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DIAGNOSTIC SIGNIFICANCE OF WASHOUT FOR TL-201 MYOCARDIAL SPECT.

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We performed Tl-201 myocardial SPECT in 33 patients with ischemic heart disease (16 with angina pectoris (AP) and 17 with old myocardial infarction (OMI)) to examine clinical significance and diagnostic efficiency of washout. Dynamic SPECT was also performed. Multistep exercise stress using ergometer was performed and SPECT data were obtained at 10min. and 3hrs. after i.v. injection of Tl-201 at peak exercise. Transverse, Vertical long axis and Short axis images were reconstructed. Early score (E-R) and washout score (W-R) were computed in each coronary artery area. Character of W-R was classified in the infarcted and in the ischemic lesion.

There were following tendencies compared E-R with W-R:

1. AP (SVD) had no tendency in both E-R and W-R. In AP (MVD) and AP with OMI, W-R was higher than E-R and in these cases W-R was useful for diagnosis. In OMI E-R was higher than W-R.
 2. In each group, detectability of RCA lesion was low. This was thought to be due to 1) criteria of score and 2) location and size of predetermined RCA region.
 3. Course of washout early after exercise could be followed by dynamic SPECT.
- In conclusion, evaluation of W-R in conjunction with E-R was useful for detection and characterization of ischemic heart diseases.

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QUANTITATIVE CORRELATION BETWEEN THALLIUM-201 MYOCARDIAL EMISSION COMPUTED TOMOGRAPHY AND LEFT VENTRICULOGRAPHY IN OLD MYOCARDIAL INFARCTION.

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The clinical usefulness of quantitative analysis of myocardial emission computed tomographic images (ECT) was evaluated in 52 patients with old myocardial infarction and 20 healthy volunteers.

Circumferential profile analysis was performed in 5 shortaxial images. Mean regional percent Tl uptakes were calculated from 3 shortaxial images. The percent infarct size was evaluated as percentage of the Tl defect to the total left ventricular myocardium. Left ventricular hemiaxial shortening in LVG was calculated at 3 ventricular levels corresponding to the 3 shortaxial images. A mean value of all hemiaxial shortening in RAO and LAO projections (total hemiaxial shortening) was obtained.

There was a significant correlation between mean percent Tl uptake and percent hemiaxial shortening ($r=0.43-0.65$). Percent infarct size obtained with ECT significantly correlated with total hemiaxial shortening ($r=-0.69$).

It was concluded that there was a close relationship between the size of infarcted myocardium evaluated by ECT and either of the regional or global left ventricular dysfunction assessed by LVG.

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AN APPLICATION OF HYPERVENTILATION TL-201 MYOCARDIAL SCINTIGRAPHY FOR DIAGNOSIS OF VASOSPASTIC ANGINA. T.Imamura, Y.Koiwaya, K.Tanaka, S.Jinnouchi*, H.Hoshi* and K.Watanabe*. First Department of Internal Medicine and Department of Radiology*, Miyazaki Medical College, Miyazaki.

To evaluate the effectiveness of hyperventilation (HV) Tl-201 myocardial scintigraphy for diagnosis (Dx) of vasospastic angina, the present study was performed in 6 patients (pts) in whom chest pain was repeatedly induced after HV. In all the pts, the occurrence of coronary spasm after HV was confirmed later by coronary angiography. HV was performed for 6 min, and a dose of 2mCi of Tl-201 was injected when chest pain occurred. Planar and single photon emission computed tomographic (SPECT) images were obtained just after chest pain and 4 hrs later. Plasma pH shifted from 7.38 to 7.57, and chest pain occurred 0-370 sec (average 110 sec) after HV, when ST-segment elevation was shown in 5 out of 6 pts, however no ischemic ECG change was demonstrated in 1 pt. On the other hand, HV Tl-201 scintigraphy demonstrated perfusion defect in all the pts. We concluded that HV Tl-201 scintigraphy is an effective noninvasive technique in Dx of vasospastic angina in certain pts, which allows to show transient ischemic sites. HV Tl-201 SPECT may provide further quantitative assessment of ischemic area.

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EVALUATION OF PERI-INFARCTIONAL ISCHEMIA BY THALLIUM-201 EXERCISE EMISSION COMPUTED TOMOGRAPHY (ECT).

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Twenty-seven patients (pts) (mean age=55±8 yrs) with anterior myocardial infarction involving only the left anterior descending artery were evaluated the periinfarctional ischemia (PII) by Tl-201 exercise (EX) ECT. Graded ergometer Ex test (25-W increments) and Ex ECT imaging were performed. Defects of ECT were scored by the scoring method as previously reported in all transaxial, sagittal and frontal slices. Reperfused area after 2 hours of Ex was thought to be PII. Regional EF (r-EF) was calculated by segmental area method. Pts were grouped into 2, group (gr) A: total or partial occlusion with severe delay (10 pts) on coronary arteriography, gr B: partial occlusion without delay (17 pts). Results were as follows: 1. PII was more frequently observed in gr A than gr B ($p<0.02$), 2. PII was hardly seen in cases with low r-EF less than 15%, but no statistical difference in r-EF between gr A and gr B existed, 3. PII was larger in pts with small defects, and it showed close negative correlation between the defect score at rest and PII/persistent defect size ($r=0.88$). Thus, PII was easily detected in cases with coronary artery disease with high-grade obstruction and with the less damaged myocardium.