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BRAIN PERFUSION IMAGE USING N-ISOPROPYL-P-IODO-AMPHETAMINE: DETECTION OF INTERHEMISPHERIC DIFFERENCES. H. Seki, H. Matsuda, H. Ishida, H. Sumiya, K. Yokoyama, K. Hisada, H. Fujii, H. Hayase, S. Yamamoto, H. Kobayashi and M. Hayashi. Kanazawa University,Kanazawa, Fukui Medical College, Fukui.

In brain perfusion images using N-Isopropyl-p-iodoamphetamine and rotating gamma camera ECT, brain maps showing laterality indices (LI) were made for the purpose of detecting interhemispheric differences. Left(L) and right(R) lateral images were made by adding sagittal section images in each hemisphere,respectively. LI was calculated as follows. LI =100X(1+(R-L)/(R+L)). The normal ranges (mean±2sd) of the indices determined by those obtained in five normal right-handed subjects were 103±4 and 103±10 for brain mean and each pixel, respectively. Out of 42 measurements in 36 right-handed patients with cerebrovascular accidents, brain mean LI beyond the normal limits and areas showing abnormal regional LI were observed in 11(26 %) and 35(83%) measurements,respectively. On the other hand, X-ray CT showed low density areas in only 18(43%). These brain maps were clinically useful for detecting and quantifying interhemispheric differences.

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MEASUREMENT OF CEREBRAL CIRCULATION PARAMETERS BY SINGLE-PHOTON ECT. H. Seki, H. Matsuda, H. Ishida, H. Sumiya, N. Tonami and K. Hisada.Kanazawa Univ., Kanazawa.

For the purpose of investigating the pathophysiology of cerebrovascular disorders, cerebral circulation parameters were measured using N-Isopropyl-p-(I-123)-iodoamphetamine(IMP), Tc-99m-labeled red blood cell(Tc-RBC) and Tc-99m labeled albumin(Tc-HSA) by SPECT. These parameters include cerebral blood flow(CBF), cerebral blood volume (CBV), intracranial hematocrit(ICHT) and mean transit time index(MTT index). CBF measurements were made by IMP intra-venous injection and arterial imput sampling. ICHT were calculated by operations of Tc-RBC images and (Tc-RBC + Tc-HSA) images. Using the ICHT, CBV were calculated from Tc-RBC images and peripheral venous blood counting. Then MTT indices were calculated from CBV devided by CBF. The normal values of ICHT and CBV(parietal region) determined by those obtained in four normal subjects were 0.87 X peripheral venous hematocrit and 4.1 ml/100g, respectively. In a 61 y.o. female patient with subarachnoid hemorrhage from rupture of left ophthalmic aneurysma(post-clipping),MTT indices at basal ganglia level were 12.8, 9.8, 4.8, 5.9, 4.2 and 3.8 sec. for left frontal, right frontal, left temporal, right temporal, left occipital and right occipital regions, respectively. It is interesting that MTT indices has a certain correlation to oxygen extraction fraction.

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QUANTITATIVE MEASUREMENT OF CEREBRAL BLOOD FLOW BY ^{123}I-IMP. A.Inugami,Y.Aizawa,M.Murakami,F.Shishido, S.Miura,I.Kanno,T.Hachiya,K.Uemura. Research Institute for Brain and Blood Vessels, Akita, Japan.

We investigated for quantitative measurement of cerebral blood flow by intravenous injection of ^{123}I-IMP.

The objects of this study are 18 cases; 2 normals and 16 apoplexies. We had SPECT images at 17-24 minutes after injection of 3 mCi-^{123}I-IMP for static scan by HEADTOME-II. Arterial sampling started at same time of intravenous injection, and measured for ^{123}I-IMP that input to the brain, and then extracted unmetabolised IMP from the arterial blood.

Anotherwise, accumulated ^{123}I-IMP to the brain measured by HEADTOME-II images.

Beforehand, corrected the HEADTOME-II and well counter for measurement of blood activity and correction for absorption of HEADTOME-II used for AIZAWA's method. We measured for cerebral blood flow by ^{123}I-IMP counts in arterial blood and brain, conformed to Microsphere model by Kuhl etc. Mean normal value of whole brain is about 42.1 ml/100 g/min, closely resemble to 47.2±5.4 by Kuhl. Blood flow in white matter is low than usual reported count. We left over scope for investigation for examination.

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COMPARISON OF QUANTITATIVE MEASUREMENT FOR CEREBRAL BLOOD FLOW BETWEEN THE ^{123}I-IMP and $C^{15}O_2$. A.Inugami,F.Shishido,T.Ogawa,T.Yamaguchi, Y.Aizawa,S.Miura,M.Murakami,I.Kanno, K.Uemura.Research Institute for Brain and Blood Vessels-AKITA.

We investigated of quantitatively for cerebral blood flow compared ^{123}I-IMP-SPECT with $C^{15}O_2$-PET.

The objects are 16 cases included normal cases and 14 apoplexies. The machine are HEADTOME-II and III. On intravenous ^{123}I-IMP method, we measured cerebral blood flow conformed to Microsphere model with ^{123}I-IMP activity in arterial blood and the head. And, on the $C^{15}O_2$-PET study, measured cerebral blood flow conformed to ^{15}O-steady state model. Normal values by ^{123}I-IMP are 42.1 ml/100 g/min (mean count of whole blood), thalamus; 33.0 and white matter; 12.8. Anotherwise, on $C^{15}O_2$ study, the counts are 45.6, 43.1 and 21.9. Values by ^{123}I-IMP method lower than $C^{15}O_2$ study.

We considered the consequence of differences for calculation model, examination method, partial volume effect, absorption correction and contamination of ^{124}I. We left for ability to investigate the ^{123}I-IMP study, but compare with the other SPECT-images, ^{123}I-IMP-images have good resolution.

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