

Cerebrospinal Space Scintigrams Report 5: Cisternography with ^{111}In -DTPA

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Cisternography with In-DTPA was performed in 42 patients with head injury etc:

The patients were divided into the following groups by R.I cisternography.

Group A1 consisted of patients who were infused with R.I subarachnoidally by lumbar puncture, but showed no appearance of the R.I in the parasagittal area with the R.I ventricular reflux even 24–48 hours later.

Group A2 comprised patients in whom the ventricular reflux of R.I once occurred, but the R.I appeared in the parasagittal area later.

Group B1 was composed of patients who showed the slow appearance of R.I in the parasagittal area.

Group B2 showed normal cerebrospinal fluid flow.

Of the 42 patients, 11 were classed to Group A1 12 to Group A2, 5 to Group B1 and 14 to Group B2.

The peak of the curve of disappearance of R.I from the blood was noted three hours after infusion, while the disappearance of R.I was delayed in not a few patients classed to Groups A1 and B1.

No side effects were noted in any of the patients.

RI Cisternography with ^{111}In -DTPA

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In contrast to ^{169}Yb -DTPA, the usage of ^{111}In -DTPA, a new radiopharmaceutical, is not as yet popular for RI cisternography. This report deals with a comparative study of these two radiopharmaceuticals for RI cisternography.

For the past one year 301 RI cisternographies were performed in 160 cases at the Neurosurgical Service of Shizuoka Rosai Hospital. Among those

^{169}Yb -DTPA was used in 137 occasions, ^{111}In -DTPA in 53, and both ^{169}Yb -DTPA and ^{111}In -DTPA in 30. The results of this study were as follow.

1. ^{111}In -DTPA was chemically stable in intrathecal administration.
2. A reactive fever was minimal with ^{111}In -DTPA if any.

3. There was no adverse reaction, such as aseptic meningitis, following $^{111}\text{In-DTPA}$ cisternographies.
4. The effective half-life of $^{111}\text{In-DTPA}$ was 16 hours, and that of $^{169}\text{Yb-DTPA}$ 22 hours in this series. This means the men were exposed to radioactivity less with $^{111}\text{In-DTPA}$ than with

$^{169}\text{Yb-DTPA}$.

5. However, there was no difference in diagnostic value between these two radiopharmaceuticals, even 48 hours after intrathecal administration. From this study $^{111}\text{In-DTPA}$ appears to be more suitable for RI cisternography than $^{169}\text{Yb-DTPA}$.

A Comparative Study of Qualitative and Quantitative Radioisotopic Cisternography

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It is the purpose of this study to compare qualitative and quantitative findings of RI cisternography with reference to CSF pressure.

RI cisternography was performed using scintillation camera in seventy two cases in which the disturbances of CSF dynamics were suspected. In addition to scintiphotos, external count rates in anterior and bilateral projections of the head were also computed at 3, 6, 24 and 48 hours after injection of $^{169}\text{Yb-DTPA}$ $^{111}\text{In-DTPA}$ into lumbar subarachnoid space. Quantitative finding was evaluated by means of the ratio of count rate at 24 hours or 48 hours to 6 hours after injection (respectively C_{24}/C_6 , C_{48}/C_6).

In comparison of qualitative and quantitative findings, it was evident that the ratio varied considerably from case to case recognized abnormal image of bilateral sylvian cistern though

abnormal accumulation image of parasagittal convexity had closed interrelationship with elevation of the ratio. The ratio showed significant ($p < 0.01$) difference between two groups in which narrow image and wide image of bilateral sylvian cistern. The group (14 cases) with the narrow image and the low ratio revealed high CSF pressure with a mean value of 272 mmH₂O and the pressure for 9 cases in this group were more than 200 mmH₂O. And, the group (8 cases) with the wide image and the high ratio revealed relatively low CSF pressure with a mean value of 149 mmH₂O and the pressure for 3 cases in this group were less than 80 mmH₂O. On the other hand, the group (6 cases) recognized ventricular filling and nondilatated ventricle revealed high CSF pressure with a mean value of 299 mmH₂O.