myocardium at the time of 15, 30, 45, 60, 90, 120, 180 and 240 minutes(min) after Tl injection on LAO myocardial images.

High rate(150/min) right ventricular pacing (Pc) was done on all patients with duration of 4 min and Tl was injected intravenously 1 min before the termination of Pc. Results are as follows; compared with posterolateral (PL) Tl kinetics, 1)initial Tl uptake was decreased in the interventricular septum(IVS) (1.00 vs 0.80±0.15, p<0.05). 2)washout rate(4hrs) of IVS was decreased(40±11 vs 26±14%, p<0.001). 3)time to peak counts of IVS was prolonged(24±14 vs 53±21min, p<0.02). 4)time constant of exponential reduction phase of Tl time activity curves were not different between in PL and in IVS(6.3±1.5 vs 7.0±2.7 hrs, NS). These results suggest that r-M Tl initial uptake and Cr in the exponential reduction phase may be dependent on r-CBF, but r-M Tl kinetics during the saturation phase (between initial uptake and the beginning of exponential reduction) may not be dependent on r-CBF but dependent on initial myocardial Tl uptake.

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MYOCARDIAL SPECT AND RADIONUCLIDE CARDIOANGIOGRAPHY IN DUCHENNE MUSCULAR DYSTROPHY. S.Nagamachi, M.Kishi, K.Inoue. Miyazaki Higashi Byoin National Sanatorium, Miyazaki. S.Jnnouchi, S.Ono, H.Hoshi, K.Watanabe. Miyazaki Medical College, Miyazaki.

The myocardial muscle involvement in patients with cardiomyopathy in Duchenne type progressive muscular dystrophy (DMD) was evaluated by radionuclide methods. Cases subjected to study were 9 patients with DMD. All patients were studied twice from 1984 to 1986 (The second examinations were 2 years after the first examinations.). Equipment used was a rotating gamma camera system (ZLC 7500 and Scintipac 70A). Tl-201 myocardial uptake ratio (MUR) and left ventricular muscle volume (LVMV) were calculated using the results obtained by Tl-201 myocardial SPECT and phantom studies. Cardiac index (CI), stroke volume index (SVI) and ejection fraction (EF) were obtained by radionuclide cardioangiography. The hypoperfusion areas of the left ventricular muscle were apt to enlarge with ages. MUR and LVMV did not change with age remarkably. CI, SVI and EF were apt to decrease with ages. Tl-201 myocardial SPECT and radionuclide cardioangiography seemed to be useful method to evaluate myocardial muscle involvement in patients with DMD.

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EVALUATION OF ADRIAMYCIN CARDIOTOXICITY BY NUCLEAR CARDIAC IMAGING. S. Wakasugi, Y. Hasegawa, S. Nakano. Division of Cardiology and Nuclear Medicine, The Center for Adult Diseases, Osaka.

The usefulness of Tl-201 myocardial scintigraphy and radionuclide angiocardio-graphy for detection of Adriamycin (ADR) cardiotoxicity was evaluated in 28 patients receiving ADR. Left ventricular ejection fraction (LVEF) measured by quantitative radionuclide angiocardio-graphy using the gated blood pool method had a weak but statistically significant inverse linear correlation with cumulative ADR dose and showed abnormal value (<55%) in 31% of 39 measurements of 28 patients. Abnormal low uptake in Tl-201 myocardial scintigraphy was found in 88% of 40 scintigrams of 28 patients, and indicated more high frequency compared to the frequency of appearance of abnormal LVEF. There was no linear correlation between Tl-201 defect score and cumulative ADR dose. However, in individual cases Tl-201 defect score indicated dose dependent increase during receiving ADR and serial improvement after discontinuation of ADR therapy. We conclude that Tl-201 myocardial scintigraphy and radionuclide angiocardio-graphy can noninvasively detect ADR cardiotoxicity and may allow identification of patients at risk for development of ADR cardiomyopathy.

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REVERSE REDISTRIBUTION AND FAST WASHOUT IN Tl-201 STRESS MYOCARDIAL PERFUSION SCAN. M.Taniguchi, K.Nakajima, H.Bunko, Y.Shiire, I.Nanbu, J.Taki, N.Tonami, K.Hisada. Department of Nuclear Medicine, Kanazawa University school of Medicine, Kanazawa.

We investigated and reported 32 reverse redistribution(RR) and 6 fast washout(FW) patients. The frequency of RR was about 3%(32/1000) of Tl-201 stress myocardial perfusion scan by visual judgement of independent two observers, but it became 0.6% by quantitative analysis using Bull's-eye map where the increase in more than 10% of extent score and/or more than 10 points of severity score in the delayed image map compared to early image map were judged RR positive. The relation between the location of RR and coronary artery stenosis by contrast angiography, the location of aorto-coronary bypass, hypertension, PVC, et al. was unclear. (co-incidence was 1/6, 1/6, 1/6, 0/6 respectively) In 32 myocardial infarction, FW was found in 6 patient by study of washout-rate using Bull's-eye map. Between FW patients and non-FW patients, there were no significant differences in the size of infarction, cardiac function (cardiac output, ejection fraction, left ventricular end-diastolic volume), severity of coronary artery stenosis and the time interval from onset of infarction. We concluded that RR and FW had to be diagnosed carefully because the quantitative criteria was not established yet, and these were hard to explain mechanisms clinically.