SUBDURAL HEMATOMA OCCURRING IN SURGICALLY TREATED HYDROCEPHALIC CHILDREN

WITH A NOTE ON A METHOD OF HANDLING PERSISTENT ACCUMULATIONS

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(Received for publication March 24, 1958)

While in recent years subarachnoid-peritoneal anastomoses have been performed, the majority of patients with congenital hydrocephalus have been treated in this clinic by choroid plexectomy. Our technique for the operation has been reported in detail elsewhere. In order to maintain the integrity of the cranial vault when cerebrospinal fluid is withdrawn from the ventricle, a plaster cast is applied preoperatively in the form of a ring encompassing the forehead and occiput. Following excision or coagulation of the plexus, Ringer’s solution is instilled into the ventricle in sufficient quantity to prevent the brain, which has been supported during the course of the operation with retractors, from collapsing. If the head is so positioned that the opening in the skull is uppermost, the fluid can be replaced almost completely. However, it is very difficult to expand the brain so as entirely to obliterate the subdural space, and some separation between cortex and dura mater may persist. This space is traversed by a variable number of stretched veins, which may conceivably rupture and produce a hematoma.

Surgical procedures for the treatment of hydrocephalus other than choroid plexectomy, designed to reduce intracranial pressure by shunting cerebrospinal fluid into extraneural channels, pose a similar threat. A sudden diminution of pressure within the ventricles resulting from withdrawal of cerebrospinal fluid may also possibly bring about a collapse of the brain which, in turn, may lead to rupture of a vein and bleeding into the subdural space.

Though mentioned in a paper by Voris, to our knowledge there is only Anderson’s report in the literature dealing primarily with subdural hematoma as a complication of the surgical treatment of hydrocephalus. The latter has described 3 such cases occurring in a group of 24 treated infants. In all 3 symptoms referable to the hematoma became manifest early in the postoperative course. The hematoma developed after a spino-ureteral anastomosis in 1 case, following choroid plexectomy in a 2nd and subsequent to the removal of an intraventricular cyst containing choroid plexus in a 3rd patient.

In view of the paucity of information available on this subject, we are reporting 3 additional cases. Incidentally a method of dealing with chronic recurrent subdural accumulations of fluid in a head much enlarged by pre-
ceeding hydrocephalus will be briefly described. Our experience is based on 85 surgically treated hydrocephalic children on whom 134 operations were performed.

CASE REPORTS


History. A 3½-month-old male infant was referred to this clinic on Feb. 23, 1948 because of excessive enlargement of the head. He was a first-born child delivered by forceps after a normal full-term pregnancy. A scalp laceration in the left frontal region was incurred at the time of delivery.

Examination. The pertinent findings were limited to the head. It measured 48.5 cm. in circumference. The anterior fontanelle was dilated (6×6 cm.) and bulged moderately.

Course. Subdural punctures failed to disclose the presence of a hematoma. Accordingly a ventricular estimation was performed using a small quantity of gas (40 cc.). An extreme degree of ventricular dilatation was revealed.

1st and 2nd Operations. Under local anesthesia a small right parietotemporoccipital flap was reflected and a choroid plexectomy was performed on Feb. 26, 1948. Twelve days later a similar procedure was done on the left side.

Course. The child withstood the operations well and at the time of discharge from the hospital on Mar. 16, 1948, his head circumference measured 49 cm.

For about 1½ years, he appeared to be making satisfactory progress. His fontanelle closed, he began to walk and his mental development was seemingly reasonably good. At the age of 8 months an internal squint of the left eye became manifest. Some enlargement of the head continued to take place, its circumference in September, 1949 being 53.5 cm.

In January, 1950, following a fall, the child became irritable, drowsy and vomited occasionally. In addition to these symptoms, episodes occurred during which he would suddenly retract his head.

Readmission. Jan. 11, 1950. Examination at this time disclosed no gross neurologic abnormalities. Lumbar puncture revealed xanthochromic CSF containing 1822 mg. per cent total protein. EEG indicated an absence of all electrical activity over the left hemisphere. The presence of a subdural hematoma was suspected.

3rd Operation. Bilateral trephination was performed on Jan. 15, 1950. A large subdural clot overlying the left cerebrum was evacuated.

Course. Considerable improvement followed.

4th Operation. Removal of the inner membrane of the subdural hematoma was subsequently accomplished by means of a craniotomy. Fluid similar in character to that present in the subdural space was found within the ventricle, leading to the conclusion that the subdural space and ventricle communicated through the opening of the cortex originally created for the purpose of gaining access to the choroid plexus.

Course. Right-sided seizures developed, but otherwise the child’s course was not remarkable. Except for occasional vomiting, his condition during the next 8 months was reasonably satisfactory. An EEG in March, 1951 was reported to be within normal limits.