So unlike RISA, cisternography with Yb-DTPA shows us CSF dynamics in all subarachnoid spaces in detail.

D-6. A New Classification of Pathological Cerebrospinal Fluid Protein

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Classification of the CSF protein profiles has been attempted by many workers, such as Esser, Bauer, Saito and so on with electrophoretic and immunoelectrophoretic techniques. Their classifications, however, could not always satisfy clinical demands for lack of representation of pathophysiological conditions.

It may be possible to classify the csf protein profile into four types by means of polyacrylamide gel electrophoresis and immunoelectrophoresis;

- 1) Concentrated (or retention) type; due to disturbed absorption of macromolecular proteins.
- 2) Filtrated type: due to increased vascular permeability.
- 3) Paraprotein type; occurrence of such abnormal protein as the 'S-100' protein, etc, not contained in plasma.
- 4) Combined type; combination of the filtrated type and the paraprotein type.

A supernatant obtained by centrifuging or standing at 4°C overnight was carefully removed. Blood stained sample was not accepted. Lowry's method was used for the quantitative determination of protein contents of the csf sample.

As the protein fraction which migrated more rapidly than the prealbumin on 8% polyacrylamide gel electrophoresis were not of plasma origin, they were considered to be paraproteins. The 'S-100' protein was distinguished from other paraproteins on the basis of reaction with the anti-S'-100' protein antibody of Levine and relative mobility to the albumin.

The sample in which the α_2 -macroglobulin, the β -lipoprotein and the fibrinogen were demonstrated by immunoelectrophoresis were considered to be the filtrated type, because the occurrence of those proteins were due to increased vascular permeability.

Results were as follows. The materials consisted of the csf sample from 117 patients with various disorders of the central nervous system. Protein contents of more than 50 mg/dl were obtained in 68 cases. Of 68 cases, 30 was the concentrated type; 9 neoplasm, 7 trauma, 2 inflammation, 14 cases; the paraprotein type 10, and the combined type 14. Fifteen out of the 31 neoplasm cases were either the paraprotein or the combined type. Five out of the 9 inflammatory cases were the filtrated type. 49 cases showed protein contents of less than 50 mg/dl. Of then 33 showed the normal profile. Seventeen cases were neoplasms, and 9 of them showed

paraproteins. The 'S-100' protein was demonstrated in 8 of the 117 cases, and 6 of 8 cases were glioma.

D-7. The Effect of Dexamethasone Phosphate on Production of CSF in Subarachnoid Space

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So far we have postulated the actual CSF production and absorption not only in the ventricular system, but also in the cerebrospinal subarachnoid space. The CSF production rate in the whole intracranial space is 0.047 ml/min., which can be reduced to about 50% with the use of 0.15 mg/kg of intravenous dexamethasone phosphate. Also we have obtained the production rate of 0.018 ml/min. in the spinal subarachnoid space by means of perfusion.

This investigation was designed to clarify whether or not was there any difference in the effect of dexamethasone phosphate on production rate in whole intracranial space and spinal subarachnoid space.

Adult mongrel dogs weighing 10–15 kg of body weight were used. Laminectomy was performed in the cervical and lumbar region, after which catheter was inserted into the subarachnoid space under direct vision. In caudo-cephalad fasion, perfusion of the system was carried out for two hours after intravenous administration of dexamethasone phosphate with physiological isolation of the spinal subarachnoid space. Perfusion fluid was artificial CSF containing 25 mg% of Inulin as a tracer which was recovered by Resorcinol method.

Result was as follows: the production rate began to reduce immediately after i.v. injection of dexamethasone phosphate and attained to maximal reduction of production rate of —50% in 50 min. No difference between whole intracranial space and spinal subarachnoid space was found as to the effect of dexamethasone phosphate in CSF production rate.

It is noteworthy to notice above described evidence when one realizes the absence of both choroid plexus and ependymal lining in the spinal subarachnoid space about the effect of dexamethasone phosphate on CSF production mechanism.