Acute Extradural Hematoma of the Posterior Fossa

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Extradural hematoma in the posterior fossa is rare and often is not considered in cases of head injury.

In 1938 McKenzie recorded a case of a child who, 30 hours after a fall from a chair, became stuporous and died 14 hours later. Autopsy revealed an extradural hematoma of the posterior fossa. In his comment he stated: "I had never heard of extradural hemorrhage over the cerebellum; the diagnosis was not even suspected." He regarded the case as a pathological curiosity, reported "in the hope that some day an acute clinician will diagnose such a condition." This hope was realized when Coleman and Thomson published a similar case with successful treatment; since then there have been other such reports. The literature on this subject has been reviewed by Beller and Peyser, by Campbell et al., and, more recently, by Leigh and O'Connell who were able to collect 80 cases. Others can be found elsewhere. Most of the reported cases followed a subacute course, with the symptoms appearing several days after an injury to the occiput. This subacute form has been adequately described. Emphasis has been laid on the slow development of this type of hematoma, since it usually results from slow bleeding from a dural sinus, in contrast to the strong rapid bleeding from the middle meningeal artery in supratentorial hematomas.

Occasionally this type of hematoma does occur with strikingly acute symptoms leading to death within a few hours. Even in these cases prompt diagnosis and surgical intervention may save the patient. We have recently seen and successfully treated a case of this sort.

Case Report

A 17-year-old boy was found unconscious at the foot of the steps of his school and was admitted to the hospital 2½ hours later. It was related that, at the age of 10, he had an illness regarded as encephalitis.

Physical Examination. He was in deep coma with manifestations of decerebrate rigidity; both pupils were equally dilated and unreactive. His blood pressure was 120/80, his pulse 72 per min., the breathing stertorous at 50 per min., and the fingernails were cyanotic. He responded to painful stimulation by movements of pronation and hyper-extension, although the left limbs showed less movement. There was generalized hyperreflexia, with patellar and ankle clonus and bilateral extensor plantar responses. There was persistent eye deviation to the left and marked neck stiffness.

Radiological Examination. A curvilinear fracture extended close to the midline of the occiput, crossing the sulcus of the transverse sinus (Fig. 1). Right carotid angiography showed deviation of the pericallosal arteries in the antero-posterior projection, probably the result of rotation of the head and not an indication of sub-falcine herniation. A mild degree of dilatation of the lateral ventricle was suspected in the lateral projection (Fig. 2); the lateral displacement of the thalamo-striate vein in the antero-posterior projection was considered further evidence (Fig. 3). Slowed cerebral circulation was suggested by the fact that the early venous phase was only reached in the
3rd film; by this time, in our standard technique, we expect the dural venous sinuses to be visualized. During the angiographic examination the blood pressure rose to 180 systolic, the pulse to 120 per min., and the right pupil became more dilated.

The findings taken together suggested a state of mild hydrocephalus associated with acute intracranial hypertension. In the presence of an occipital fracture, a posterior fossa hematoma was considered a strong possibility.

Operation. Bilateral suboccipital burr-holes revealed a large fresh extradural hematoma about 3 cm. thick. Through a suboccipital craniectomy some 60 cc. of blood, partly clotted and partly liquid, were removed. The bleeding was found to be coming from a tear of the torcular Herophili and from torn small dural vessels. Hemostasis was achieved with gelfoam and suturing of the dura to the epicranium at the torcular. The dura over the cerebellum was incised but this did not reveal any further abnormality. A Penrose drain was incorporated in the wound closure and tracheostomy performed.

Postoperative Course. Immediately after operation, the pupils returned to normal size and reacted to light; breathing became quieter and slower. Twelve hours later the signs of decerebration and the left hemiparesis had disappeared. The patient’s condition was critical for several days but, over the next 2 weeks, consciousness slowly returned. After 3 weeks he was out of bed, but showed signs of spasticity, ataxia, and dysarthria plus dysmetria of the left upper limb; he vomited occasionally.

Within 6 months there was considerable improvement. He had returned to his studies and was fully independent, but complained of headache, giddiness and difficulty in walking. The legs were still spastic; there were hyperreflexia and bilateral Babinski responses, dysdiadochokinesis and slurred speech.

Comment. This patient had been admitted in extremely poor condition with decerebrate rigidity and fixed dilated pupils. The left hemiparesis at first suggested a supratentorial lesion but the demonstration of an occipital fracture and an angiographic suggestion of hydrocephalus pointed to the correct diagnosis and effective surgical therapy.

Review of Cases

We have found 12 other cases in which coma actually developed within 12 hours (Table 1)\(^5,12,13,17,22\) and which we arbitrarily termed “acute”. Table 1 also shows that 7 cases suffered immediate unconsciousness followed by a period of recovery. In 3 cases, the original injury was so mild as not to cause

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Fig. 2. Right carotid angiography, lateral projection showing wide sweep of pericallosal arteries.

Fig. 3. Same, venous phase, antero-posterior. The widened arc of thalamo-striate vein indicates ventricular dilatation, without shift. Early venous filling in the third film of the series indicates slowed circulation.