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Double epidural hematomas. An uncommon presentation in head trauma

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ABSTRACT

Double epidural hematomas are uncommonly seen in trauma, and they tend to have a higher mortality rate as compared to single EDH. We present the case of a 15-year-old male who presented with right frontal and right parietal acute EDH and underwent right fronto-temporo-parietal craniotomy and EDH evacuation. Double EDHs are usually associated with low GCS on presentation, and they need to be surgically evacuated rapidly. They are seen as a consequence of severe TBI with high morbidity and mortality.

Keywords
double extradural hematoma, traumatic brain injury, craniotomy, neurosurgical emergency, hematoma evacuation

INTRODUCTION

Extra-dural hematomas account for 10.6% of all traumatic brain injuries, and for about 5-15% of fatal head injuries.[1] Double EDHs have a reported incidence of 2-10% of all reported EDH. However, they have a mortality rate of more than 30%.[2] When associated with a GCS of less than 8, the mortality rate increases to 48%.[3] Double EDHs occurring on the same side after trauma is extremely uncommon. We present a case of ipsilateral double EDH in a 15-year-old child after physical assault.

ILLUSTRATIVE CASE

A 15-year-old male presented to the Casualty with alleged history of assault over head with wooden stick by unknown people with brief period of loss of consciousness for 5 minutes and a single episode of vomiting. There was no history of seizures or ear/nose/throat bleed. No history of substance abuse was elicited from the patient or attendants. Patient did not have any known premorbid conditions.

On examination, patient was vitally stable but drowsy with a Glasgow coma score of E3V4M6. Pupils were bilaterally equally reactive to light. There were no other focal neurological deficits present. Rest of the systemic examination was within normal limits.

Non-Contrast CT scan was done in the Emergency which showed an extra axial biconvex collection of blood HU of maximal thickness 24mm in the right frontal region with another extra axial biconvex collection of blood HU in the right parietal region of maximal thickness 20mm with overlying linear undisplaced fracture of right parietal bone. There was

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obliteration of sulcal spaces and cisterns with resultant mass effect and midline shift of 4.5mm to left. The volume of EDH in right frontal region was calculated to be 44 ml and was 35ml in the right parietal region.

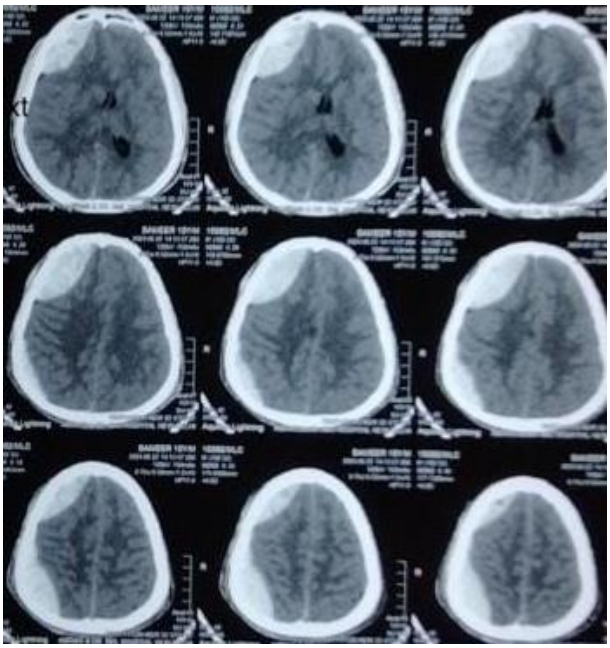

Figure 1. Non contrast CT head showing right frontal EDH of volume 44ml and right parietal EDH of volume 35ml causing mass effect and midline shift of 4.5mm to left.

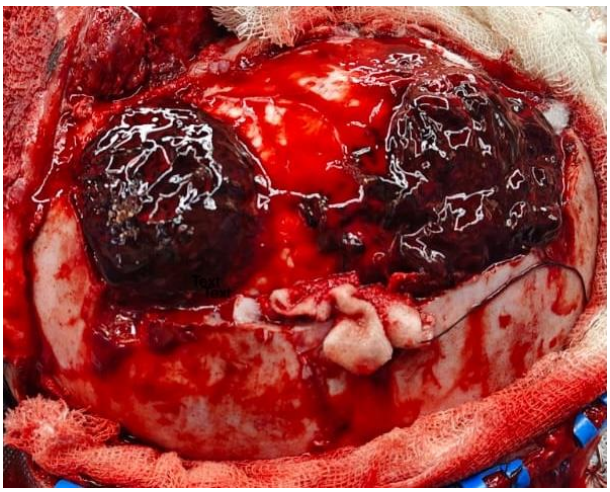

Figure 2. Intra-operative photograph showing double EDH, one in the frontal region and other in parietal region.

Patient underwent right fronto-parieto-temporal craniotomy and EDH evacuation. Standard reverse question mark incision was made and right fronto-temporo-parietal bone flap was elevated using high speed drill. Extra-dural hematoma of approx. volume 50 cc was seen in the right frontal region, no bleeding vessel could be identified in this region. Another extra-dural hematoma of volume approx. 40cc was present in the right parietal region and was not in communication with the previously mentioned EDH. The source of bleeding here was the linear fracture line in the overlying bone. Intraoperatively, gentle evacuation of the EDHs was done. Dural hitch sutures were placed at the margins of craniotomy so as to allow brain expansion, and prevent accumulation of blood in the dead space. The bone flap was replaced back and wound was closed in layers.

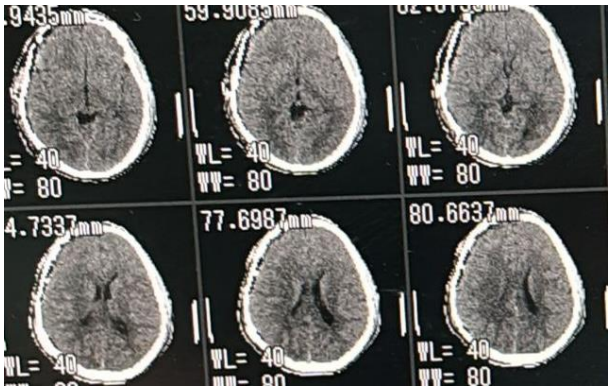

Figure 3. Post operative non contrast CT head showing near total evacuation of both hematomas with resolution of mass effect.

Patient was extubated on the same day with a post-operative GCS of E4V5M6. A non- contrast scan done in post op revealed near total evacuation of both the hematomas. Patient was discharged on post operative day 3 with no focal neurological deficits.

Discussion

Double EDH is a rare diagnosis and accounts for about 2-10% of all EDHs reported across literature.[4] It may be unilateral or bilateral, with the unilateral variant being much less common, having a incidence of only 8% of all double extra-dural hematomas.[5] However the mortality rate is higher as compared to single EDH, especially when associated with GCS of less than 8, wherein the mortality rate can be as high as 47%.

Double EDHs are more commonly seen bilaterally because of coup and counter-coup mechanism of injury. However, double EDHs occurring on the same side are also reported in literature. EDHs result from

injuries to dural vessels, most commonly the middle meningeal artery or its terminal branches, and are usually associated with an overlying fracture of the skull bone. Unlike the classic EDH, double EDH is more commonly venous in origin, with bleeding occurring from diploic veins or a torn dural venous sinus.[6]

In the present case, the bleeding occurred in the frontal region due to stripping of the periosteal dura from the frontal bone following trauma, whereas in the parietal region the EDH was associated with an overlying fracture.

Noncontrast CT scan is diagnostic in such cases. In CT scans, EDH usually appears as a biconvex extradural hyperdense collection, limited to cranial suture lines. The presence of areas of low density within the hyperdense collection (swirl sign) represents active ongoing bleeding. [7] Urgent surgical evacuation is the management of choice in such cases.

Double EDH is usually the result of a more significant and severe mechanism of trauma, and are associated with greater morbidity and mortality.[8] They usually have a lower GCS at presentation and undergo rapid neurological decline. Therefore, early identification and prompt and urgent evacuation of the hematoma remains the cornerstone of therapy in such cases.[9]

Conclusion

Double extradural hematoma is an uncommon but life-threatening entity often resulting from high-impact trauma. Early recognition through prompt neuroimaging and timely surgical evacuation are crucial for favourable outcomes. Vigilant intraoperative haemostasis and postoperative monitoring remain essential to prevent recurrence and ensure optimal neurological recovery.

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