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CLINICAL STUDY ON THE REGIONAL MYOCARDIAL THALLIUM-201 CLEARANCE—THE RELATION WITH WASHOUT RATE TO LOAD OF EXERCISE—

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It has been reported that the washout rate (WR) in the ischemic region is decreased compared to that in normal region in the exercise Tl-201 myocardial scintigram. But, the WR is affected by the load, so, the criterion with consideration for load of exercise is neccessory to evaluate the regional myocardial perfusion abnormality by WR in the exercise Tl-201 scintigram under the different load. We examined the relation between the WR for 3 hours and the parameters indicating the load(pressure rate product(PRP) and heart rate(HR)) in 13 normals, 20 angina pectoris(AP) with one vessel lesion and 16 old myocardial infarction without AP. The correlation between WR and PRP or HR during exercise was rough in 49 normal regions , but the WR in 49 normal and 20 ischemic regions under the various load was clearly separated by the identical line: $WR=794\times10^{-5}\times PRP - 6.7$. Among these 69 regions, overlap was only one case.

	r	p<
PRP(Ex)	0.4018	0.01
HR(Ex)	0.3568	0.05
% of maxHR	0.3447	0.05
⊿ PRP(Ex-Rest)	0.3013	0.05
⊿ HR(Ex-Rest)	0.1795	NS

n=49(normal region)

Left table showed the relation between the WR for 3 hours in the exercise Tl-201 myocardial scintigram and parameters indicating the load.

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CANGES OF REGIONAL RADIOACTIVITY IN MYOCARDIUM ACCORDING TO TIME ON EXERCISE STRESS THALLIUM-201 SCINTIGRAPHY IN ISCHEMIC HEART DISEASES.

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In order to evaluate sequential distribution of Thallium-201 in regional ischemic myocardium,index of exercise stress scintigraphy was studied in 7 patients undergoing coronary angiography. Uptake Ratio(UR),namely radioactivity per 10 matrix in anteroseptal region,inferior wall or posterior wall against to total injected radioactivity were used as indices.Sequential images were obtained in LAO view at 5,15,30,60 and 120 minites after the Thallium-201 injection during exercise.In normal area,UR was 0.23 ± 0.04(5 min),0.22 ± 0.04(15 min),0.22 ± 0.04(30 min), 0.20 ± 0.03(60 min),0.16 ± 0.04(120 min), respectively.UR of ischemic area was between these in normal area and infarction area.Decreasing gradient of UR of ischemic area was smaller than these of normal area and infarction area.UR in ischemic area indicated relative coronary blood flow insufficiency at exercise image.It is concluded that sequential UR was useful index to evaluate spatial and temporal uptake and washout of Thallium-201 on regional myocardium.

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VALUE OF Tl-201 WASHOUT RATE IN EXERCISE MYOCARDIAL SCINTIGRAMS.

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To search whether or not Tl-201 washout rate can detect coronary artery disease(CAD) and assess severity of CAD without perfusion defect analysis, 14 pts with angiographically normal coronary arteries(N) and 40 pts with isolated LAD disease(stenosis of 50% or greater) were underwent exercise Tl-201 myocardial scintigrams. Serial scintigrams were obtained initially and 3 hrs after Tl-Cl injection from 4 views. For segmental analysis, cardiac images were divided into 8 segments for each view. Lower limits of normal of segmental WR were determined from mean minus 2SD of N group. Pts with CAD were divided into 2 groups acording to the severity of coronary stenosis, as A group(50%-75% stenosis) and B group(greater than 75%). The sensitivity of WR criteria to detect CAD was 77% in A group and 93% in B group.There was a significant difference among these groups of N,A,and B in segmental WR. WR of N,A,and B were 0.53+0.05, 0.47+0.07,and 0.36+0.04, respectively.

Thus, WR is useful not only to detect CAD but also to assess severity of CAD.

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PATHOGENESIS PRESENTED SPECIFIC TL-201 KINETICS OF MYOCARDIUM IN STRESS TL-201 ECT.

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Negative washout rate (WOR) may be demonstrated in the ischemic region of the heart by stress Tl-201 myocardial scintigraphy. This finding is often observed in variant angina pectoris (AP) in spasm and effort AP with collateral vessels. This paper attempts to differentiate these two pathogeneses by stress Tl-201 emission tomogrpahy.

The study deals with 23 patients ; 10 variant AP and 13 effort AP with collaterals. All 23 patients underwent coronary cine angiography,left ventriculography and stress Tl-201 emission tomography. Tl-201 kinetics of variant AP showed decreased uptake only in the localized area, followed by progressive increase of local accumulation of the isotope, whereas effort AP with collaterals revealed abnormal Tl-201 kinetics diffusely in the myocardium in addition to similar Tl-201 kinetics to variant AP.