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CLINICAL APPLICATION OF N-ISOPROPYL-I-123-P-IODOAMPHETAMINE (IMP) IN EPLEPCY. Y.Hiraki, S.Morimoto, K.Aono, K.Kobayashi, M.Ikeda and T.Shyomori.Okayama University Medical School.

IMP SPECT was widely used to map cerebral blood flow in patients with cerebrovascular disease. This paper discribes the use of IMP SPECT to map the distribution of cerebral blood flow in eplepcy. The scans were performed with a multidetector system (HEADTOME-II), patients were monitored by EEG by the time of the scan after the administration of IMP. In a focal epleptic patient with EEG evidence of sezure activity, IMP images showed abnormal cerebral blood flow in the same region with sezure activity area. Other patient with the frequent appearance of sezure activity during EEG monitoring had increased perfusion area where no epleptic activity was suspected by EEG. IMP is useful to map cerebral blood flow in focal eplepcy.

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POSITRON EMISSION TOMOGRAPHIC LOCALIZATION OF LEFT UNILATERAL SPATIAL AGNOSIA. K.Tagawa,K.Nagata,F.Shishido,K.Uemura. Research Institute for Brain and Blood Vessels-Akita, Akita.

Positron emission tomography (PET) was used to clarify the localization and the underlying mechanisms of left unilateral spatial agnosia (LUSA) in 11 patients with cerebral infarction in the right middle cerebral artery territory. Cerebral blood flow (CBF) and cerebral metabolic rate of oxygen ($CMRO_2$) were measured with PET using O-15 steady state technique. Sixteen patients who did not exhibit this syndrome served as a control values. Local values designated the average of 135 pixels covering the area of 18 × 30 mm in the right posterior parietal region. Both CBF and $CMRO_2$ were significantly lower at the right posterior parietal region as compared with the control group. Two kinds of patients, those with LUSA and those without it, were seen in the range of CBF between 25 and 35 ml/100 ml/min and in that of $CMRO_2$ between 1.8 and 2.2 ml/100 ml/min. These ranges of CBF and $CMRO_2$ in the right parietal region were considered to include the border value between these patients. The $CMRO_2$ values were more stabilized in the course of cerebral infarction as compared with the CBF values. The right posterior parietal $CMRO_2$ values less than 2.0 ml/100 ml/min was considered to be critical in causing LUSA.

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POSITRON EMISSION TOMOGRAPHIC STUDIES IN PROGRESSIVE SUPRANUCLEAR PALSY (PSP).
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Two patients with progressive supranuclear palsy (PSP) were studies with positron emission tomography (PET) by oxygen-15 steady state method. Case 1 is a 58 year-old woman who has been exhibiting mild dementia, supranuclear ophthalmoplegia, axial dystonia, and psuedobular palsy for 4 years. Case 2 is a 69 year-old man who has been presenting the similar symptoms for 2 years. Regional values of cerebral blood flow (CBF) and cerebral metabolic rate of oxygen (CMRO2) were measured in the pons, cerebellar hemisphere, midbrain, thalamus, basal ganglia, and cerebral cortex. These regional values were compared with those in 2 patients with Alzheimer disease (AD) and those in the 7 normal volunteers. In the patients with PSP, both CBF and CMRO2 were reduced in all regions as compared with 7 normal volunteers. Regional CMRO2 was markedly reduced in the midbrain, thalamus and basal ganglia, whereas the cerebellar hemisphere and cerebral cortex were relatively spared. Among the cerebral cortices, the frontal lobe was relatively involved in the patients with PSP. In the patients with AD, there was a remarkable reduction of CMRO2 in the cerebral cortex, especially in the temporal and parietal lobes, as compared with those with PSP. As it has been suggested by the clinicopathological investigations, the relative hypometabolism in the subcortical structures on the PET findings may also suggest a "subcortical type of dementia" in patients with PSP, whereas the relative cortical involvement indicated a "cortical type of dementia" in those with AD.

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LOCAL CEREBRAL GLUCOSE METABOLIC PATTERNS IN PEDIATRIC NEUROLOGIC DISORDERS DETERMINED BY POSITRON EMISSION TOMOGRAPHY.
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We are studying local cerebral metabolic rates for glucose with [F-18]2-fluorodeoxy-glucose and positron emission tomography in childhood neurologic disorders such as Lennox-Gastaut syndrome, complex partial seizure, Leigh disease and atypical phenyl-ketonuria. In Lennox-Gastaut syndrome (6 cases) and complex partial seizure (5 cases) structural lesions hitherto un-diagnosed by conventional X-ray CT became apparent on PET. These lesions showed hypometabolism and sometimes correlated well with EEG findings. An 11-year-old boy with cytochrome C oxidase deficiency (Leigh disease) had an area of hypometabolism in the right lenticular and caudate nuclei to temporal cortex, which was greater than predicted from NMR-CT. Two siblings with dihydropteridine reductase deficiency (atypical PKU) demonstrated decreased glucose metabolism in bilateral areas of caudate-putamen, which was lacking in dopamine and serotonin in the patients. Thus, PET with FDG may detect lesions not visualized by conventional imaging procedure and provide clinical information of diagnostic and therapeutic significance in the management of childhood neurologic disorders.