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Brain scintigraphies by I-123 IMP (n-isopropyl-p-iodoamphetamine) in patients with hemi or, quadroplegia.

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Brain scintigraphies were carried out in three different groups consisting of 21 patients, 10 with the acute infantile hemiplegia (AIH), 7 with hemi or quadroplegia after 2 to 25 years of asphixic birth, and 4 asphixia of the new borns. Among the first group of 10 AIH patients, 5 had hemispherical defects and the rest had the defects in the territory of MCA. However the other side of the brain had intact RI uptakes. In the second group, the patients with asphixia at birth had similar defects to that of AIH, except one with quadroplegia who had a large area of decreased RI uptake in the central region. The third group of patients with the asphixia of the newborn had much different patterns of IMP uptake from the above. One had normal homogeneous distribution, two had almost no brain uptake. We carried out two IMP scintigraphies in the last patient, with no brain uptake on the first trial and the patchy ones on the second trial which seemed to show the improvement of the brain blood supply. This baby did not show any neurological abnormailities after 10 months. These results would suggest that this noninvasive examination of the brain blood flow could be a useful tool for the early diagnoses of the abnormality of the brain blood flow.

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CLINICAL EVALUATION OF IMP-SPECT ON DETECTION FOR PRIMARY BRAIN TUMORS.

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IMP-SPECT was performed to evaluate the value of IMP-SPECT in 12 patients with primary brain tumors. The histopathological diagnosis in the present study included four meningiomas, two astrocytomas, two pontine gliomas, one ependymoma, one germinoma, one neurinoma and one pituitary adenoma. Eight out of 12 lesions were demonstrted by IMP-SPECT as decreased radioactivity and the detected areas corresponded to the region of mass lesion with perifocal edema on X-CT. The undetected four lesions were smaller than 2.5 cm in size and were deeply located in the brain.The IMP activity counted at meningioma seemed to be higher value than those of astrocytoma and ependymoma, however, the problem remained for the further study.

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TOMOGRAPHIC STUDY OF N-ISOPROPYL-P-I-123-IODOAMPHETAMINE (IMP) IN BRAIN TUMORS.

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We administered intravenously 3 - 6 mCi of N-isopropyl-P-I-123-iodoamphetamine (IMP) for total 19 cases of 4 cases with metastatic tumor, 3 cases with meningioma, 3 cases with glioblastoma multiforme, 3 cases with astrocytoma, 1 case with oligodendroglioma, 2 cases with malignant lymphoma, 2 cases with pituitary adenoma and 1 case with neurinoma employing SPECT device (HEADTOME-II) from April of this year, and early images and delayed images were obtained from immediately after and after 3 - 8 hours of intravenous administration, respectively. Tomographic maps of local cerebral blood flow (CBF) with Xe-133 and with IMP were compared in 14 cases, and the following results were obtained. The early images of CBF study and IMP study were similar except 1 case of meningioma. In meningioma, there were cases with or without accumulation by IMP study. In 2 cases of astrocytoma, the accumulation of IMP was noted by the early image of IMP study.

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I-123-IMP CEREBRAL BLOOD FLOW IMAGING.

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I-123-IMP cerebral blood flow SPECT was studied in 20 patients with brain tumor (metastasis, 4 ; low grade astrocytoma, 6 ; high grade astrocytoma, 3 ; pineal tumor, 3 ; pituitary adenoma, 3 ; meningioma, 1). Each case was injected 1 mCi of IMP intravenously. SPECT data were collected for 1000 k counts from 20 min. after injection, using a circular detector array emission tomograph system (SET 020, Shimadzu and ECLIPSE S-120, Japan datageneral).

Low blood flow on IMP image was obserbed in the area of peritumor edema as well as the tumor lesion in 12 cases with metastasis, astrocytoma and meningioma. In 3 cases with pituitary adenoma and 1 case with pineal tumor, IMP image showed almostly normal. In 2 cases with pineal tumor low blood flow was obserbed only tumor area.

Tumor activity to cerebral cortical activity in opposite side (T/N ratio) was calculated in each case. T/N ratios were ranged from 44% to 96%, and had no tumor specificity. Good correlation was obserbed between T/N ratio in IMP and those of rCBF obserbed by Xe-133 gas study in all cases but meningioma (r=0.76). In a case with meningioma the discrepancy of T/N ratio between IMP and Xe was obserbed, which showed high rCBF and low activity in IMP image.