Extradural hematoma in the neonate

Case report

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A neonate with an extradural hematoma unassociated with trauma or skull fracture is reported. Umbilical hemorrhage was also present.

KEY WORDS • extradural hematoma • neonate • umbilical hemorrhage

Cranial extradural hematoma in the neonate is rare. Most reported cases follow birth trauma and almost invariably have been associated with a skull fracture. We are reporting a case of extradural neonatal hematoma unrelated to skull fracture.

Case Report

This baby boy was born on May 5, 1978, by spontaneous normal vaginal delivery following an uncomplicated pregnancy. Birth weight was normal. The head circumference was 36.0 cm. There was slight widening of the cranial sutures, but with a soft anterior fontanel. No other abnormality was present.

Progress was normal until the 10th day of life when an ooze of blood from the umbilicus occurred. The hemoglobin was 7.7 gm/dl. An 80-ml transfusion of fresh whole blood was given. The anterior fontanel was now tense and there was definite sutural separation. The head circumference had increased to 38.2 cm. The patient was transferred to the Royal Children's Hospital, Brisbane, on May 25, 1978.

Examination. The patient was an active baby without any neurological deficit and no signs of trauma. A diagnosis of hydrocephalus was considered.

At 19 days of age, a computerized tomography (CT) head scan was performed (Fig. 1). This demonstrated a large lentiform extradural collection of varying densities with some enhancement at the dural margin. Marked shift of the midline structures was present, together with compression of the left lateral ventricle and dilation of the right lateral ventricle. The hematoma was confined beneath the left parietal bone. A preoperative coagulation profile, including serum fibrinogen, was normal. The patient received 1 ml of 1 mg vitamin K.

Operation. A craniotomy using a 3-cm trephine disc was used to evacuate a large, tense extradural hematoma containing liquid and clot. No active bleeding points were observed. The extradural space was obliterated by raising the dura and draining by suction for 24 hours. A 50-ml blood transfusion was given intraoperatively.

Postoperative Course. The postoperative course was uneventful. At 9 months of age, progress and head circumference were normal.

Discussion

Extradural hematoma (EDH) in the neonate is uncommon. In reviewing 417 cases of EDH (167 cases of Jamieson and Yelland, 167 cases of Gallagher and Browder, and 83 cases of Hooper), we found only one case of neonatal EDH. Two cases resulting from birth trauma were reported by Gurdjian and Webster, while only one of 20 cases of EDH in childhood recorded by Campbell and Cohen was a neonate.

Various factors are responsible in the pathogenesis. The skull of the newborn is soft, pliable, and elastic, with bones tending to deform rather than fracture following trauma. Dural lacerations and vascular injury are infrequent. The unfused sutures and open fontanelles diffuse the injury and allow movement. A rounded head, sliding skin and galea, and mobile neck articulations tend to convert direct injury into less severe tangential forces.
FIG. 1. Computerized tomography scan showing a lentiform extradural collection strictly confined beneath the left parietal bone. There is some enhancement at the dural margin. Ventricular shift and distortion are evident.

Meningeal vessels in the neonate are not embedded in the skull. This reduces the incidence of vascular damage during deformation of the skull at birth.

The attachment of the dura to the skull is of particular importance. While the dura is adherent to bone, this attachment is weakest at the center but is firmly adherent at the suture line. The extradural hematoma thus develops a lentiform shape in relation to a particular skull bone, as illustrated in this case.

The EDH in this patient was estimated to contain approximately 50% of the baby's total blood volume. In the absence of trauma, difficulties in diagnosis can be experienced when the neonate presents with anemia and hypovolemia. It is also of interest how such a large hematoma was not associated with a neurological deficit or with a change in the level of consciousness. Raised intracranial pressure had been compensated by an increase in head circumference and a bulging anterior fontanel. The benefit of the CT head scan in diagnosis and treatment was demonstrated in this patient.

Congenital hypofibrinogenemia is a common cause of umbilical hemorrhage. Other forms of bleeding diathesis were also investigated and shown to be normal.

It is postulated that in this patient dural detachment and hemorrhage occurred at birth and in the absence of skull fracture or subsequent trauma, and he gradually developed an EDH and anemia. Accommodation of the mass was by increased head circumference and a bulging fontanel. Clotting of the hematoma depleted various clotting factors and resulted in umbilical hemorrhage.

References


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