Case Report

Epidural Hematoma In The Newborn Infant : A Case Report

Aslihan KOSEOGLU¹, Ahmet DAGTEKIN¹, Aziz OZKAN², Engin KARA³, Emel AVCI¹, Aytug ATICI², Celal BAGDATOGLU¹

¹Mersin University Medical Faculty Department of Neurosurgery, Mersin-Turkey ²Mersin University Medical Faculty Department of Neonatology, Mersin-Turkey ³Mersin University Medical Faculty Department of Radiology, Mersin-Turkey

Abstract

Traumatic epidural hematoma (EDH) represents a rare head injury complication in the newborn. EDH is seen in 2-3 % of all head injuries in the pediatric population. A case of epidural hematoma by an accidental trauma due to the dropping of the patient to the labor room floor was reported. The male newborn's birth weight was 2650 gr. His neurologic examination revealed left hemiparesis. A solid epidural hematoma was recognized on Computed Tomography (CT). The hematoma was decompressed surgically. He was discharged from the hospital at the 3th day. The treatment of the newborn EDH is controversial. Treatment may be conservative, surgical or interventional needle aspiration. Etiology and treatment of the newborn EDH are discussed.

Keywords: Epidural hematoma, Newborn, Head injury

INTRODUCTION

An EDH is a collection of blood between the calvarial bone and the dura. Epidural hematoma is very rare in the newborn when compared to other types of intracranial hemorrhages. Epidural hematoma is seen in 2-3 % of all head injuries in the pediatric population, and the incidence of EDH is even rarer among infants due to the tight adherence of the dura to the skull, and folding of the skull rather than fracture. The causes of the hemorrhage are the injury of the middle meningeal artery, venous sinuses and...
fracture surfaces in adults. However, the middle meningeal artery moves freely between the skull being not embedded in the cranial bones and less susceptible to injury in neonates and small venous bleeding is of greater importance\(^6,14\).

A rare case of a newborn suffering from a fall just after a spontaneous delivery causing epidural hematoma is discussed in the light of the current literature.

**CASE PRESENTATION**

Our case who underwent a spontaneous vaginal delivery suffered an accidental trauma from being dropped on the labor room floor. The male newborn's birth weight was 2650 gram and head circumference was 34 cm. His neurologic examination revealed left hemiparesis with seizures. A solid hematoma, being 1.2 cm in width and 4 cm in anteroposterior diameter and extending from right parietal region to the vertex and a linear fracture were noticed on CT examination (Figures 1, 2). Solid epidural hematoma is drained by right parietal cranitomy during which a parietal linear fracture line and a liquid cephal hematoma was diagnosed. Postoperative period was uneventful and he was discharged from the hospital at 3\(^{th}\) day (Figure 3).

**DISCUSSION**

Traumatic EDHs constitute a distinct clinicopathological entity in children\(^4\). Neonatal traumatic head injuries are estimated to affect 0.31 % of pregnancies, and represent 2 % of neonatal deaths\(^9\). This injury may complicate apparently normal births\(^8,13\). A retrospective study of 31 patients under 2 months of age pointed out that the cause of trauma was mostly a simple fall. However, irritability or persistent crying as symptoms, cephal hematoma as a clinical finding are the most
common presentations occurring mostly in the temporoparietal region\(^4\). The association between epidural hemorrhage and cephal hematoma is a consequence of a communication of two distinctive hematomas, bleeding from one area to another through a skull fracture or intracranial extension of an underlying cephal hematoma\(^6\). In their largest retrospective series, Heyman et al. stated that parietal region was the most common site of EDH and skull fracture\(^7\).

An EDH particularly can exist when a cranial fracture is detected due to the increased diploic vascularization and blood will accumulate intra-extracranially in both extradural and subperiostal spaces. The presence of fracture is not always a rule in newborns\(^2\). In our case, epidural and cephal hematoma with parietal fracture had been diagnosed after a fall during spontaneous vaginal delivery.

Neonatal traumatic head injuries are common, but are rarely symptomatic, and only a few of them takes an indication for surgical decompression. In this situation, close observation in an intensive care unit is mandatory, and a repeat CT or MRI scans are advised within 24 hours, even if no clinical deterioration occurs\(^7\). Skull plasticity, which is specific to newborns, allows rapid adaptation to intracranial collections and bears a good clinic tolerance\(^12\).

In spite of being a criterion for conservative treatment, absence of neurologic deficit may be due to compensation of intracranial pressure elevation by nonfused cranial sutures and does not mean that the conservative treatment is proper\(^1\). When untreated, it can be fatal due to tentorial herniation. Seizures and hypotonia are the most common symptoms of traumatic newborn epidural hematomas. Our patient also had seizures and left hemiparesis.

EDH can be detected early by CT or MRI scans. The CT imaging features of an EDH are distinctive and characterized by a hyperdense lentiform collection, but it may also be hypodense or heterogeneous\(^3\).

The treatment of newborn EDH is controversial. Treatment may be conservative, surgical or interventional needle aspiration. Needle aspiration of the epidural hematoma by aspirating an overlying cephal hematoma has been described\(^2,14\) and bedside ultrasound-guided needle aspiration of the epidural hematoma has been described by Vachharajani et al\(^11\). Whenever possible, percutaneous needle aspiration was preferred, and open surgery was decided upon only after a failed attempt at percutaneous puncture\(^12\). Percutaneous aspiration through open sutures of infants obviated the need for drainage in these cases. Subdural hematomas are distinct from epidural hematomas in that they may get mixed with cerebrospinal fluid (CSF) and hence amenable of needle aspiration\(^11\). On the other hand, epidural hematomas have a tendency to be semisolid and not as prone to needle aspiration\(^11\). The main indications for surgical treatment of newborn infants with EDH were based on the thickness of the hematoma (more than 1 cm in thickness and 4 cm in AP diameter) shifting of the brain, and an associated depressed cranial fracture or hydrocephalus in a study made by Heyman et al\(^7\). Vinchon et al. reported the main indications for decompression as poor neurological tolerance (deficit, seizures), intracranial hypertension (tense fontanel, increasing head circumference), unstable vital signs (irregular breathing or heart-beat), and the brain shift on imaging\(^12\). We performed hematoma drainage by parietal craniotomy on the basis of radiologic findings (solid hematoma 1.2 cm in thickness and 4 cm in AP diameter) for the patient having seizure and left hemiparesis.

In conclusion, EDHs of the newborn are seldomly seen compared to other age groups and other intracranial hematomas. Those who are elected to be treated...
conservatively should be monitored closely at intensive care units with frequent MRI and CT controls. If decompression is indicated for liquid hematomas, USG guided aspiration can be done and for solid ones appropriate open decompression by surgery should be the treatment of choice.

**Correspondence to:**
Ahmet Dagtekin
E-mail: dagtekin69@yahoo.com

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