scanning method was confirmed to be more useful than the coventional scintiscanning. Besides the new scanning method, a new display system was also developed for the sake of more precise analysis of the isocount scanned data. This display method is called multilevel analysis or multilevel slicing.

In the present investigation, this method was applied to forty-six cases of brain tumors, including forty cases of supratentorial tumors and six cases of infratentorial tumors, positive rates being 95% and 67% respectively.

Furthermore, as a measure of the numerical analysis of the scanned data, the maximum uptake rate of the target area (RTmax = Tmax/NTmean) and the deviation indes x(DI = D_T/NTmean) are introduced: Tmax, NTmean, D_T and D_{NT} are respectively defined as a maximum uptake of the target area, a mean uptake of the non-target area, a deviation rate of the target area and a deviation rate of the non-target area. They can be obtained from analysing the television figures of multilevel analysis.

By this method, thirty-four cases of the supratentorial tumors were studied. In cases of gliomas (12 cases), meningioma (9 cases) and metastatic tumor (7 cases), mean RTmax were 1.26, 1.37 and 1.24 and mean DI were 0.84, 0.68 and 0.60 respectively. In gliomas the RTmax and the DI were correlated with the degree of malignancy of the tumors.

It was discussed that this method of numerical analysis could be aldo applied to the numerical data obtained from EMI scanning.

Dynamic Study of Cisternography with 197-Yb DTPA

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We observed the cisternography and its processed image and the accumulation rate in blood on 32 cases of CNS (central nervus system) disease, injected intrathecally 700 μci–800 μci of 197-YbDTPA.

The cisternography was made at 30 min, 1h, 2h, 3h, 4h, 24h, 48h, and 72h after intrathecal injection of 197-YbDTPA and blood activity was counted at 10 min, 20 min, 30 min, 1h, 2h, 3h, 4h, 24h, 48h, and 72h. after intrathecal injection.

The curve of the blood sequential activity of 197-Yb DTPA was classified 4 types, but it could not resolved the concern with CNS disease.

We carried out the processed image of cisternography for the purpose of the observation of dynamic study of CSF. The method of the processed image was as follow, that is, each image was devided by the sum image from 30 min to 72h. The processed image get to show the dynamics of CSF.

The static image by the original cisternography and the dynamic image by the processed image combined seemed to be useful for the diagnosis of CNS disease, especially normal pressure hydro-

cephalus.

We described the necessity of dynamic study of CSF for the diagnosis of CNS disease and one method of the observation of the dynamic study of CSF.

Radioisotope Cisternography with ^{111}In-DTPA

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Radioisotope cisternography is a very useful method for the study of cerebrospinal fluid flow and absorption. Although many radiopharmaceuticals for cisternography have been used, RIHSA has the disadvantages of beta emission, long biological half-life and causing aseptic meningitis, ^{169}YbDTPA has the disadvantages of long physical half-life and ^{99m}Tc-HSA has the disadvantage of short physical half-life.

Recently, the new radiopharmaceutical, ^{111}In-DTPA that has no these disadvantages is available. In-111 has a physical half-life of 2.81 days, no beta emission and two gamma rays that have energies of 171 and 247 KeV. Since we have a chance to use ^{111}In-DTPA (Dainabot Radioisotope Lab., LTD), we describe in this report the clinical use of this for cisternography.

Radioisotope cisternography was performed in 35 patients following the lumbar intrathecal injection of 900 μCi of ^{111}In-DTPA. Anterior and lateral cisternographic images and counts in the head were obtained approximately 4, 6, 24 and 48 hr after injection using a gamma camera (GCA-202, TOSHIBA). Blood samples were obtained at 4, 6, 24 and 48 hr and all urine was collected for 72 hrs after injection.

No side effects attributable to the injected radiopharmaceutical were observed. Ratio of counts in the head at 6 and 24 hr, rate of appearance of radioisotope in blood and urine showed no relation with cisternographic findings, such as cerebrospinal fluid flow and ventricular reflux, and the degree of neurological symptoms in any disease.

It seems that ^{111}In-DPTA leaks from subarachnoid space out of arachnoid vili. Because there was fairly good correlation between sequential counts in the head and protein contents in CSF, it seems that the behavior of ^{111}In-DTPA in cerebrospinal fluid is related to protein contents in CSF.