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BRAIN IMAGES OF ARTERIO-VENOUS MALFROMATION (AVM) WITH IMP.

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Single photon emission computed tomography (SPECT) with N-isopropyl-p-I-123 idoamphetamine (IMP) WAS performed for three patients with cerebral AVM and for a patient with dural AVM associated with the left parietal subcortical hemorrhage. Tomographic images (three slices at one time) of all patients were obtained immediately after an intravenous adominstration of IMP. The collection time of the data was 15 minutes by HEADTOME-II with high resolution mode. In three cases of cerebral AVM, nidus and drainer vein of AVMs were shown as the low activity area, while these areas were shown as the high rCBF with Xe-133 inhalation study. In a case of dural AVM, luxury perfusion was found around the hematoma 7 days after the onset. High accumulation of IMP was seen in the area of luxury perfusion by Xe-133 rCBF study. The area of intracranial draining vein was shown as a defect.

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COSMPARISON BETWEEN VENTILATION PERFUSION RATIOS USING SPECT AND VENTILATION PERFUSION RATIOS USING CONVENTIONAL LUNG SCANS.

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Ventilation perfusion imaging using SPECT was performed in the supine position on a healthy subject and one patient with pulmonary embolism. Ventilation imaging was by means of the continuous inhalation of Kr-81m, perfusion imaging utilised Tc-99m MAA. Conventional lung scans were obtained at first during SPECT perfoming. These right and left lung images were divided into nine areas, from apex to base, respectively. And activity of SPECT sections correspondent with the individual areas were obtained by the computer system. In the healthy subject, decrease of activity near the apex, calculated from conventional lung scans, was greater than that from SPECT in the regional ventilation and perfusion distribution. In the pulmonary embolism, the results using SPECT for perfusion showed lower activity of the right upper lung regions (perfusion deficit areas), but conventional perfusion scans showed similar decrease of activity near the apex in the both lungs. There was agreement ventilation distribution of the pulmonary embolism and that of the healthy subject in both conventional lung scans and SPECT findings.

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APPLICATION OF SINGLE PHOTON EMISSION CT FOR CARDIAC POOL SCINTIGRAPHY IN MYOCARDIAL INFARCTION.

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This study was performed to evaluate the usefulness of Single Photon Emission CT(SPECT) compared with conventional cardiac pool studies. Five normal volunteers and 14 cases of myocardial infarction were studied. The subjects received I.V. injections of RBC labeled in vivo with Tc-99m, and the SPECT data was obtained after first pass data and equilibrium data were obtained. The SPECT method was performed using a high resolution parallel hole colimeter, and ECG gated SPECT data was obtained routating the gamma camera from LPO 50 to RAO 40 by 30 sec./5°,then sagittal, coronal and 4-chamber view images were reconstructed and compared with the conventinal FP and EQ method in respect to wall motion, amplitude and phase delay.

All abnormal findings, that could be obtained by conventional method, could be detected by the SPECT method, and even more detailed abnormal findings that were not obtained by conventional methods were revealed by the SPECT method. Especially the sagittal images which were difficult to evaluate accurately by conventional methods could be evaluated more acculately by the SPECT method.

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MEASURMENT OF LEFT VENTRICULAR VOLUME USING GATED BLOOD POOL EMISSION COMPUTED TOMOGRAPHY.

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Left ventricular (LV) volume was measured by gated blood pool emission computed tomography (ECT) and was compared with LV volume by biplane LV cineangiography (LVG).

ECT and LVG were performed within 2 weeks in 2 normal, 3 angina and 15 myocardial infarction. The ECT images were acquired with multigate method (14 frame a beat) in 64x64 matrix using rotating dual head gamma camera after in vivo labelling 25 mCi Tc-99m -RBCs. Acquisiton generally took 10 second every 6 degree. And subsequently sagittal (long axis) images were reconstructed at a slice thickness 5.4mm. The borderline between LV and left atrium was dicided with functional image by Fourier analysis. LV volume was calculated using the following equation: LV volume = numbar of matrix in LV X volume of 1 matrix ($5.4^3 mm^3$).

When the edge of LV was dicided at 65% of LV maximum count, LV volume with ECT correlated well with LVG(Y=0.95X+5.3, r=0.98). A good correlation was observed between end-diastolic volume(EDV) by ECT and EDV by LVG(Y=0.94X+10.3, r=0.95). ECT underestimated end-systolic volume with LVG in cases with small volume (Y=0.79X+19.4, r=0.95).

We conclude that ECT is useful method to determine LV volume reasonably.

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