

sagittal sinus required for the safe removal of a parasagittal meningioma with poor visualisation of its margin in CAG, and of a metastatic carcinoma surrounded by large mass of reactive brain edema which obscured the size of tumor itself with distant effects in CAG. Follow-up evaluation of the effect of non-surgical treatment of tumor such as chemo or radiation therapy also showed the usefulness of this technique in two scintigrams of one patient taken with the same nuclide and projection, but with administration of different dose, with interval of four months and with a scanner for the first time and camera for the next time.

Profile curves of various kinds of brain tumor simply supported well known facts in characteristics of tumor scintigrams, but naked eyes were thought to have lower threshold in detection of slight change in curve than in density of image.

Count rate of tumor peak(T), bottom of normal brain tissue area (B, with BBB) and average height of skull margin (R, without BBB) on profile curves crossing the center of tumor image were measured in 75 scintigrams with ^{99m}Tc -pertechnetate of 39 cases with verified diagnosis.

Square areas surrounded by four lines indicating mean value \pm s.d. of T/B ratio in ordinate and of T/R ratio in abscissa on a graph for each group of tumor were arranged fairly lineally, glioblastoma, meningioma, metastatic tumor, neurinoma and low grade gliomas in that order.

To diagnose and unknown tumor on scintigram with this graph is somewhat difficult at present, due to fairly large overlapping among areas of each tumor, but uptake range of nuclide for each tumor on scintigram illustrated in this graph must give some useful information for the diagnosis of brain tumors.

Radioisotope Cisternography in Hydrocephalus with Quantitative Study

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Radioisotope cisternography gives the information about cerebrospinal fluid (CSF) dynamics with the sequential image of radionuclide distribution. However, to get more accurate estimates of the CSF clearance, the application of quantitative techniques is necessitated.

The purpose of our study is to devise the most suitable technique of quantitative study and to detect whether the quantitative cisternography is useful to determine the indication of shunt operation in hydrocephalic patients.

^{131}I -Human serum albumin or ^{169}Yb -DTPA was used in this study. Following ventricular or lumbar intrathecal injection of these radiopharmaceuticals, sequential anterior and lateral scintiphotos of head or spinal column were obtained with an Anger type scintillation camera at 1, 4, 24, 48 and occasionally 72 hours. The head count rate was calculated at same intervals. The head count rate at each interval was normalized with respect to the peak level of activity obtained and expressed as a percent of this maximum value.

Venous blood was taken at the same time of external head count determination and the plasma radioactivity was counted with a well-type scintillation counter. Urinary excretion rate was also determined for four or five days after injection of radiopharmaceuticals.

With a lumbar injection, the normalized head count rate for three patients, who were not normal neurologically but showed normal cisternographic pattern, reached value of 100 percent at 4 hour after injection and followed by a rapid decrease thereafter. Blood count rate curve showed a similar pattern. Half of injected radio-nuclide was excreted in the urine in a first day of examination.

10 patients with surgically untreated communicating hydrocephalus were studied with a lumbar injection. The time at which peak activity reached after injection and clearance from the head were delayed with varying degree. The urinary excretion was scanty in some patients in whom clearance from head remarkably delayed.

Another 10 patients with surgically untreated communicating hydrocephalus were studied with a ventricular injection and the head count normalized to 1 hour activity. All the head count decreased with varying degree.

7 patients with obstructive hydrocephalus were examined after the ventricular injection of tracers.

The decrease of head count was unquestionably delayed compared to the communicating hydrocephalus.

One case of obstructive hydrocephalus was injected through lumbar puncture, showed normal head count rate curve.

To investigate the clinical significance of quantitative cisternography, we compared the head count rate curve with result of shunt operation in communicating hydrocephalus. Eleven patients with communicating hydrocephalus was treated surgically. Six of them were examined before operation with ventricular injection and five of them with lumbar injection. Two patients who had been examined with lumbar injection were not improved after shunt operation. Rest of all improved after shunt procedure.

No relationship between the head count rate curve and results of shunt operation was not found.

The rate of disappearance of intracranial activity cannot give an accurate index of CSF circulation without knowledge of the cerebrospinal volume into which the radiopharmaceuticals is introduced after Ackerman, M. et al. Flow index calculated with Ackerman's method was little in all of our patients regardless their head count rate curve.