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Posterior Fossa Chronic Subdural Hematoma in the Neonate

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Acute neonatal posterior fossa subdural hematoma has been documented 13 times since 1940. Typically it occurs in a full-term infant whose delivery is complicated by forceps extraction or breech delivery. Lethargy, irritability, and respiratory irregularities occur within the first few days of life. Tense anterior fontanels and increasing head circumference result from progressive hydrocephalus. Multiple cranial nerve abnormalities may occur. Laboratory analysis reveals a diminishing hematocrit and bloody CSF.

Prior to the CT era, diagnosis was made by clinical assessment, lumbar puncture, and angiography [1]. CT scanning has aided diagnosis in five of the 13 most recently reported cases. The authors in all five cases describe findings of abnormal high density in the posterior fossa. In 1980, Margolith et al. [2] emphasized the role of CT scanning in facilitating rapid diagnosis and treatment of posterior fossa subdural hematomas in the newborn. We report the first case of a chronic neonatal posterior fossa subdural hematoma.

Case Report

A 3770-g full-term boy was born after an uncomplicated pregnancy to a 38-year-old woman gravida 12, para 4. At 34 weeks gestation the mother bumped her abdomen on the corner of a table, sustaining a small bruise. The pregnancy was otherwise uncomplicated. There was a question of large-for-dates uterus on one prenatal visit, but this was not pursued with a sonographic examination. Labor was not prolonged but meconium staining was noted on rupture of membranes. There was subsequent mild fetal bradycardia. Emergency cesarean section was performed and no resuscitation was needed. Apgar scores were 7 at 1 min and 8 at 5 min. There was mild fetal distress with respiration at 80/min and shallow. Pulse was 153 and blood pressure was 86/52. The infant was alert with a good cry and good pink coloring. Neurologic examination revealed no specific abnormalities in the motor, sensory, or startle reflex responses. However, there was a poor suck response. Good muscle tone was noted in the lower extremities with slightly diminished upper extremity strength. The head was macrocephalic with a slightly bulging anterior

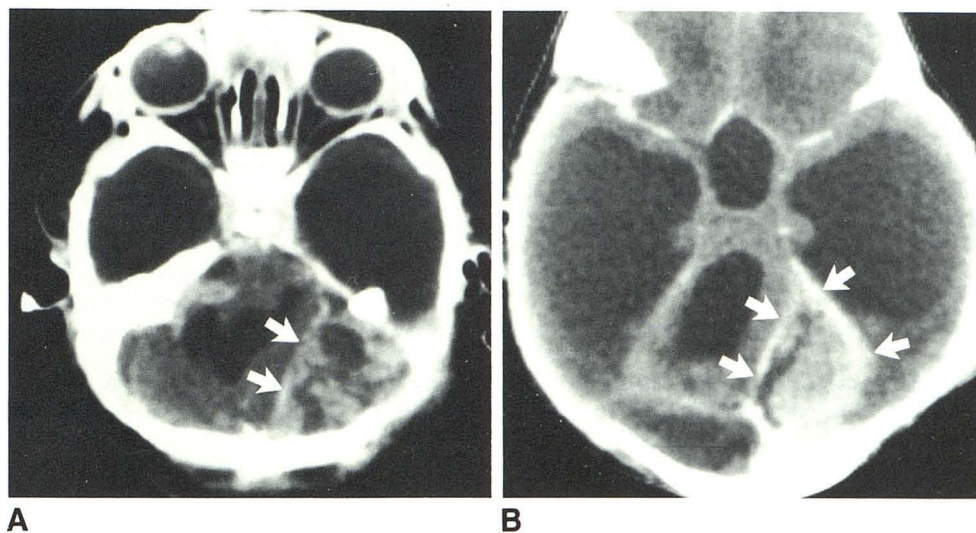


Fig. 1.—CT scans of chronic posterior fossa subdural hematoma with contrast enhancement. **A**, Rim-enhancing mixed density mass (arrows). **B**, Slightly higher cut than **A** with communicating hydrocephalus evident (arrows).

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fontanel. The patient was transferred to an imaging facility, where a CT scan was performed.

Serial 3-mm unenhanced axial images, obtained through the posterior fossa at 4 hr of age, demonstrated macrocephaly with congenital hydrocephalus. A large mass lesion with mixed high and low density was noted in the left lateral posterior fossa. It was unclear whether this was intraaxial or extraaxial. Blood-CSF levels were noted in massively dilated ventricles. Diffuse subarachnoid blood was also observed. Contrast administration demonstrated rim enhancement (Fig. 1). A left vertebral angiogram revealed a hypovascular mass displacing vessels medially and superiorly. Neurosurgical exploration revealed a chronic subdural hematoma with well-defined chronic membranes. There was no evidence of neoplasm on frozen or permanent pathologic sections. A left ventriculostomy was performed with subsequent right ventriculoperitoneal shunt placement. The postoperative course was uncomplicated and the infant is normal at 3 months of age. At this writing, the shunt appears to be functioning.

Discussion

Posterior fossa subdural hematoma is generally thought to be the result of birth trauma [3]. Massive hemorrhage causing severe neurologic complications at the time of birth is usually related to a tear in the falx or tentorium cerebelli with extension into the adjacent dural sinuses or avulsion of the vein of Galen. In contrast, slow accumulation of intratentorial blood may arise from a small tear in the tentorial leaflets or from a torn bridging vein. These injuries presumably result from

extrinsic stress on the head during delivery and thus cannot explain the chronic subdural membranes noted in our case. This suggests a prenatal hemorrhagic insult.

The initial CT presented a confusing picture because it was unclear whether the abnormality was purely intra- or extraaxial. The differential diagnosis included choroid plexus papilloma and teratoma, but we incorrectly failed to include hemorrhage. In conclusion, posterior fossa hemorrhage may present not only as a high-density infratentorial mass lesion as previously described but may also present as a mixed high- and low-density mass lesion with membrane enhancement indistinguishable from the well-known supratentorial chronic subdural hematoma.

This report is intended to expand the CT differential diagnosis of posterior fossa abnormalities in the neonate and thereby to facilitate the diagnosis and neurosurgical treatment.

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