gate the dynamic metabolism of ammonia and hepatic hemodynamics. A novel type positron camera connected with on line computer system was used for the imaging of the liver and the heart ^{13}N-radioactivity over the head was recorded by the detectors used for renogram. Sequential changes of ^{13}N-radioactivity in the blood were also measured.

Furthermore, chromatgraphic analysis of ^{13}N-labeled substances using Dowex 50w×8 was carried out to measure ^{13}N-metabolite derived from ^{13}N-ammonia and to measure the ratios of ^{13}N-metabolite relative to ^{13}N-substances. In all subjects, ^{13}N-radioactivity appeared in the liver in about 1 minute after rectal administration. ^{13}N-radioactivity visualized the liver clearly in control subjects. However, in patients with liver cirrhsis the lung and the heart were clearly visualized in 5 minutes after administration when the liver image was still faint. ^{13}N-radioactivity over the head was apparently higher in the cirrohtic group, compared with the control group. It was suggested that most of injected ammonia ^{13}N-ammonia bypassed the hepatic cells and reached peripheral tissues (e.g. heart lung, brain). We determined the heart activity and the liver activity ratio (^{13}N-hear/liver ratio) 15 minutes after rectal administration ^{13}N-heart/liver ratio was founded to be correlated with various indices of portal hypertention.

Furthermore, the percentages of ^{13}N-metabolites in the blood in 5 minutes after administration were lower in the cirrhotic group, suggesting reduced ability of the liver to remove ammonia in cirrhotic patients.

Differential Diagnosis of Brain Lesions on the Basis of Brain Scintigraphy

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The purpose of this paper is to evaluate how the brain scintigraphy is of significant value in the differential diagnosis of the brain lesions.

Radionuclide angiography and static brain scanning were done with 20-25mCi ^{99m}Tc-DTPA and Nuclear-Chicago Pho-Gamma HP. Radionuclide angiography was recorded at a rate of one frame per two seconds. Static images were obtained 5 minutes and 2 hours after injection. Using 100 cases with abnormal static images, the differential diagnosis was attempted by the following three methods; 1) intuitive diagnosis by the specialist of nuclear medicine 2) flow-chart method 3) computed numerical diagnosis.

The difference among these three methods was appeared to be of little significance, although the computed numerical diagnosis was slightly superior to the other two methods. The results indicated that on the basis of the static images alone, the overall accuracy was 55% for the intuitive diagnosis by the specialist of nuclear medicine and brain tumor could not be distinguished from intracerebral hematoma, abscess or arteriovenous malformation. However, it was possible to distinguished the major categories, namely a) intracerebral masses, b) cerebral infarction, c) subdural collections (hematoma or effusion) in over 80 percent of the cases. Furthermore, the combination of the radionuclide angiography and static images improved significantly the results on the basis of the static images alone. Namely, the overall accuracy was 72% and the major categories were distinguished in over 90 percent of the cases. The rate of correct diagnosis in each lesions was as follows: 67% of glioblastoma (6/9), 100% of meningioma (5/5), 100% of acoustic neurinoma (9/9), 67% of craniopharyngioma (2/3), 43% of metastatic tumor (6/14), 44% of other brain tumors (4/9), 33% of intracerebral hematoma (2/6), 100% of arteriovenous malformation (2/2), 0% of abscess (0/1), 83% of infarction (24/29) and 92% of subdural hematoma (12/13).