



Image Report

Remote bifrontal epidural hematoma following hemispheric glioma resection. A rare life-threatening postoperative complication

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ABSTRACT

Background: Postoperative acute epidural hematoma (EDH) is a well-known serious complication that usually occurs at the operated site after cranial surgery. However, epidural bleeding, distant from the site of the previous craniotomy, is relatively rare and may sometimes cause significant neurological morbidity or even mortality. We report such a case.

Case Description: A 35-year-old woman, previously healthy, was operated on for a left temporo-parieto-fronto-insular anaplastic astrocytoma. Between 2 and 4 h after the surgery, the patient had trouble waking-up following the general anesthesia. Emergent computed tomography (CT) scan revealed an acute bifrontal EDH away from the initial surgical field. The patient underwent an immediate reoperation, a decompressive bifrontal craniotomy, and the evacuation of the hematoma. Despite the neurologic improvement, she died 24 days after the surgery due to severe sepsis caused by pulmonary infection with pseudomonas aeruginosa.

Conclusion: The pathophysiology of postoperative remote EDH is poorly understood, although various hypotheses have been suggested including the loss of tamponade effect, the vasomotor mechanisms, and the coagulopathy. As seen in the present case report, we suspected that the intensive use of perioperative mannitol may also promote this complication. In the early postoperative period, every patient with neurological deterioration should have a rapid cranial CT-scan because early detection and removal of postoperative acute EDH can be life-saving.

Keywords: Brain tumors, Craniotomy, Epidural hematoma, Glioma, Postoperative complication, Remote

A 35-year-old woman, previously healthy, was referred to our department with a 12-month history of headache and a right hemiparesis that started 2 months before her admission. Magnetic resonance imaging of the patient's head showed a left intraxial temporo-parieto-fronto-insular tumor (7.2 × 7.8 × 6.9 cm) with a 1.2 cm midline shift to the right [Figure 1]. The patient was placed on supine position over a horseshoe headrest without pins fixation. Then, a large left craniotomy was performed. There was a significant brain swelling before and during surgical resection of the tumor requiring osmotherapy with an intravenous infusion of mannitol. The tumor was completely and successfully removed. The dura was normally closed and suspended. Between 2 and 4 h after the surgery, the patient had some trouble waking-up

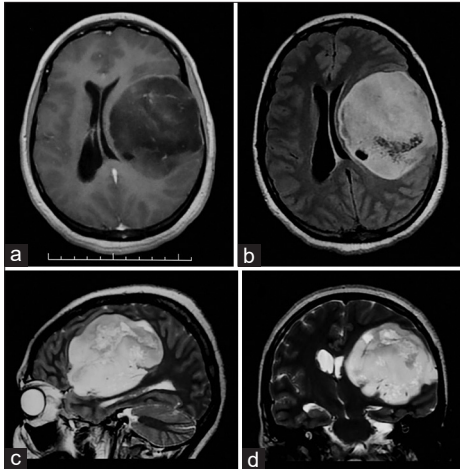


Figure 1: Voluminous tumor involving the left frontal, parietal, and temporal lobes in a 35-year-old woman. Brain magnetic resonance imaging: Axial post gadolinium T1-weighted image (a) and on FLAIR sequences (b). Sagittal (c) and coronal (d) T2-weighted images. Histopathological diagnosis was an anaplastic astrocytoma.

after the general anesthesia. An acute bifrontal epidural hematoma (EDH) away from the initial surgical approach was revealed by emergent computed tomography (CT) scan [Figure 2]. The patient underwent an immediate reoperation, a decompressive bifrontal craniotomy, and the evacuation of the hematoma. Coagulation parameters were within normal ranges, before and after the surgical procedures. Progressively, her mental status improved after few days of unconsciousness and she was gradually weaned from the mechanical ventilation. Post extubation, her Glasgow Coma Scale fluctuated between 8 and 11 with the right hemiparesis. Unfortunately, she died 24 days after the surgery due to severe sepsis caused by pulmonary infection with *Pseudomonas aeruginosa*. Neuropathologic examination of the brain tumor revealed an anaplastic astrocytoma.

Postoperative acute EDH is a well-known serious complication that usually occurs at the site of the cranial surgery.^[5] Using dural tenting sutures have always been taught to prevent blood from collecting in the potential epidural space following cranial surgery.^[6] However, acute extradural hematoma distant (remote) from the site of the previous craniotomy is relatively rare and may sometimes cause significant neurological morbidity or even death.^[1,2,4,7,8]

The pathophysiology of this unusual condition is poorly understood although various hypotheses have been suggested including the loss of tamponade effect, the vasomotor mechanisms, and the coagulopathy.^[1-4,7,8] As in our case, we suspected that the intensive use of perioperative mannitol may also promote this complication. In the early postoperative period, every patient with neurological deterioration should have a rapid cranial CT-scan because

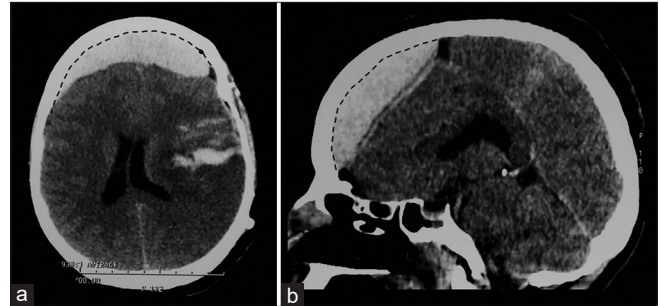


Figure 2: Postoperative head CT-scan done 4 h after the first surgery. Axial (a) and sagittal (b) images revealing a bifrontal acute epidural hematoma away from the initial left surgical approach.

early detection and removal of postoperative acute EDH can be life-saving.^[2,3,9]

Depending on its location, the distant postsurgical EDH can be classified as in the adjacent site, on the contralateral side, or more rarely on bilateral side. Between 1974 and 2015, 23 cases of remote postoperative EDH after brain tumor surgery were reported in the literature.^[3] In addition, 14 more cases were published by a single Chinese team in 2016.^[9] As reported by Yu *et al.*, incidence of postoperative remote EDH after intracranial tumor resection is about 0.15%.^[9] Among all these 37 cases reported, two cases died and both had bilateral EDH like in our patient.^[3,9] Prognosis of bilateral hematoma seems more perilous than that of a unilateral one. Interestingly, remote intracranial EDH appears to be independent of brain tumor nature.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflict of interest.

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