Anterior Third Ventricular Cysts in Infancy

Case Report

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Cysts of the anterior third ventricle were first described by Wallman in 1858. These cysts have been thought to originate from a paraphysial remnant in the telencephalic portion of the third ventricle, from a diencephalic ependymal pouch, or from the epithelium of the choroid plexus.¹,²,³

Since Wallman’s original publication, almost 300 cases have been reported; in only six had the symptoms appeared before the age of 10 and in only two before the age of 2.²,⁵

The purpose of this communication is to report a third case of an ependymal cyst of the third ventricle in early infancy, to review the histories of the other two infant cases, and to describe an approach to treatment.

Reports on Cases in Infancy

The only two other cases of anterior third ventricular or colloid cysts in infancy were reported by Gemperlein.² Wrede’s case in 1928 with onset of symptoms in the first few months of life was the youngest case reported until 1958. On review of this case, the cyst seems to have been a choroid plexus papilloma of the lateral ventricle and not a third ventricular cyst.

Gemperlein’s first case was a 2-month-old infant with progressive hydrocephalus. A ventriculogram showed obstruction of the foramen of Monro. At operation a paraphysial cyst was removed. The child was reported to have made an uneventful recovery.

Gemperlein’s second case was a 6-month-old boy with bilateral ostitis media and progressive hydrocephalus. A right ventriculocervical subarachnoid shunt was ineffective, and the child died at the age of 16 months. At autopsy a paraphysial cyst was found.

S.B. was admitted to the New York Neurological Institute at the age of 8 weeks because of an enlarging head. The fontanel had been noted to be tense at the age of 3 weeks. During the next 5 weeks the head circumference had increased by 5 cm. An older sibling had had a thalamic astrocytoma operated upon at the age of 9 years.

On admission the head circumference was 51 cm, but the child was entirely normal neurologically. Pneumoencephalography performed soon after admission (Fig. 1) showed a 2 × 3 cm pedunculated mass projecting downward into the third ventricle from an attachment posterior to the foramen of Monro. The third ventricle was massively dilated, as was the lateral ventricle, and the lateral cortical mantle was only about 1 cm thick.

First Operation. A standard, right-ventriculo-atrial shunt was performed using a Pudenz-Heyer pump and tubing with a simultaneous shunt from the left to the right ventricle to by-pass the obstructed foramen of Monro. In the next 3 weeks, the head circumference diminished from 51.5 cm to 49 cm.

Second Operation. Three weeks after the shunt had been performed a second procedure was done. A coronal incision was made across the anterior fontanel immediately anterior to the coronal suture. A 4 × 4 cm free flap of bone was removed from the right frontal region. A right midfrontal cortical incision was made and the ventricle entered. Cortical collapse was prevented during surgery by gently packing the frontal horn of the right lateral ventricle with cotton balls soaked in warm Ringer’s solution. A Mayfield aneurysm clip was placed across the cephalic end of the Pudenz shunt within the lumen of the lateral ventricle to prevent air embolization during surgery.

The cyst appeared as a thin-walled struc-
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ture containing clear fluid which spread apart the columns of the fornix immediately posterior to the foramen of Monro. Its inferior surface invaginated the roof of the third ventricle. It was easily separated from the surrounding structures except for an attachment by a pedicle to the roof of the third ventricle. This was cauterized and divided. The septum pellucidum was widely fenestrated.

The Mayfield clip and the cotton packing were removed. A red rubber French catheter (No. 8) was introduced into the lateral ventricle through the cortical incision. Large pieces of Gelfoam were placed around the catheter between it and the surrounding brain. Physiological Ringer's solution was introduced into the ventricle through the catheter to refill the ventricular system, and the catheter removed. Silver clip markers were placed on the pia of the frontal pole.

Postoperative Course. The postoperative course was uneventful except for a transient febrile rise to 104°F without signs of sepsis. The child was discharged on the tenth postoperative day. Two months postoperatively, the shunt remained patent and the child neurologically normal. Skull x-rays at that time showed the silver clip markers on the pia to be closely applied to the inner surface of the frontal bone.

Pathology. The specimen consisted of a narrow band of fibrous connective tissue lined by a single layer of cuboidal and low-columnar cells with more or less basilar-placed, rounded nuclei (Fig. 2). In the taller cells, the nuclei were more oval. Occasionally, there was a suggestion of ciliation and a row of tiny granules at the free cell border. In most regions, cilia were not present. Continuous with the membrane was a small group of papillae of the choroid plexus. The connective tissue, presumably tela cho- roidea, was attached at several points to fragments of brain tissue. At one such point,