Subdural hematomas of the posterior fossa in normal-weight newborns

Report of two cases

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Two cases are reported of subdural hematoma of the posterior fossa in normal-weight full-term newborn infants. The most salient factors in these cases were the lack of specific symptoms and signs indicating the nature and location of the lesion, the importance of computerized tomography for diagnosis, and the good results obtained with early surgical treatment.

Key Words: subdural hematoma - posterior fossa - computerized tomography - normal-weight newborn

Two normal-weight full-term newborn infants with subdural hematoma of the posterior fossa were treated surgically, with excellent results. A review of the literature disclosed 11 other cases published in the last 48 years since the first report cited by Munro in 1934, and published by Coblents in 1940 (Table 1).

Case Reports

Case 1

This baby boy, the third son of a 40-year-old mother, was born after an uneventful 40-week pregnancy. Delivery was achieved by cephalad presentation, using a vacuum extractor. The baby's weight was 3150 gm, and the Apgar score at 1 minute was 9 and at 5 minutes was 10. The child appeared normal at birth, but 24 hours later a left facial paresis appeared, without any other symptoms. Over the following days, the head circumference increased progressively.

Admission. The child was admitted to this hospital 11 days after birth. He had megalcephaly (head circumference 39 cm), tight fontanelles, and separation of the cranial sutures. He also had left eyelid ptosis, displacement of the left eye downward and outward, obliteration of the left nasolabial crease, and deviation of the oral commissure to the right. Neonatal reflexes were present and symmetrical. The hematocrit was 39%, and coagulation tests were normal. Computerized tomography (CT) revealed a collection of blood in the posterior fossa in the left lateral and vermis region, producing marked displacement of the fourth ventricle to the right, and moderate ventricular dilatation (Fig. 1).

Operation. A left suboccipital hemicraniectomy was performed, the dura mater was opened, and 45 cc of partially coagulated blood was removed. The cerebellar cortex was apparently undamaged. Cerebrospinal fluid flowed at high pressure immediately from the cisterna magna. The postoperative course was favorable, and the patient was released 15 days after the operation. The neurological examination was normal 10 months later.

Case 2

This baby girl, the 11th daughter of a 40-year-old mother, was born after an uneventful 40-week pregnancy. Delivery was achieved by cephalad presentation, using a vacuum extractor. The baby weighed 4100 gm. Her Apgar scores were unknown. She appeared normal at birth but 12 hours later she suffered generalized convulsions.

Admission. The child was admitted to this hospital 4 days after birth with unmanageable convulsive seizures. She was being treated with phenobarbital and
was somnolent, with little vitality. She exhibited general hypotonicity, an incomplete Moro reflex, and no sucking reflex. She had tight fontanels and slight impairment of the left third cranial nerve. Hematocrit was 27%, and the vitamin K-dependent factors were depleted. Blood analysis revealed thrombocytopenia. Computerized tomography demonstrated a pericerebellar subdural collection of blood in the posterior fossa, larger on the right, displacing the fourth ventricle to the left without causing it to collapse (Fig. 2).

**Operation.** Right suboccipital hemicraniectomy was performed, with incision of the dura mater and evacuation of 30 cc of dark-colored blood and numerous

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### TABLE 1

**Summary of clinical course in 13 cases**

<table>
<thead>
<tr>
<th>Authors &amp; Year</th>
<th>Weight (gm)</th>
<th>Delivery</th>
<th>Symptoms &amp; Signs</th>
<th>CT Scan</th>
<th>Complications</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surgical cases</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coblentz, 1940</td>
<td>3711</td>
<td>forceps</td>
<td>enlarging head, tight fontanels, lethargy</td>
<td>no</td>
<td>no</td>
<td>excellent</td>
</tr>
<tr>
<td>Nelson, 1959</td>
<td>3732</td>
<td>breech, forceps</td>
<td>irregular breathing, tight fontanels, vomiting</td>
<td>no</td>
<td>communicating hydrocephalus</td>
<td>good</td>
</tr>
<tr>
<td>Reigh &amp; Nelson, 1962</td>
<td>3872</td>
<td>breech</td>
<td>irregular breathing, tight fontanels, vomiting</td>
<td>no</td>
<td>no</td>
<td>excellent</td>
</tr>
<tr>
<td>Pitty, et al., 1967</td>
<td>3940</td>
<td>forceps</td>
<td>slow respirations, vomiting, lethargy</td>
<td>no</td>
<td>communicating hydrocephalus</td>
<td>good</td>
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<tr>
<td>Gilles &amp; Shillito, 1970</td>
<td>3219</td>
<td>forceps</td>
<td>enlarging head, tight fontanels, vomiting</td>
<td>no</td>
<td>sepsis</td>
<td>died</td>
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<tr>
<td>Carter &amp; Pittman, 1971</td>
<td>3240</td>
<td>easy</td>
<td>enlarging head, tight fontanels, vomiting</td>
<td>no</td>
<td>retardation; communicating hydrocephalus</td>
<td>unfavorable</td>
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<tr>
<td>Serfontein, et al., 1980</td>
<td>3930</td>
<td>forceps</td>
<td>irregular respirations, enlarging head, tight fontanels, lethargy</td>
<td>yes</td>
<td></td>
<td>excellent</td>
</tr>
<tr>
<td>Hernansanz, et al., 1984</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Case 1</td>
<td>3150</td>
<td>vacuum</td>
<td>tight fontanels, enlarging head, facial paresis seizures, tight fontanels, hypotonicity, lethargy</td>
<td>yes</td>
<td>no</td>
<td>excellent</td>
</tr>
<tr>
<td>Case 2</td>
<td>4100</td>
<td>difficult expulsion</td>
<td></td>
<td>yes</td>
<td>no</td>
<td>excellent</td>
</tr>
<tr>
<td><strong>Nonsurgical cases</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gilles &amp; Shillito, 1970</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Case 1</td>
<td>3517</td>
<td>difficult breech, forceps</td>
<td>irregular respirations, enlarging head, vomiting</td>
<td>no</td>
<td></td>
<td>died</td>
</tr>
<tr>
<td>Case 2</td>
<td>4317</td>
<td>forceps</td>
<td>irregular respirations</td>
<td>no</td>
<td></td>
<td>died</td>
</tr>
<tr>
<td>Blank, et al., 1978</td>
<td>4317</td>
<td>easy</td>
<td>enlarging head, irregular respirations, tight fontanels, lethargy</td>
<td>yes</td>
<td></td>
<td>died</td>
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<tr>
<td>Margalith, et al., 1980</td>
<td>3670</td>
<td>easy</td>
<td>enlarging head, irregular respirations, tight fontanels</td>
<td>yes</td>
<td></td>
<td>died</td>
</tr>
</tbody>
</table>

* CT = computerized tomography.

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![Fig. 1](image1.png)  
*Fig. 1. Case 1. Computerized tomography scans before surgery (left) and 1 week after the operation (right).*

![Fig. 2](image2.png)  
*Fig. 2. Case 2. Computerized tomography scans before surgery (left) and 2 weeks after the operation (right).*
clots. Postoperative recovery was slow during the first 5 days. The patient received 5 mg/kg/day phenobarbital and was free of seizures. After the 5th day, however, she began to improve and was released 20 days after admission. Examination prior to release revealed slight hypotonicity of the lower extremities. Eighteen months after the operation the neurological examination was normal.

Discussion

Subdural hematoma of the posterior fossa in normal-weight full-term newborn infants is infrequent. Since the first case cited by Munro in 1934 and published by Coblentz in 1940, only 13 cases have appeared in the literature, including the two presented in this communication (Table 1). We have only included one of the three cases described by Serfontein, et al., because the other two were low-weight premature infants. Likewise, we excluded the case described by Norlén, et al., because the patient's weight is unknown, although the surgical results were good.

In every reported case the symptoms and signs were those of intracranial hypertension, including bulging fontanels, suture separation, vomiting, and lethargy. Cerebellar and cranial nerve symptoms were variable. In 10 cases there had been problems at delivery. There were three breech presentations and 10 vertex presentations. Forceps were used in seven of these cases, and in one instance a vacuum extractor was applied.

The most specific symptomatology of this disease might be said to be lack of specific symptoms. Eight of the cases were managed before the availability of CT scanning, and were diagnosed by ventriculography and/or angiography. The other five cases were diagnosed on CT scanning, which we consider essential for diagnosis in these cases. Of the 13 cases in this series, four were not submitted to surgical treatment and all of these patients died. Among the nine patients who underwent surgery, only one died from sepsis. One case had a poor outcome with psychomotor retardation as well as hydrocephalus. Two patients with apparently favorable results later developed communicating hydrocephalus. In the remaining five cases, excellent results were obtained.

The etiology of this disorder is not known. We believe that abrupt pressure changes in the birth canal and precipitate obstetrical maneuvers, especially instrumental interventions, are factors to consider as possible causes.

References


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