CASE REPORTS AND TECHNICAL NOTES

EXTRADURAL HEMORRHAGE OF THE ANTERIOR AND POSTERIOR FOSSAE

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Extradural hemorrhages of the anterior and posterior fossae are rare. Even at postmortem examinations, those covering the surface of one cerebellar hemisphere are not often seen. The infrequency of significant bleeding in these locations is shown by the series of 504 autopsy cases of fractured skull studied by LeCount and Apfelbach.* In 104 cases there were extradural hemorrhages large enough to cause cerebral compression; 14 of these clots covered the occipital lobe and 6 the frontal and parietal lobes. The remainder were in the middle fossa. None was encountered over the cerebellum.

This report concerns 2 cases in a series of severe head injuries seen at the 180th General Hospital. It should re-emphasize the problem of extradural hemorrhage in unusual locations.1,5,9

The classical picture of a middle fossa extradural hemorrhage, usually due to a tear of the middle meningeal artery, is well known. Progressive stupor, bradycardia, contralateral pyramidal tract signs and the presence of a homolateral, fixed and dilated pupil indicate the need for immediate surgery. The clot is approached through the subtemporal trephine and decompression opening.3

Though by far the majority of extradural hemorrhages occur as the result of a tear of the middle meningeal artery, it should be kept in mind that the anterior and posterior meningeal arteries, as well as the dural sinuses, may give rise to hemorrhage in either the anterior or the posterior fossa. It is believed that the anterior ethmoidal artery, which gives off a branch to supply the dura mater of the anterior fossa, is the source of bleeding in frontal extradural hemorrhages.

In contrast to hemorrhage from the middle meningeal artery, frontal and cerebellar extradural bleeding give few diagnostic signs to indicate the need for urgent surgery. The following 2 cases are examples in point.

Case 1. A young, white male was admitted to the hospital on 6 July 1945, having been injured in a jeep accident several hours before. Examination in the first medical installation had shown a stuporous patient who became restless when disturbed. Respirations were rapid; blood pressure was 160/100 and pulse 100. Blood was oozing from both ears, the nose and the mouth. There was a 4 cm. curved laceration of the scalp in the right frontal region, just below the hairline. A second, smaller laceration was over the right parietal area. There was a fracture of the left forearm. Neurological examination showed pinpoint pupils and a nystagmus to the right.

Transfer to the general hospital was effected the next day. On admission here the patient was deeply stuporous and moderately restless. He moved the left lower extremity slightly less than the right. The pupils were small, equal and reacted poorly. There were no other neurological findings. Pulse rate and blood pressure were unchanged.

The patient continued in deep stupor. He was maintained on caffeine, nasal oxygen and intravenous fluids. No localizing neurological signs developed. On 10 July a spinal tap was done. The pressure was elevated to 240 mm. and the fluid was clear and colorless. His condition continued to decline, breathing became deep and labored, and rectal temperature climbed to 105°. Death came on 14 July, 8 days after the injury.

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EXTRADURAL HEMORRHAGE

Postmortem examination showed the previously described lacerations. On removal of the calvarium a large extradural clot covering the right frontal pole was disclosed (Fig. 1). It measured $9 \times 6 \times 3$ cm, and there was a smaller extension of the clot over the anterior pole of the left frontal lobe. The clot was dark red in color, solid, and firmly adherent to the surface of the dura. The remainder of the brain was grossly normal. The anterior fossa showed an extensive fracture which paralleled the sphenoid wings entirely across the anterior fossa (Fig. 2). It was not possible to determine the actual bleeding point.

![Fig. 1. Case 1. Anterior and lateral views of right frontal extradural hematoma.](image)

Comment. In this case, localizing neurological signs were absent. The pulse was not slowed, the blood pressure remained slightly elevated and the pupils remained equal. As can be seen in Fig. 1, the clot was located over the frontal pole, far anterior to the middle meningeal artery. Its presence would not have been disclosed by an approach through the classical temporal incision. A significant factor in the localization of an extradural clot covering the frontal pole is the presence of a laceration or abrasion over the frontal region of the scalp. Such a lesion was present in this case. A second factor of diagnostic importance was the presence of clear spinal fluid under increased pressure.

The second case report concerns an extradural hematoma in the posterior fossa. Clots in this location are very rare. Coleman and Thomson have pointed out that the combination of cerebellar signs, nuchal rigidity and drowsiness in a patient with an occipital skull fracture indicates the possibility of a posterior fossa, extradural clot. Kessel reported a case of posterior fossa, extradural hematoma which was successfully operated upon. He pointed out that in the diagnosis of a hematoma in this location the symptoms may be slow in developing due to the low pressure in the transverse sinus.

Case 2. A young, white male was admitted to the hospital 19 July 1945 a few hours after he had fallen from a truck. He was deeply stuporous on admission and the only external evidence of injury was a superficial scalp abrasion in the midline just above the inion. Neurological examination showed a patient in deep stupor. There was no bleeding from nose, mouth or ears. The pupils were equal and reacted well to light. There was no evidence of paralysis or paresis and a bilateral Babinski response was present. Blood pressure was normal; pulse 72.

The patient began to clear somewhat and respond to simple commands. A spinal tap was done and the fluid was found to be grossly bloody and under 120 mm. of pressure. He continued to improve slowly for several hours and then became increasingly restless. About 12