Rapid Disappearance of Acute Posterior Fossa Epidural Hematoma
—Case Report—

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Abstract

A 34-year-old man presented with an acute epidural hematoma that resolved within 24 hours after a fall. On admission, neurological examination found no abnormalities. Computed tomography (CT) indicated a linear fracture in the occiput. Four hours after the injury, the patient’s condition worsened and repeat CT showed a bilateral epidural hematoma in the posterior fossa extending over the bilateral transverse sinuses and severe brain swelling. The patient’s family refused surgery. Conservative management with pentothal was performed in the intensive care unit. Follow-up CT 21 hours after the initial injury showed complete resolution of the hematoma and an increase in the CT density of the pericranial soft tissue near the hematoma. The pressure gradient between the subgaleal and epidural space may have been important in the rapid disappearance of this epidural hematoma.

Key words: acute epidural hematoma, rapid disappearance

Introduction

Epidural hematoma (EDH) occurring as a result of traumatic head injury constitutes one of the most critical emergencies in neurosurgery. Advances in imaging techniques have clarified the natural history of such hematomas, but nonoperative treatment has usually been adopted in patients with subacute and chronic EDHs. The resolution time of the hematoma is generally quite long, but a few cases of EDH have rapidly disappeared (<24 hours). Various mechanisms have been suggested, but how the hematoma disappears remains unclear. We report a case of bilateral EDH which disappeared rapidly without surgical intervention.

Case Report

A 34-year-old male fell from a height of approximately 2.5 m at 2:50 PM on September 4, 2002, and hit his occipital region against the floor. He was transported directly to hospital by ambulance immediately after the injury.

On admission, he complained of headache and ear bleeding. Mastoid area swelling was noted in the right temporal region. Neurological examination revealed that the patient was alert with no neurological deficits. All laboratory values were within the normal limits with no evidence of coagulopathy.

Brain computed tomography (CT) performed at 3:50 PM revealed a skull fracture in the occiput and pneumocephalus (Fig. 1).

The patient’s condition worsened 4 hours after the injury. The patient was intubated. Repeat CT showed a bilateral EDH in the posterior fossa region, extending over the bilateral transverse sinuses and compressing the brainstem (Fig. 2A). The patient’s
family refused surgery, so conservative management with pentothal coma therapy was performed in the intensive care unit. Follow-up CT 21 hours later showed almost complete resolution of the EDH in the posterior fossa (Fig. 2B). There was no hemorrhage in the supratentorial region, with evidence of severe cerebral edema. The patient died 11 days after the injury as a result of cerebral edema.

Discussion

Extradural hematoma is generally managed with surgical treatment, but spontaneous healing has been observed in both asymptomatic and mildly symptomatic patients. 5,7 The healing process has been likened to that of chronic subdural hematoma, which occurs through the formation of a thin fibrovascular neomembrane lining the dural side acting as an absorbing structure. The angioblasts begin to form recognizable sinusoids which gradually establish connections with the marginal dural vessels, so most blood components and by-product can pass back into the dural circulation through cytoplasmic gaps in the permeable wall of these sinusoids. 5,8 However, such hematoma resolution only begins from the 2nd week, so cannot account for the rapid disappearance of the hematoma in our case.

Only five cases of EDH have resolved within 24 hours of detection with conservative management. 1–4,9 Such rapid resolution in the acute stage could result from pressure-induced redistribution secondary to brain swelling. 6 However, EDH may not be so easy to dissipate because of the tenacious adhesion between bone and dura, especially in a large hematoma. Another possibility is that the hematoma is forced out of the intracranial region through the fracture line due to the pressure gradient between the epidural and extracranial parts. 1,4,9 In our case, the EDH could not be reabsorbed and the pressure gradient may have been important in the hematoma disappearance.

In our case, follow-up CT demonstrated a linear skull fracture at the midline and density change in the pericranial soft tissue. To confirm the pressure gradient hypothesis, the density of the pericranial soft tissue was measured on the brain CT scans. The mean density of the hematoma was 70.4 Hounsfield unit (HU). Initially, the density of the pericranial tissue was 47.15 ± 3.01 HU, but increased to 55.40 ± 2.75 HU after resolution. Therefore, a connection between the acute posterior fossa EDH and the pericranial tissue through the fracture might account for the rapid disappearance of the hematoma.

References


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