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Neonatal Epidural Hematoma: A Rare Case Report

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ABSTRACT

Newborns constitute a high-risk population for brain injuries (1). Intracranial hemorrhages in newborns are uncommon, with epidural hematoma (EH) being particularly rare. (2)

We present a rare case of neonatal non-traumatic epidural hemorrhage, revealed by clonic seizures in a 3-day-old newborn, highlighting the management and the newborn's outcome.

Keywords: *clonic seizures – Newborn – epidural hematoma*

1. INTRODUCTION

Epidural hematoma (EDH) in neonates is a rare condition, often related to underdeveloped meningeal arteries. Documented cases are few, mostly linked to difficult deliveries. Management strategies, including surgical evacuation, endoscopic procedures, and needle aspiration, vary based on clinical presentation and hematoma size. (3)

Effective management of neonatal EDH requires early recognition and tailored treatment to prevent complications, emphasizing the need for heightened awareness among healthcare providers.

2. CASE REPORT

We report a case involving a 3-day-old male, who was born to a 23-year-old gravida 2, para 2 women. The neonate was admitted to the neonatal intensive care unit (NICU) due to clonic seizures. The pregnancy was well-monitored and estimated at 38 weeks and 5 days of gestation, with no complications noted, infectious history was negative. Labor process was monitored until full cervical dilation, an emergency caesarean section was indicated due to the inability of the fetus to engage despite full cervical dilation and was performed without incidents. APGAR score was 8 and 10 respectively at 5, 10 min, the neonate exhibited a strong cry and good muscle tone.

On initial examination, he presented with a pink complexion, was reactive, and demonstrated spontaneous movements. Sucking reflex was present and strong such as all primitive reflexes. The anterior fontanel was normotensive. A scalp hematoma was observed, which did not require surgical intervention. No remarkable findings were noted in the somatic examination.

The neonate presented at ay 3 clonic seizures followed by an interictal state with a heart rate of 132 bpm, a respiratory rate of 33 breaths per minute, a temperature of 36.6°C, oxygen saturation of 97%, capillary blood glucose of 1.14 mmol/L, and blood electrolyte levels as follows: Na+: 138 mmol/L, K+: 4.3 mmol/L, Ca2+: 89 mg/L, albumin: 32 g/L, urea: 0.2 mmol/L, and creatinine: 4 µmol/L.

Following stabilization, the neonate appeared mildly jaundiced, reactive, and exhibited spontaneous movements with a tense fontanelle and cephalohematoma, along with good axial and peripheral tone.

An urgent transfontanellar ultrasound revealed well-defined hyper-echoic areas in the right parietal cortico-subcortical regions, non-systematized and without mass effect on midline structures.

An amplitude-integrated EEG performed after the effects of phenobarbital revealed a type 1 convulsive pattern.

Cerebral MRI revealed subacute Epidural hematomas in the right fronto-parietal and left temporal regions, the largest fronto-parietal hematoma is communicating through a fracture line with a homolateral cephalhematoma. This was associated with bilateral edema-hemorrhagic contusion foci and meningeal hemorrhage(figure 1).

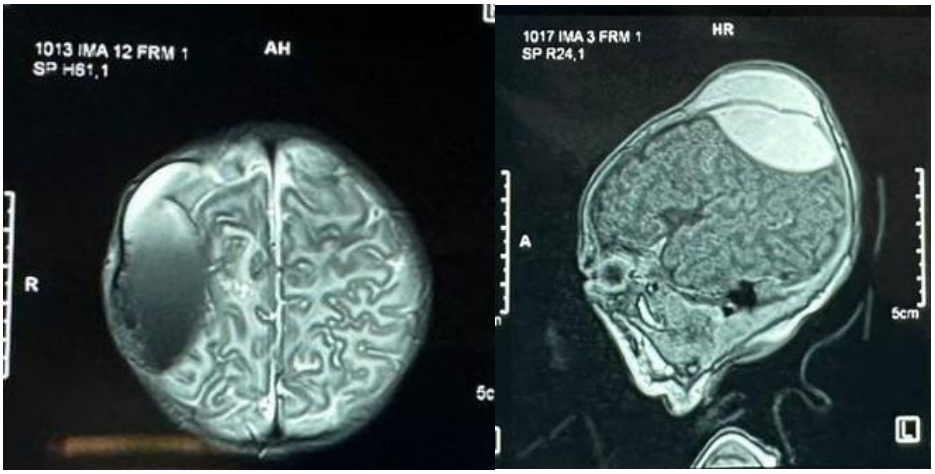

Figure1: Subacute extra-dural hematomas in the right fronto-parietal and left temporal regions, with the largest fronto-parietal hematoma communicating through a fracture line with a homolateral cephalhematoma, associated with bilateral edema-hemorrhagic contusion foci and meningeal hemorrhage.

Considering these findings, the patient was urgently taken to the operating room for neurosurgical treatment. After an uncomplicated postoperative course, phenobarbital was discontinued, and clinical monitoring along with EEG surveillance showed no abnormalities, the auto-emission test results were normal. Over a 6-month period, the neonate exhibited a favorable outcome with good growth in stature, weight, and psychomotor development. A transfontanellar ultrasound subsequently showed normal results."

3. DISCUSSION

This case highlights how neonatal clonus can serve as a subtle and early indicator of epidural hemorrhage, a rare but serious condition linked to obstetric trauma. Studies have demonstrated a link between obstetric trauma and neonatal cerebral hemorrhage, emphasizing the importance of minimizing trauma during instrumental births to reduce these risks. (4).

The prevalence of epidural hemorrhage represents 2% of all intracranial hemorrhage in neonates (5), there are less than 80 reported cases, often associated with the type of delivery and accidental falls, for this reason it is considered a rare event. The delivery method represents a risk factor for neonatal epidural hemorrhage (EH), with mechanical assistance methods like forceps and vacuum extraction (6)

Although a Spanish article by Giorgio-Hernandez et al. (7) and our study describe cases delivered by caesarean section, such occurrences remain very rare.

Epidural hemorrhages (EH) are most located in the temporoparietal region. They are rare in the frontal region due to the dura mater's adhesion to the membranous portion of the coronal suture, and they are even less frequent in the posterior fossa (8;9;10)

The source of bleeding in newborns can be either venous or arterial. However, due to their unique anatomy and developmental stage, it is typically venous and thus tends to be progressive (5)

The clinical presentation of epidural hemorrhage (EDH) in neonates varies widely. It can range from being asymptomatic to presenting with convulsive seizures especially clonic ones (our case) or, in severe cases, resulting in death (11). This condition is frequently observed in patients with concurrent brain lesions, asphyxia, clotting disorders, among other complications.

Currently, the gold standard for diagnosing epidural hemorrhage (EDH) is MRI or CT, which provide more accurate information about the size, thickness, location, and other features of the hematoma compared to ultrasonography,(7; 12; 13) In our patient, transfontanellar ultrasound findings were indicative of intracerebral hematoma, which were subsequently confirmed by MRI.

The management of epidural hemorrhage (EDH) remains a topic of debate. The literature describes cases where watchful waiting led to spontaneous resolution, especially in asymptomatic patients with EDH less than 1 cm. (14; 15) However, it is evident that cases presenting with neurological impairment and hemodynamic changes require an aggressive approach,

including craniotomy and evacuation of the hematoma(11;3)

In our patient, the chosen approach was a craniotomy with gentle evacuation of the hematoma followed by irrigation, primarily due to its size (thickness exceeding 10 mm), mass effect, and the risk of long-term calcification

Yu et al. (16) propose that early surgical intervention can prevent neurological deterioration and ossification associated with epidural hemorrhage (EH)

4. CONCLUSION

The awareness of pediatricians, obstetricians and neurosurgeons about the occurrence of epidural hemorrhage (EH) in newborns is crucial. Prompt identification and management of the condition are vital, as newborns typically exhibit rapid recovery with no neurological sequelae. Efficient treatment significantly reduces morbidity and mortality rates

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