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## N-ISOPROPYL I-123 P-iodoamphetamine BRAIN SCANS WITH SINGLE PHOTON EMISSION TOMOGRAPHY IN MOYAMOYA DISEASE.

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N-isopropyl I-123 p-iodoamphetamine (IMP) have been advocated as radio-tracer for assessing regional cerebral perfusion. And IMP brain scan was proved to be a valuable method to quantify the regional disturbance of cerebral perfusion when adequate collimator and data processing method were selected. It is the purpose of this report to discuss the differences between cerebral angiography, CT findings and IMP-SPECT images of moyamoya disease. 5 cases of moyamoya disease was evaluated. In three cases, CT reveals low density areas which are thought to be infarction, and in two cases cerebral hemiatrophy. Cerebral angiography showed clearly the occlusion of the large vessels and secondary collaterals in all 5 cases. In conclusion, iodoamphetamine brain scintigraphy with SPECT method showed the characteristic regional disturbance of cerebral perfusion. And the lesion was depicted larger in iodoamphetamine brain scintigraphy with SPECT than in X-ray CT. With its high sensitivity, iodoamphetamine brain scintigraphy with SPECT method is proven of value for the early detection of this infrequent type CVD.

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## CLINICAL ESTIMATION OF CASES WITH CEREBROVASCULAR DISEASE USING N-ISOPROPYL I-123 P-iodo-AMPHETAMINE (IMP)

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7 patients with cerebrovascular disease and one volunteer underwent IMP-SPECT. The results of radionuclide examination were compared with contrast cerebrovascular angiography and X-ray CT scan. We found that even the high density area in dynamic CT scan showed low radioactivity in IMP-SPECT, using X-ray CT at the same time foci of low perfusion was detected with certainty, and IMP-SPECT was useful in estimation of surgical treatment.

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## CLINICAL EVALUATION OF CEREBROVASCULAR DISEASES (CVD) WITH I-123 IODOAMPHETAMINE (I-123 IMP) AND SINGLE PHOTON EMISSION TOMOGRAPHY (SPECT) M. Kawamura, K. Murase, M. Miyagawa, S. Nakata, S. Watanabe, N. Harada, A. Iio and K. Hamamoto. Dep. of Radiology Ehime Univ., Ehime.

Brain imagings with I-123 IMP and SPECT were performed in 21 persons (one Normal, 10 ischemic CVD, 9 Ruptured Aneurysm, one postoperative giant Aneurysm), comparing with X-CT, Kr-81m perfusion scan, and intra-carotid Xe-133 clearance method. In 3 of 5 CVD pts, with neurological symptoms, uptake defects in the low density areas (X-CT), and uptake decreases around those area were shown by I-123 IMP imagings. One pt. with microembolic infarction after cardiac operation was normal in I-123 IMP imagings and X-CT, though neurologically symptomatic. In one pt., I-123 IMP imagings detected the abnormal ischemic area earlier than other methods. In 5 pts., fully recovered from strokes and no neurological deficits, I-123 IMP imagings showed uptake decreases in larger areas than expected by other methods and were able to demonstrate the responsible areas for the previous neurological deficits. In CVD, I-123 imagings were useful for following pts. before and after surgical by-pass therapy. Vasospasms are very important problem in the prognosis of pts. with ruptured aneurysm. In all 7 Pts. with angiographically defined vasospasms, uptake defects or decrease were demonstrated compatible with the territories of vasospastic arteries, though 3 cases were negative in X-CT. I-123 IMP imagings are non-invasive and sensitive methods in accurately demonstrating the perfusion abnormalities in the brain.

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## CLINICAL EVALUATION OF N-ISOPROPYL I-123 P-iodoamphetamine AS A TRACER FOR LOCAL CEREBRAL PERFUSION.

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N-isopropyl I-123 P-idoamphetamine (IMP), which was developed by Winchell et al, is a radiopharmaceutical that is lipid-soluble and has a high first-pass extraction efficiency in brain tissue. Initial IMP distribution is thought to be proportional to local cerebral perfusion and is stable for at least 1 hour after administration. We therefore evaluated the clinical ability of IMP on 16 patients with cerebrovascular disease, by comparing IMP brain scans with transmission computed tomography (TCT) and O-15-CO2 positron emission computed tomography (PCT). Each patients received 3 mCi of IMP intravenously and scanning was carried out between 10-70 min after the injection. Perfusion defects visualised by IMP scans generally exceeded structural changes suggested by TCT and it agreed well with O-15-CO2 images. We concluded that IMP may be useful as a pharmaceutical labelled with r-emitter to assess regional cerebral perfusion non-invasively.