POST TRAUMATIC EXTRADURAL HAEMATOMA IN AN TWO MONTH OLD INFANT : RARE CASE REPORT WITH REVIEW OF LITERATURE

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Abstract

Traumatic brain injury is very common among children, but the incidence of acute EDH is relatively rare than adult population. Acute EDH in infants and children is a totally different entity in terms of occurrence and presentation. Diagnosis of pediatric EDH is difficult due to few specific characteristics of pediatric population. Early diagnosis and prompt management leads to better neurological outcome.

Introduction:

Traumatic brain injury is a common cause of mortality and acquired neurological impairment in children.¹ The acute epidural hematoma (EDH) incidence in children is relatively uncommon, and represents only 2-3% of all head injuries, with even more rarer incidence in infants.²⁻⁵ It is basically due to tight adherence of the dura to the skull and folding of the skull which makes the incidence of EDH even more rarer.⁶ In neonates and infants, middle meningeal artery moves freely between the skull hence less susceptible to injury in comparison to adults, small venous sinuses bleeding is more important cause of bleeding in infants.⁷ Prerequisites for better outcomes are early diagnosis and management. Diagnosis of pediatric EDH is difficult due to few specific characteristics of pediatric population.⁸⁻¹⁰ Mortality rates in children including infants vary among different studies which approximate to around 0–12%.¹⁰⁻¹⁴ Use of computed tomography (CT) as a standard diagnostic tool has led to accurate and early diagnosis of EDH. Advanced imaging has also altered the profile of patients and outcomes in all groups and also uncovered a group of patients having posttraumatic EDH who are asymptomatic and another group of patients with EDH which were detected at varying periods following the initial trauma and managed non-operatively.¹⁵⁻¹⁶

There is lack of guidelines of pediatric EDH management. Criteria for using surgical evacuation versus conservative managements is also unclear, which further makes management of pediatric EDH more complicated.¹⁷⁻¹⁹ We are reporting here a rare case of acute epidural hematoma in an eight month old infant due to fall from bed, who was managed surgically.

Case presentation/ clinical presentation:
The patient is a 2 month old boy who accidently fell from bed approximating a height of 2 feet on left side of his head. His immediate cry was noted by his mother, cry was followed by loss of consciousness. Patient was immediately taken to some hospital and then referred to our institution. As per patient’s mother patient had brief period of loss of consciousness along with history of vomiting and no history of seizures, ear nose and oral bleed. On examination patient was opening eyes to pain, cries on pain, and moving all 4 limbs. His heart rate was 140/min and blood pressure was 90/60 and on general examination significant pallor was present. Pre operative CT head was suggestive of left temporo-parietal massive acute EDH with mass effect causing partial effacement of ipsilateral ventricle and slight midline shift towards right side along with fracture of left parietal bone and subgaleal hematoma in left parietal region (image-1). Blood investigation report was Hb - 5.8 gm/dl, packed cell volume, and coagulation
profile was normal. Patient was operated with left temporo-parietal craniotomy and suction and evacuation of acute EDH. Post operative period was uneventful with Post operative CT head showed a craniotomy defect in left temporo-parietal region, no midline shift, open basal cistern and normal ventricles (figure 2). Patient was discharged on post operative day 5 with satisfactory condition.

**Figure 1:** Preoperative CT showing massive Left temporoparietal acute EDH with mass effect with compression of Left lateral ventricle with midline shift.

**Figure 2:** Postoperative CT with complete evacuation of EDH with no midline shift with normal left lateral ventricle.

**Discussion:**

Traumatic acute EDH is rare in children especially in infants and is a life threatening condition, it become a rare clinical entity in infants due to some nonspecific presentation and also due to presence of various factors like pliability of infant skull. In neonates and infants middle meningeal artery moves freely between the skull hence less susceptible to injury in comparison to adults, with small venous sinuses bleeding as more important cause of bleeding in infants. In infants the dura is strongly attached to the skull and therefore EDH is rare in these age group. In many previous studies, it has been stated that the most common cause of injury in infants is fall from height. Few authors however have also emphasized that even fall from a minor height can lead to acute EDH but according to Beni–Adani et al fall from more than 1 metre height carry worse prognosis.

The most common site of EDH in infants is parietal & temporoparietal area. In many studies there is 4% increased risk of EDH in children with skull fractures. Although according to few studies association of EDH occurrence with skull fracture is rarely seen in infants because of the deformity and pliability of infant skull bone and skull fracture is also not detectable in conventional radiographic films because of thinness of skull bone.
Pallor and anemia is also considered as very important clinical sign of EDH in infants and children with no otherwise hemorrhagic site. Dhellemes P et al., Pasaoglu et al. reported 90% incidence of pallor and anemia in their study and Ciurea AV et al also found association of moderate pallor in patients. Presence of Subgaleal hematoma is also seen in acute EDH cases, and large subgaleal hematomas may also lead to anemia, hypotension and shock. Cephalhaematoma is also common with 66.6% occurrence in study by ciurea et al. Dhellemes et al also stated that decrease in loss of consciousness and presence of hemiparesis are late signs and have no specificity in children.

The treatment of choice remains surgical excision with no specific criteria present. However, Chen et al stated that EDH with volume greater than 30 ml, with thickness greater than 15 mm, and a midline shift of more than 5 mm. For smaller lesions with no neurological compromise a conservative approach is preferred. The prognosis is better in younger children, and depends upon the clinical status of the patient with poor outcome in patients with higher TINS (Trauma infant neurological score) score and low CCS (Children Coma Scale) presence of associated injury, prompt diagnosis and early management. The mortality has decreased significantly in post CT era mostly related to early diagnosis and prompt management. The mortality in infants ranges from 6-12% with Beni-Adani et al., Rocchi et al., Ersahin et al. and Pasaoglu reported 6.6%, 5.5%, 6%, 12% mortality in their series respectively.

Conclusion:
Acute EDH in infants and childrens is a total different entity in terms of occurrence and presentation. It is very rare in infants with incidence rate of approx 2%. They present nonspecifically with low haemoglobin, increasing pallor, bradycardia, loss of consciousness and even seizure. In this era of CT scan the diagnosis and management has become early and prompt resulting in improved prognosis. It is a neurosurgical emergency and needs urgent intervention. With neural compression, midline shift of more than 5 mm, volume greater than 30 cc needs urgent surgical management to obtain a good outcome. Despite extensive studies a mortality rate of approx 4-12% is attributed to these injuries.

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