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MEASUREMENT OF REGIONAL MYOCARDIAL UPTAKE OF TL-201 BY ECT. T.Ito,K.Takeda,H.Maeda,T.Nakagawa, N.Yamaguchi,T.Kitano,M.Hamada,Y.Futagami,M.Kakegawa and S.Matsui. Mie University School of Medicine. Tsu. Toshiba Co. Nasu.

Regional myocardial uptake of Tl-201(RMU) was measured by ECT as a means of quantitative estimation of regional myocardial blood flow for individual coronary arteries (RCA, LAD and LCX).

7 normals and 35 cases with coronary artery disease, 20 of which have more than 75% stenosis in a single vessel and 15 in multiple vessels, were studied. A dose of 2.5mCi of Tl-201 was rapidly injected intravenously into the patients with submaximal exercise loading by bicycle ergometer. 10 minutes after tracer injection, ECT data were acquired and tomographic sections oriented perpendicular and parallel to the long axis of left ventricle were reconstructed with attenuation correction.

Attenuation corrected mean myocardial counts per pixel for RCA, LAD and LCX regions were obtained by ROI selection on myocardial ECT images and divided by the injected counts measured by ECT.

Normal RMU values for RCA, LAD and LCX regions were $0.97\pm0.18\times10^{-4}$, $1.10\pm0.20\times10^{-4}$ and $1.10\pm0.22\times10^{-4}$ respectively. In patients with LAD disease, either single- or multi-vessels disease, RMU was significantly decreased not only in LAD region but also in RCA and LCX regions. By contrast, in patients with single RCA desease, RMU was significantly decreased only in RCA region, tending to be increased in LAD and LCX regions. The explanation of these unexpected pathophysiology remains to be elucidated.

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LOCATION AND SIZE OF MYOCARDIAL INFARCTION BY THALLIUM 201 EMISSION COMPUTED TOMOGRAM M.Ohyanagi,Y.Todo,N.Yashutomi,Y.Tsuda, S.Mori,N.Komasa,T.Yamamoto,Y.Kawai,T.Iwasaki,M.Fukuchi,1st dep.of Medicine and RI center,Hyogo callege of Medicine,Nishinomiya

The location and size of myocardial infarction by use of Tl 201 Emission Computed Tomogram (ECT) were compared with coronary angiogram(CAG) and left ventriculogram(LCG). ECT,CAG and LVG were carried out one month after the onset of myocardial infarction. From the long and short axis image of the left ventricle in the ECT,the location and size of infarction was decided. On the short axis image in the papillary muscle level the extent which was defective in uptake of thallium was estimated as a percentage. The "% defect" compared with the ejection fraction of LVG. The determination of the size and location by ECT did correspond well with the CAG and LVG.This finding was particularly noticeable in the obstruction and stenosis of trunk of coronary arteries, but not in the branches (diagnal and obtuse marginal branches).Between % defect and the EF of LVG a significant correlation was shown,so that the ECT is thought to be an extremely useful method for determination of location and size of myocardial infarction.

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STUDIES ON THE QUANTIFYING OF THE INFARCT SIZE BY 201Tl MYOCARDIAL ECT. TWatanabe,N.Akaba,Y.Naito,T.Goto,N.Ikebe,S.Abe,Y.Nagai, I.Yamasawa,C.Ibukiyama,H.Murayama* The 2nd Dept. of Intern. Med. & Radiol* Tokyo Med. College.

The infarct size(%Defect) was evaluated by 201Tl myocardial ECT quantitatively, and was compared with the RI equilibrium method(EQ), left ventriculoangiography(LVG) and exercise ergometer test. ECT was taken by the 180° range method with 30 second duration at 5°. %Defect was calculated from the Transverse, Coronal and Sagital plane as the defect ratio to the whole heart size. LVEF was calculated by EQ. There was a significant correration between the LVEF and %Defect(r=0.75) %AS(Asynergy) was derived from RAO & LAO projection of LVG as the ratio of abnormal wall motion at the end diastric period to the whole cardiac contour. %AS and %Defect had poor correlation only with RAO projection(r= 0.57), but it was highly correlated when compared both projection(r=0.80).%Defect and Max Vo2, obteined from the Max exercise test, was not significantly correlated. We concluded that quantifying of infarct size by 201Tl ECT was significantly correlated with the LV function at rest and abnormal wall motion.

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QUANTITATIVE ANALYSIS OF OLD MYOCARDIAL INFARCTION WITH EMISSION COMPUTED TOMOGRAPHY. H.Matsushima, K.Mochizuki, H. Kida, and F.Kasahara. Tokoname City Hospital. M.Okada, N.Kawai, T.Kondo, H.Hayashi, and I.Sotobata. Nagoya University School of Med. Nagoya. J.Tsuzuki. Daido Hospital Nagoya.

The clinical usefulness of quantitative analysis of myocardial emission computed tomographic (ECT) images was evaluated in 30 patients with old myocardial infarction.

The patient was considered to have a perfusion defect, if the patient's circumferential profile curve crosses below the lower limit of normal curves obtained on 10 ostensibly healthy volunteers. Seven scintigraphic segments in a central long-axial or 3 central shortaxial images were assigned to 7 respective left ventriculographic wall segments, and the ratio of thallium (Tl) defect to total myocardium in 6 consecutive shortaxial images was expressed as the percent Tl defect.

Diagnostic accuracy of ECT for detection of akinetic or dyskinetic LV wall segments was 83% in anterior, 78% in apical, 87% in septal, 78% in inferior and 70% in posterior walls. Percent Tl defect correlated significantly with percent abnormally contracting segments determined angiographically (r=0.53).

It was concluded that the quantitative analysis of ECT was a useful means in evaluating the location and size of old myocardial infarction.