

clearance into the blood. There were significant differences in clearances out of CSF and blood between ^{131}I HSA and ^{169}Yb -DTPA, and the latter showed rapid transmission into the blood out of CSF and into the urine out of blood, more than all early appearance of radioactivity in the blood within a few minutes of intrathecal (lumbar) injection of ^{169}Yb -DTPA suggested a new category of CSF resorption on the surface of spinal cord and its theca.

From these data, following conclusions are suggested: 1) RI-cisternography is a unique and useful method to determine the CSF dynamics, 2) it is possible to examine not only the anatomopathological change of CSF system but also its functional capacity, 3)

^{131}I HSA is the conventional RI-tracer and good enough to use clinically but with a few side effects of aseptic meningitis, 4) ^{169}Yb -DTPA is a new RI-tracer with short effective half life, and a safe tracer without significant side effect, and capable of intrathecal injection of 0.5 to 1mCi—dosis, which promises better representation of cisternograms, 5) in some cases, the cisternograms shows not only mechanical disturbances of subarachnoid spaces but delicately concomitant disturbances of focal blood brain barrier. In future more effective and safe, and even lesion-specific tracers will develop the exact neurosurgical diagnosis.

Diagnostic Significance of Cisternography

—With Special Reference to Brain Tumors (including Intratentorial Tumor), Head Trauma, Convulsive Seizure and Inflammation—

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Purpose

Recent use of RI in the study of dynamic flow of spinal fluid has been asserted by a great many researchers as helpful. We tried to evaluate the diagnostic value of cisternography, by comparing it with other auxiliary methods of diagnosis such as PEG, CAG, VAG, and brain scintiscan. Comparison was also made between ^{169}Yb -DTPA and RISA, two radioisotopes used in the trial.

Method

Following injection of 100-200 μ Ci RISA and 1 μ Ci ^{169}Yb -DTPA into spinal canal by spinal puncture, records were consecutively taken of dynamic flow of spinal fluid with scinticamera.

I. Cases

Diagnostic procedure was applied to 16 cases of brain tumor including intratentorial tumor, 11 cases of head trauma, 4 cases of congenital malformation, 3 cases of hydrocephalus, 2

cases of convulsive seizure, 2 cases of aneurysm, 2 cases of A-V malformation, 2 cases of inflammation, 3 presumably normal cases and 5 uncertain cases, 60 cases in total.

Result

While in the majority of cases various auxiliary means of diagnosis mentioned above concurrently been applied, only cisternography supplied positive findings. For example: (1) detection of tumor of the pineal region, early diagnosis of which is relatively difficult, (2) revelation by cisternography and operation that the tumor clinically considered as originating in acoustic nerve was in fact pons glioma, (3) contradiction of previous diagnosis, by which the presence of tumor of the spinal cord had been affirmed and its treatment done, on the strength of cisternographic evidence that there was no passage failure of cerebrospinal fluid and the picture was normal, (4) revelation by cisternography of uneven

incorporation of isotope in the cistern in the case of convulsive seizure and hemiplegia occurring as sequela of head trauma, a finding unlikely to be obtained by PEG alone, this agreeing well with EEG findings, (5) denial of the presence of tumor in the case of cerebellospinal degeneration that is often mistaken for spinal tumor or pons glioma, in which cisternography proved a valuable auxiliary means of diagnosis by supplying normal picture. Between RISA and $^{169}\text{Yb-DTPA}$, the latter was found to have following advantages over the former: $^{169}\text{Yb-DTPA}$ (1) Suffers no change in cerebrospinal fluid, which makes it unnecessary to carry out any prior treatment, (2) Highly stable, and has long shelf life, (3) Has short biological half-life, and emits no β -ray which means that it can be administered in massive amount so that clearer view would be obtained, (4) Produces no side effect. Slight difference was also observed between $^{169}\text{Yb-DTPA}$ and RISA in dynamic characteristics: $^{169}\text{Yb-DTPA}$ reached the cistern faster than RISA. This presumably was attributable partly to difference in molecular weight between them.

II. Conclusion

1. There was difference between $^{131}\text{I-HSA}$ and $^{169}\text{Yb-DTPA}$ in time needed for each to reach the brain surface. This was attributed to difference in molecular weight between them.

2. It took 3-6 hr. and 30-60 min. respectively for $^{131}\text{I-HSA}$ and $^{169}\text{Yb-DTPA}$ to reach the brain surface. In cases where longer time was needed, some disturbance of pathway for the liquor was suspected. Further study seemed necessary concerning this point.

3. In cases in which retention, asymmetry, accumulation and defect were observed, clinical findings were positive but corresponding abnormalities were not detected by other diagnostic techniques.

4. Cisternography could safely be applied by lumbar tap in cases in which intracranial pressure was increased.

5. The present test concerns dynamic flow of spinal fluid. When combined with angiography and PEG dealing with morphological features and EEG which is electrophysiological test, it proved helpful in discovery of abnormalities so far not clarified besides producing the result which agreed well with clinical findings.

6. Cisternography is extremely useful as a screening test done prior to angiography or PEG in cases of spinal cord tumor and other brain tumors.

7. Cisternography helps not only the study of dynamic flow, but is valuable in diagnosis of abnormalities not detected by other auxiliary diagnostic techniques, thereby proving useful in selecting cases for which operation is the treatment of choice.

Diagnostic Value of Thyroid Scintiscanning:

As a Information for the Surgical Management of Thyroid Lesions

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When the thyroid lesions are treated with surgery, the most important role of the thyroid scintiscanning with radioactive iodine may be differentiation between benign and malignant neoplasm of the thyroid, and diagnosis of developmental anomalies. Therefore, the scintiscanning have been performed as a rou-

tine examination before surgery in our department.

In this paper, the diagnostic significance of scintigrams of 165 cases of carcinoma and 170 cases of adenoma of the thyroid was discussed and presented our experience of developmental anomalies of the thyroid.