in 46%. U form which was introduced by McKissok and the shift of anterior cerebral artery combined U form in 29.6% each other and the shift of posterior cerebral artery in 30.8% of 26 patients.

On echoencephalography, the shift of midline echo was observed in 56.3% and echo of hematoma in 87.5% of 16 patients, especially a case in which echo of hematoma were observed had pons hemorrhage which was negative in carotid arteriography.

On EEG, δ wave was observed in only 23.6% regardless of unconsciousness, but slow α and θ wave in 80.7% each other. The lateral signs were observed in 76.9%, but localized signs in 30.7%.

DISCUSSION TO 34 AND 35

Autopsy Findings of Cases with Cerebrovascular Lesions

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We have been experienced 69 cases of intracranial aneurysms, 65 cases of intracranial arteriovenous malformation, 26 cases of cerebral or carotid arterial occlusion, and 6 cases of hypertensive hemorrhage in the past 6 years. However, since these cases are not adequate for evaluation of surgical treatment of cerebral vascular lesion, we have reexamined 642 autopsied cases of cerebrovascular lesion, that is, subarachnoid hemorrhage: 124 cases, cerebral hemorrhage: 302 cases, cerebral softening; 146 cases and others; 80 cases.

Ruptured aneurysms were verified in 92 out of 124 cases of subarachnoid hemorrhage. Sites of aneurysms were anterior cerebral-anterior communicating complex in 39 cases, internal carotid-posterior communicating arteries in 12, middle cerebral arteries in 20 and vertebral-basilar-cerebellar arteries in 18. Moreover, in more than 10% of cases, multiple aneurysms were found. These facts suggest that the significance of bilateral carotid and vertebral arteriograms can hardly be overemphasized.

Sites of the intracerebral hematomas were classified as follows: (1) cortico-subcortical (33 cases, 15%), (2) thalamostriate area (50, 22%), (3) cerebellum (30, 13%), (4) primary ventricular (4, 2%), (5) hypothalamus and brain stem (15, 7%), (6) medulla and pons (78, 35%) (primary pontine hemorrhage in 40 cases), and (7) multifocal (14, 6%). Thus the hematomas in groups 4 to 7 amounted to about a half of the total cases. In another half of the cases (groups 1-3), however, the hematomas were situated in the region where the operative

procedures seemed to be possible, and moreover, in these 3 groups, more than 80% of cases harbored the hematomas as large as 3-6 cm in diameter or more.

36. Experimental Studies on Intracerebral Hemorrhage

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The clinicopathological changes in the early stage in experimental intracerebral hemorrhage, which was made by putting the fresh clot into internal capsule, were studied. Results were obtained as follows:

- 1) Blood pressure rised slightly and puls rate showed no changes or decreased. Respiration became rapid immediately after putting and slow lately.
- 2) Cerebrospinal fluid pressure rised immediately 2 or 3 times as normal and maintained in high pressure.
- 3) Cerebral blood flow (carotic artery) and O₂ volume of cerebral blood decreased.
- 4) Cerebral oxygen tention decreased immediatly and recovered in 30 to 60 minutes and then increased afterward.
- 5) O₂ and CO₂ volume of periferal blood showed no marked changes, but O₂ volume of venous blood tended to decrease.
- 6) Leucocyte count did not show any constant changes and blood sugar decreased, and Ht, serum protein showed no changes.

From the above results, it may be concluded that cerebral blood circulation and cerebral metabolism are markedly decreased.

37. The Operation of Hypertensive Intracerebral Hemorrhage

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Twenty cases of massive intracerebral hemorrhage out of 38 surgically treated cases of cerebral apoplexy, including 3 cerebral softenings, were operated upon from 12 hours to 13 days after stroke. And though 18 cases had been complicated