

319

POSITRON CT IMAGES WITH N-13 AMMONIA IN CARDIO MYOPATHY.

T.Himi, K.Yoshida, M.Syukuya, Y.Masuda, Y.Inagaki, T.Yamazaki* and Y.Tateno*. The Third Department of Internal Medicine Chiba University School of Medicine, *National Institute of Radiological Sciences, Chiba.

Positron CT was performed after the intravenous injection of N-13 ammonia in 10 patients with hypertrophic cardiomyopathy (HCM), 7 patients with dilated cardiomyopathy (DCM) and 3 normals. Three slices in the midventricular level were selected in each patient for the study. Thresholds at 70% and 80% of maximal myocardial radioactivity in each slice were arbitrarily defined to assess heterogeneity of accumulation of N-13 ammonia throughout the myocardium. Patients with HCM revealed the hypertrophic myocardium of left ventricle associated with concomitant visualization of right ventricular myocardium. Patients with DCM revealed the enlarged left ventricle without left ventricular hypertrophy. Besides that, patients with DCM more frequently exhibited noncontiguous irregular shaped regions of accumulations of N-13 ammonia within myocardium than other subjects examined in this study.

320

MEASUREMENT OF REGIONAL MYOCARDIAL BLOOD FLOW AND AMMONIA EXTRACTION FRACTION WITH N-13-NH₃ DYNAMIC POSITRON CT.

M.Endo, T.Iinuma, T.Yamasaki, Y.Tateno, K.Yoshida, T.Himi, Y.Masuda and Y.Inagaki.

Regional myocardial blood flow (RMBF) can be evaluated by analyzing (1) wash out process after injection of ¹³³Xe into coronary artery, or (2) extraction and trap of ¹³N-NH₃ or ⁸²Rb. But these are highly invasive methods, which need insertion of a catheter into artery to inject a tracer or withdraw blood at a constant rate. In order to develop a non-invasive method, we have tried to measure RMBF and extraction fraction of ammonia with dynamic positron CT after venous injection of ¹³N-NH₃. Serial 6-second PCT scans for two minutes (20 scans) were performed after a bolus venous injection of ¹³N-NH₃ (5-10 mCi) water solution. The RMBF and extraction fraction were calculated from time-activity curves of myocardium and blood pool (atrium), using a first-pass model proposed by Mullani et al. Our preliminary results showed a good agreement with values reported in other literatures.

321

CLINICAL USEFULNESS OF SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY USING THALLIUM-201 (²⁰¹Tl-SPECT) IN THE ACUTE PHASE OF MYOCARDIAL INFARCTION (MI)

Koichi Setsuta, Yoshifumi Tomita, Hiromu Tei, Kazuo Munakata, Hirokazu Hayakawa, Keiji Tanaka, Takao Kato, Teruo Takano, Ryoichi Saito, Atsushi Okuyama, Fuminori Hikita, Yoshihiko Yamagishi and Kin'ichi Ebata. Nippon Medical School.

In order to clarify the clinical usefulness of ²⁰¹Tl-SPECT in the acute phase of myocardial infarction, 42 patients were studied. 20 patients were treated with ²⁰¹Tl-SPECT within 3 days after the onset of MI (group A) and 22 patients were treated from 4 days up to 3 weeks (group B). We calculated SPECT score (SS) by visual evaluation (cold 5, severe low 4, low 3, suspectable low 2, normal 1) of about 28 SPECT pictures showing the coronal and sagittal planes and also compared SS with other parameters (Killip classification, Forrester hemodynamic subset, CI, PCWP, Cardiac enzymes, LVEF). As a result, 1) SS of the patients with Forrester III or IV proved to be significantly higher than that of Forrester I or II in both group A and B. 2) There were significant correlation between SS and max GOT, and max LDH in both groups, SS and max CPK in group A only. 3) There were also significant correlations between SS and LVEF calculated by ^{99m}Tc-radiionuclide ventriculography in both groups, and closed correlation in group A. It was concluded that SS might reflect the infarct size and severity of MI and be useful for determination of LV function, especially in group A.

322

COMPARISON BETWEEN Tl-201 MYOCARDIAL SCINTIGRAM AND TWO DIMENSIONAL ECHOCARDIOGRAM

T.Muto, J.Yamazaki, H.Osawa, R.Aoki, T.Uchi, Y.Kawamura, K.Okuzumi, H.Nakano, M.Wakakura, T.Morishita, Y.Sasaki¹⁾. 1st Dep. of Int. Med., 1)Radiol., Toho Univ., Tokyo.

The comparison between infarct size of Tl-201 myocardial scintigram (Tl scinti) and wall motion of two dimensional echocardiogram (2DE) were performed in 30 patients with AMI. Two examinations were studied within 1 - 5 days after the onset of AMI. The estimation of defect score from Tl scinti were made using circumferential profile curve. Akinetic ratio was obtained from 2DE by measuring akinetic length and end diastolic length. In patients with antero-septal infarction, correlation between defect score (LAO) and akinetic ratio (Ap4C) was $r=0.800$ ($P<0.01$), between defect score (ANT+LAT) and akinetic ratio (ApRAO) was $r=0.758$ ($P<0.05$), between defect angle (LAO) and akinetic ratio (Ap4C) was $r=0.539$ ($P<0.05$). In patients with inferior or posterior infarction, correlation between defect score (ANT+LAT) and akinetic ratio (ApRAO) was $r=0.676$ ($P<0.05$), between defect angle (ANT+LAT) and akinetic ratio (ApRAO) was $r=0.539$ (n.s.). In conclusion, defect score from Tl scinti was significantly correlative with akinetic ratio from 2DE and defect size from Tl scinti larger than akinetic size from 2DE.