ritan geriatric hospital. Among these cases, 64 cases were over 50 years old. Radioisotope cisternography was performed by the same method as that of the previous report using ^{169}Yb-DTPA. As an index of delayed C S F circulation, cunt rates of brain conpartment at 24 hours and 6 hours after injection (C_{24}/C_6) were compared with age and clinical signs and symptomes. These cases with the higher activity of head at 24 hours than that of 6 hours are defined to have delead C S F circulation. Patients were classified according to age and 4 clinical symptomes; mental dullness, gait disturbance, incontinence of urine and mutism.

Results; 1) Out of 64 cases over 50 years old, 43 cases (67%) showed delaed circulation of C S F. Among these 43 cases, 3 cases showed transient ventricular filling, 7 cases showed persistent ventricular filling and 33 cases showed only delaed circulation of C S F. Twenty one cases (33%) over 50 years old showed no delaed circulation of C S F. Among these 21 cases, 4 cases showed transient ventricular filling, 4 cases showed persistent ventricular filling and 13 cases showed no ventricular filling. 2) In normal control as well as in cases without 4 major symptomes the mean ratio (C_{24}/C_6) is 0.77. However, according to the increase in number of symptomes the mean ratio showed steady increase, that is with 1 symptome 1.16, with 2 symptomes 1.31, with 3 symptomes 1.34 and with 4 symptomes 1.52. 3) When these ratios wre plotted against age between 3rd end 9th decade significant correlation abetween the delaed C S F circuration and the efect of aging was observed

The Mechanism of High Protein Content of CSF in Guillain-Barre Syndrome ——Diffusion and Transport of Risa in CSF space or from CSF to Plasma——

H. Okuyma, S. Takase and K. Itahara

Division of Clinical Neurology, Institute of Brain Diseases, Tohoku University School of Medicine, Sendai

S. Suzuki and M. Shitara

National Railway Hospital, Sendai

The high content of protein in CSF of the patients affected with Guillain-Barre syndrome (GBS) is an important item of its diagnostic criteria, but the mechanism of protein-increment have been still not explained. The one theory presented up to now is "stagnation within CSF cavity due to disturbance of absorption", and the others is "hyperpermeability of CNS capillaries".

The authers tried to study on that mechanism using ^{131}I-RISA.

CSF (C), plasma space (P) and etravascular space except CSF (E) compose the catenary three compartment system in sequence of C-P-E relating to albumin transport.

Sequential linear scanning of RISA administrated intrathecally by lumbar puncture showed rostral diffusion along the neuraxis within CSF cavity. The ratio B/A indicates the order of RISA diffusion. A: counts between xyphoidion and symphysion after 30 min. B: counts between vertex and gnathion after 4 hrs. This B/A ratio was similar value in GBS group(6) as in control group (6).

Single dose administration of 100μCi of RISA into P revealed that disappearance curves from P in GBS and control cases was not discriminated at all. Because C is negligiblly small compared with P and E, RISA disappeared from P with albumin metabolism and with transport into E. Therefore it may be assumed that the albumin metabolism and permeability of P-E barrier in GBS are as normal as in control. When the same amount of RISA was administrated intrathecally, RISA appeared more rapidly, into P reached higher peaks and then declined more faster in P in GBS than in control cases.

The only possible explanation on the results is that C-P barrier in GBS is more permeable than that of control. Accelerated influx of RISA from C into P is owing to hyperpermeability of C-P barrier and elimination from P is also accelerated, because its supply from C is stopped earlier.

Summary: the RISA diffusion within CSF cavity is not different at all between the cases of GBS and the control. As the mechanism of high content of CSF-protein in GBS, it may be concluded that CSF-plasma barrier is more permeable than that of control.

Radionuclide Measurement of CSF Flow Rate in Ventricular Shunt.

——Phantom Experiment and Clinical Application——

T. Maeda, H. Mori, K. Hisada

Department of Neclear Medicine

S. Kadoya, K. Haba

Department of Neurosurgery, University Hospital, Kanazawa University, Kanazawa

Methods:

On phantom experiment, the Rickham resesvoir-Holter and the flushing device-Pudenz shunt, Picker Dyna Camera II-C apparatus and digital analytical balance (Sartorius Type 2463) and $^{99m}TcO_4^-$ were used.

The shunt system operated as a siphon under the gamma camera. $^{99m}TcO_4^-$ of 50 to 100 μCi was injected into the reservoir and removal of it was expressed as a time activity curve, and a clearance half-time ($T_{1/2}$) of radioactivity was determined from this curves.

The flow downed and evaporated water was wieghted with the balance and total of these values divided by the duration of water transfer yielded the flow rate in gram/min or ml/min. The removal of radioactivity and the flow rate of water through the CSF shunt divice were studied simultaniously. These values were plotted on logarithmic graph and compared with calculated ones according following equation:

$$C_{CSF} = \frac{0.693}{T_{1/2}} \times \text{Reservoir volume}$$

Results and Discussion:

The proper volume of $^{99m}TcO_4^-$ was 0.05ml