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DYNAMIC OF REDISTRIBUTION ON STRESS MYOCARDIAL SCINTIGRAPHY. --ISCHEMIC HEART DISEASE--

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We examined the change of proper myocardial count on redistribution of ischemic heart disease. It was compared with the grade of coronary artery stenosis,the existance of collateral circulation, and the appearance time of redistribution. Redistributions were seen in 16 segments of 11 cases until 2.5 hours after exercise. The proper myocardial count(Cmt) was gained from next formula[Cmt = Ct - BG, Ct: Raw Myocardial Count, BG: Background Count,]. Cmt was collected about 4 views at immediately(Cm0), 1 hour(Cm1) and 2.5 hours(Cm2.5) after exercise. Redistributions were seen in 10 segments at 1 hour and 6 segments at 2.5 hours after exercise.In normal regions, Cm1/Cm0 and Cm2.5/Cm0 were 0.87±0.12 and 0.70±0.17,respectively. In regions of redistribution, they increased to 1.04±0.16 ($P<0.01$) and 0.86±0.16($P<0.02$),respectively. We thought that the observation of redistribution was enough until 2.5 hours after exercise. Redistribution appeared early in case of less severe stenosis or more developing collateral circulation.

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SIGNIFICANCE OF REGIONAL MYOCARDIAL WASHOUT RATE OF Tl-201.

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To evaluate the significance of myocardial washout rate of Tl-201,stress-redistribution Tl-201 magnified scintigrams were obtained in 58 patients(pts)with coronary artery disease(CAD). Normalized washout profile method(NWM) had higher sensitivity for detection of CAD(71%,53% and 67% for LAD,RCA and LCX),compared to not-normalized washout profile method. Initial distribution profile method(IDM) had the best sensitivity for LAD and RCA(90% and 63%),but NWM had the best sensitivity for LCX lesion. Prediction of three-vessel disease in pts with myocardial infarction was 65% by IDM, and significantly improved(88%)by combination of IDM and NWM. 80% of 74 ischemic segments with initial defect had redistribution index(RI) more than 30%, but only 59% of those segments showed abnormal slow washout (SW). The significant SW was not necessarily found in ischemic segments. 24 ischemic segments had SW without initial defect. Abnormal SW were recognized in 30% of ischemic or infarct segments which had RI less than 30% and slight redistribution or persistent defect. These data indicate that washout rate has significant value not dependent on initial distribution and redistribution.

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ASSESSMENT OF INDIVIDUAL CORONARY ARTERY LESION BY THE Tl-201 WASH-OUT RATE PROFILE IN EXERCISE MYOCARDIAL SCINTIGRAPHY.

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In order to evaluate the diagnostic accuracy of the regional Tl-201 wash-out rate in exercise study for detection of individual coronary artery lesion(CAL), 11 normals and 33 patients with CAL underwent myocardial scintigraphy immediately after and 2.5 hours after symptom-limited maximal exercise. Tl-201 distribution profile(DP) at peak exercise and the percent wash-out rate profile(WP) were determined quantitatively by computer processing. If profiles deviate below the lower limits determined in 10 normal volunteers from the 2 standard deviation of these two profiles, we considered them as abnormal. Results obtained in the left anterior descending(LAD), left circumflex(LCX) and right(RCA) coronary arteries were as follows:

		sensitivity	specificity	accuracy
LAD	WP	96%	100%	95%
	DP	81%	92%	84%
LCX	WP	89%	80%	84%
	DP	79%	60%	68%
RCA	WP	80%	54%	66%
	DP	75%	67%	70%

These results suggest that the regional Tl-201 wash-out rate(WP) is highly sensitive in detecting the individual coronary lesion.

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THE DIAGNOSTIC EFFICACY OF RADIONUCLIDE METHOD FOR MYOCARCIAL INFARCTION.

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To evaluate the diagnostic efficacy of radionuclide methods for myocardial infarction(MI), Tl-201 myocardial scan, multigated pool scan and ECG were examined in 52 patients who were confirmed their diagnoses by left ventriculography(LVG) and coronary angiography(CAG). They were 25 MI, 25 angina pectoris and 2 cardiomyopathy. Sensitivity in the diagnosis of MI was 84% in Tl-201 scan, 88% in wall motion study, 96% in wall motion study with phase analysis and 64% in ECG. Sensitivity in the diagnosis of LV asynergy was 74% in Tl-201 scan, 71% in wall motion study and 79% in wall motion with phase study. Furthermore, the diagnostic efficacy of radionuclide methods and ECG was analyzed with ROC analysis. The ROC curve of multigated pool scan showed higher efficacy than those of Tl-201 scan and ECG in the diagnosis of MI. However, the ROC curve of wall motion study combined with phase analysis revealed the best diagnostic efficacy in the diagnosis of MI and also in the diagnosis of LV asynergy. In conclusion, the wall motion study with phase analysis is very useful noninvasive method in the diagnosis of MI.