of the hematoma through burr hole openings, and, so far, no recurrence has been encountered.

3) All cases of acute subdural hematoma accompanied multiple brain lacerations and/or intracerebral hematoma. For the compound lesion of this type, single irrigation of the hematoma through burr holes was practically of no value. Large osteoplastic craniotomy should be indicated for sufficient removal of blood clot and devitalized brain tissue so as to leave a space within the skull, and the patient should be managed with planned hypothermia after the operation.

4) Convexity fracture was confirmed in all death cases, while basis fracture was noted only in 2 cases in which the fracture extended down from the convexity.

5) Cause of death was thought to be primary brain stem lesion in 2 cases, and in all others secondary lesion of vital centers due to brain stem herniation played the major role. For anticipation and diagnosis of the brain stem herniation, lack of pulsation of retinal veins and angiographic findings were as essential as close neurological observations. Cerebral arteries were not visualized further than the carotid siphon in 2 cases with advanced incisural herniation. Post-mortem examination in these cases disclosed a considerable disturbance of blood circulation of the whole cerebrum.

6) Importance of lateral view besides A-P carotid angiogram for the diagnosis of intracranial hematoma was emphasized and a four-way-cock with needle and syringes which was designed by us for this purpose was presented.

L4. A Clinical Review of 13 Cases of Intracranial Vascular Injuries.

H. NISHIJIMA, Y. SAKAKIHARA and T. OKANO

The 1st Dept. of Surg., Tokushima Univ. School of Med.

Thirteen cases of intracranial vascular injuries and hematoma have been reviewed. These included two cases of epidural hematoma, seven cases of subdural hematoma, two cases of intracerebral hematoma, one case of traumatic occlusion of internal carotid artery and one case of arteriovenous fistula in the cavernous sinus. In epidural hematoma, skull fracture and "lucid interval" were evident and motor disorders of extremities were present. No appreciable elevation in cerebrospinal pressure was demonstrated. In acute subdural hematoma, "lucid interval" was present in one case, progressive unconsciousness developed in two cases in whom the patients were completely unconscious immediately after trauma. In these three cases, anisocoria, abnormal light reaction were present. These signs and symptoms were considered to be due to serious cerebral laceration which rendered the prognosis serious, and in one case the outcome was fatal.

Two cases of intracerebral hematoma occurred in geriatric patients with hypertension and arteriosclerosis. "Lucid interval" was typical in one case and

associated with cerebral laceration, elevated cerebrospinal pressure, choked disc and focal signs.

The diagnosis was made by cerebral angiography. Suction of hematoma resulted in the improvement of symptoms.

Cases of chronic subdural hematoma were admitted 13 to 100 days after the trauma. Signs and symptoms are those of elevated intracranial pressure and focal lesions. Cerebral angiography readily established the diagnosis. Symptoms were relieved by the removal of hematoma or suction of liquefied hematoma. Prognosis were excellent. It was felt that suction of hematoma may be difficult in cases where hematoma has been organized or has not been yet liquefied. The case of internal carotid occlusion was admitted because of hemiplegia and aphonia six months after trauma. Cerebral angiography established the diagnosis. Administration of vasodilator agent combined with stellate block brought forth the relative relief. Early diagnosis should result in a better improvement. In arterio-venous fistula, no pulsating exophthalmos was present. No ocular palsy was evident. Convulsion was not seen. Ligature of common carotid artery resulted in complete relief of the symptoms.

L5. Pathological Physiology and Treatment in the Acute Stadium of Cerebral Injury.

T. MITSUNO

The 2nd Dept. of Surg., Iwate Med. College

It has been emphasized that hazard due to pressure cone occurred if lumbar puncture and removal of CSF was done in acute stadium of cerebral injury. But lumbar puncture is of benefit and useful for the purpose of diagnosis of cerebral compression and subarachnoid hemorrhage.

Main changes in pathological physiology of acute stadium after cerebral injury are inhibition in respiration and cerebral circulation, especially disturbance of circulation of vertebral artery resulting anoxia of the brain stem.

L6. Clinical Studies on Intracranial Hematomas.

S. KIKUCHI

Juntendo Univ. School of Med.

1) Clinico-statistical observation

Material: 93 cases of intracranial hematomas which were treated in our clinic and 298 cases of autopsy at Tokyo Medical Examiner Office.