CASE REPORTS AND TECHNICAL NOTE

POSTERIOR-FOSSA SUBDURAL HEMATOMA WITH SECONDARY HYDROCEPHALUS

REPORT OF CASE AND REVIEW OF THE LITERATURE*

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(Received for publication September 20, 1961)

Hydrocephalus in the newborn infant, secondary to unilateral or bilateral subdural hematoma or effusion over the cerebral hemispheres, has become well recognized and documented in the literature. There is, however, a paucity of both cases and discussion, in the literature, of hydrocephalus caused by subdural hemorrhage in the posterior fossa of the newborn.

Coblentz,‡ in 1940, reported a case of cerebellar subdural hematoma in a 2-week-old infant with secondary hydrocephalus who recovered following operation. He found only 4 other reported cases of posterior-fossa subdural hematoma and these were disclosed at autopsy. More recently, Nelson§ reported a similar case of posterior-fossa subdural hematoma in a newborn infant with hydrocephalus requiring a lumbar arachnoidal suprarenal shunt following evacuation of the hematoma.

Subdural hematoma of the posterior fossa is an infrequent but lethal lesion at any age, as is shown by some recent reviews of collected cases of subdural hematoma. McKissock et al. reported on 389 cases of subdural hematoma of which 2 were in the posterior fossa; 1 was operated upon but the outcome was not mentioned. Freed and Boyd¶ reviewed 106 cases of subdural hematoma but no case of posterior-fossa subdural hematoma was reported in their series. Fisher et al. found 4 cases in their series and only 1 was in a child. One of their 4 patients survived. Estridge and Smith, in a more recent review of the lesion, found 15 cases of subdural hematoma of the posterior fossa described since the first report by Picken in 1928. In addition to reporting a successful surgical case of their own, they found 7 other cases reported in the literature in which the patient had survived operation since the one reported by Coblentz in 1940.

Our purpose in presenting this unusual case is not only to add another to those already recorded but to point out how easily a misdiagnosis could have been made and the wrong treatment instituted.

CASE REPORT

A male infant, weighing 8 lb. 8 oz., was born on Oct. 11, 1960 following a 40-week gestation. Delivery was carried out under caudal anesthesia with breas presentation which was considered “not unusually difficult.” The head was delivered 3–4 min. after the rest of the body. The baby did not cry well for 2–3 min. Respiratory effort was weak and there was cyanosis. The throat was suctioned and oxygen was given. Tone of muscles was poor. Within 5–10 min. his condition was good and he was placed in an incubator.

Course after Birth. 10 hours. Color was poor. He was responsive only to moderate stimuli. Vomiting occurred. Respirations were irregular at 24–30/min. Circumference of head was 141⁄2 in. Anterior fontanel was full and tense. There was nystagmus to the left. Hemoglobin was 15.3 gm.; hematocrit was 47 percent; count of white blood cells was 25,000 (N-84; L-14). Bilateral coronal subdural taps were negative. Spinal fluid was bloody grossly.

18 hours. The infant looked better. He had a high-pitched cry and a vacant stare with anxious expression. Left pupil was larger than right.

2 days. There was increased tone of muscles with extensor spasm of upper extremities. Moro reflex was absent. He had a vacant stare and a high-pitched cry. He vomited 3 times when given water with glucose. Clysis was given.

3 days. Circumference of head was 141⁄2 in. He was looking better. Clysis was given.

4 days. Vomiting continued. Fontanel was tense. Moro reflex was present. Repeated subdural taps were negative.

7 days. He retained some feeding by gavage. Repeated subdural taps were negative. Lumbar puncture yielded xanthochromic cerebrospinal fluid with 20 white blood cells (P-11; L-18) and 1,087 red blood cells.

11 days. Vomiting continued. Fontanel was full.

* The contents reflect the personal views of the authors and are not to be construed as a statement of official Army or Air Force policy.

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‡ Received for publication September 20, 1961.

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11 Received for publication September 20, 1961.
There was some separation of sutures. Repeated subdural taps were negative. Spinal tap yielded xanthochromic cerebrospinal fluid containing 200 mg. per cent protein.

13 days. Circumference of head was 16 in. Weight was 8 lb. He was quite lethargic. Veins of the scalp were distended. He still vomited. Neurosurgical consultation was obtained.

14 days. Phenolsulphonphthalein test to determine obstruction or communication of cerebrospinal fluid revealed no dye in lumbar subarachnoidal space 20 min. after injection of ½ cc. into right lateral ventricle. It was noted that the ventricular fluid was only slightly xanthochromic whereas that in the lumbar region was markedly xanthochromic.

15 days. Ventriculography with 50 cc. of air was carried out (Fig. 1).

Operation. 17 days after birth. Bilateral suboccipital craniectomy was carried out under general anesthesia. When the right occipital burr-hole was made it was noted that the dura mater was brownish-grey without pulsation. A small stellate dural incision revealed very xanthochromic subdural fluid containing hematomatous tissue. The right cerebellar hemisphere was depressed 1 cm. In the left posterior fossa there was a “currant-jelly” hematoma, measuring 5 x 4 cm., which was evacuated. The left cerebellar hemisphere was displaced upward and medially into the 4th ventricle. The medulla and pons were arched slightly toward the right. The arachnoid was discolored but no subdural membrane had formed. Following evacuation of all the hematoma, there was a good flow of cerebrospinal fluid through the 4th ventricle with beginning return of the left cerebellum to its normal position. The source of the hematoma was not determined. The wound was closed tightly without drainage.

Postoperative Course. The hydrocephalus subsided and the patient ate well without vomiting. He was discharged 16 days after operation. Examination revealed no abnormalities; circumference of the head was 15 ½ in. He has continued to do well the 9 months he has been followed since operation.

DISCUSSION

The case described by Coblenz4 in 1940 and 1 reported by Nelson12 in 1959 were the only 2 previous cases of posterior-fossa subdural hematoma in the newborn found in the literature in which the infants survived. Both cases are similar, in certain respects, to the one presented here.

Following ventriculography in our case we felt that birth trauma had produced subarachnoid hemorrhage to such an extent that the foramina of Luschka and Magendie had become occluded with hematoma or arachnoiditis and that the posterior fossa should be explored before resorting to a ventriculo-atrial shunt.

Babson2 reviewed the literature and reported on 3 cases of spontaneous subarachnoid hemorrhage in infants and its relation to hydrocephalus. He believed that the reaction of the blood on the meninges with resultant adhesions and obstruction to the free flow of cerebrospinal fluid could cause varying degrees of hydrocephalus. The patient described by Nelson12 required a lumbo-peritoneal shunt 6 days following evacuation of the posterior-fossa hematoma. However, he did not speculate as to the reason for the communicat-ing hydrocephalus.

A close examination of the clinical findings recorded by the pediatrician in our case during the first 2 weeks after birth gave some indication that we were dealing with posterior-fossa injury—vomiting, nystagmus, decerebrate spasms, weak high-pitched cry, and respiratory difficulty. This is in contrast to Nelson’s case, in which there were no focal signs, except a left facial paresis, attributed to trauma to the 7th cranial nerve by forceps, and vomiting with a full fontanel. Early, however, the findings in our case were not unlike