Type 1; relative delayed peak time of head count, ventricular reflux 1/2 of cases, moderate clearance.

Type 2; eraly peak time, without ventricular reflux, early clearnace.

Type 3; delayed peak time, with marked ventricular reflux, delayed clearance.

The usefullness of RI cisternography in evaluation of microcephalus was reported.

Spontaneous Recanalization of Occuluded Cerebral Vessels and Its Effect for Regional Cerebral Hemodynamics

K. UEMURA*, T. OKUDERA*, I. KANNO*, Y. MIURA* S. MIURA* and J. WATARAI**

Department of Radiology and Nuclear Medicine, Research Institute of Brain and Blood Vessels, Akita

***Department of Radiology, Yamagata University, School of Medicine, Yamagata*

Regional cerebral blood flow and its vasomotor response for CO_2 inhalation and hypertension were examined in 50 cases with cerebral infarction using the ^{133}Xe intraarterial injection method and the rCBF imaging which was reported by us previously. Results of rCBF studies were analyzed with the special interests in its sequential change with lapsed time from onset and with spontaneous recanalization of occluded vessels.

Results were summarized as follows.

1) Spontaneous recanalization in the occluded vessels were observed in 20 cases and, in most cases its occured within 2 weeks from onset.
2) Luxury perfusion was observed in 65% of recanalized cases but, in occluded group, it was proved only 3 cases out of 30 cases.
3) Luxury perfusion was proved in the cases of not only very acute phase but also 3 weeks after onset.
4) Disturbance of CO_2 reactivity and autoregulation of cerebral vessels were observed in most cases of acute phase. CO_2 reactivity was seemed to recover after 3–4 weeks after the onset but disautoregulation was prolonged to several month.
5) Vasomotor reactivity of recanalized group was almost same as occluded group.

Study on the Unsuccessful Cases of Cisternography

S. KAWAGUCHI, M. IIO, K. CHIBA, H. MURATA, K. MATUI, H. YAMADA, M. ABE

Department of Nuclear Medicine and Radiological Sciences, Tokyo Metropolitan Geriatric Hospital

In the cisternography, injected tracer sometimes leaves from the subarachnoidal space and it disturbs the reading of the cistern. Three hundred and thirty seven cases (373 times) of cisternography examined in our laboratory for the last 4 years were investigated for the purpose to clarify the reasons of such unsuccessful cisternography. The results were as follows:

(1) In total, there were 22% of unsuccessful cisternography accompanied with various grade of brain scan. Completely unsuccessful cases which were not of use were recognized in 5% (19 cases).
(2) There was no remarkable correlations between several radiopharmaceuticals supplied by 3 different companies with results of cisternography.
(3) After investigating the unsuccessful cases, it was found that the reason attributed to the factor of the patient himself was 60%, the malinfusion of spinal tap was 30% and the leakage was 10%. As the possible factor of the patient, increased permiability of blood and spinal fluid barrier or compensatory absorption at spinal level could be considered.
(4) On the other hand, images of malinfusion of

spinal tap (9%) and images of leakage (13%) were observed even in the successful cases of cisternography. The fact indicates that the factor of the patient himself described in (3) plays much higher role than appeared in the figure.

(5) Follow up study of same cases showed 3 types, such as continuously successful cases (A), mixed cases (B) and continuously unsuccessful cases (C). There found no specific reason and difference between these groups. As one of important reasons for the unsuccessful cisternography, technical factor plays some important role as weas indicated in the follow up studies which showed as much as 11 cases out of 30 had both successful and unsuccessful results in short interval studies.

(6) Continuously unsuccessful cases were only 4 cases. It is important that the needle of spinal tap should be inserted precisely into the subarachnoidal space. The cases with images of leakage or malinfusion should be examined further. Even in the unsuccessful case reexamination with some interval should be performed since frequent successful second examination can be expected.

Radionuclide Examinations of Ventricular Atrial or Ventricular Peritoneal Shunt Examination of Patency, Blocked Site and Cerebrospinal Fluid Flow Rate

T. MAEDA*, H. MORI*, K. HISADA* and S. KADOYA**
*Department of Nuclear Medicine, Kanazawa University, Kanazawa
**Department of Neurosurgery, Kanazawa Medical College, Uchinada

A small volume of $^{99m}TcO_4^-$ was injected into the reservoir and scintiphoto was taken after few minutes with polaloid camera. When shunt was patent, the photo showed the radioactivity in the reservoir and didtal tube. In obstructed case, radionuclide in the reservoir was flushed by digital pressure or reinjection of saline. We examined the possibility of csf withdrawal from the reservoir, too. When distal tube was block, the photo after flushing showed ventricular tube in Rickham Holter system, and only reservoir in Pudenz system. Csf was easily withdrawed into syringe, too. When ventricular tube was block, photo after flushing showed distal tube in each type, and csf was not withdrawed.

We performed phantom experiments to determine csf flow rate through the shunt system, Rickham Holter system and Pudenz system. In the first experiment, flow rate was set by siphon, and in the second one, flow rate was set by infusion pump. Radioactivity clearance half time at the reservoir and flow rate showed linear relationships on double-log scale in each experiment. The data of the second experiments are shown. In Rickham Holter system, the regression equation is $\log_{10}(F) = -1.8 \log_{10}(T1/2)$, and the experimental variation is $-1.9 \log_{10}(T1/2) - 0.03 \leqq \log_{10}(F) \leqq -1.7 \log_{10}(T1/2) + 0.02$. In Pudenz system the regression equation is $\log_{10}(F) = -1.3 \log_{10}(T1/2) + 0.086$, and the variation is $-1.26 \log_{10}(T1/2) - 0.047 \leqq \log_{10}(F) \leqq -1.26 \log_{10}(T1/2) + 0.1$. These data of the second experiment are almost same values as that of the first one.

Correlation with Radionuclides Cisternogram and Computed Tomogram

M. MIYAZAKI*, A. NARIMATSU*, M. MAKI*, K. KUSAKABE*, T. YAMAZAKI*, E. TAZAKI*, N. KOBAYASHI** and Y. SAITO**
*Department of Radiology, **Department of Neuroradiol, Tokyo Women's Medical College

With a use of computed tomography, the morphological informations of the ventricles, basal cisterns and cerebral sulci can be easily obtained. On the other side, radionuclides cisternography is an excellent method to know the flow of the cerebrospinal fluid. In this study, radionuclides