Membranous Occlusion of the Aqueduct of Sylvius

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Membranous occlusion of the aqueduct of Sylvius has been considered a rare cause of hydrocephalus (Fig. 1). The occurrence of 4 cases on this unit within a 6 month period prompted a review of this disorder and further consideration of the pathogenesis, diagnosis and surgical treatment.

Case Reports

Case 1. S.H. (9750-64). This 19-year-old student was well until 2 weeks before admission when she fell on her buttocks while roller skating. Although there had been no head injury she was confused for 2 hours. During the following week she continued her normal activity but felt unsteady and light-headed, and spoke of roaring in her ears. On several occasions she fell suddenly and unexpectedly and after the last fall was admitted with a fractured ankle. Neurological opinion was sought because attempts at ambulation induced a feeling of unsteadiness and fear of falling.

Examination. She had numerous café au lait patches. Early bilateral papilloedema was the only other finding. Skull films were normal. Air encephalography resulted in filling of the 4th ventricle. Ethiodian ventriculography showed the aqueduct to be dilated and bulbous and blocked at the lower end (Fig. 2). Several hours later a few drops of contrast material were found to have passed through into the 4th ventricle.

Operation. With the knowledge that a narrow obstruction existed at the lower end of the aqueduct, exploration of the 4th ventricle was planned before carrying out a Torkildsen procedure.

Through a suboccipital craniectomy the 4th ventricle was inspected. A small No. 8 rubber catheter which initially encountered resistance passed up the aqueduct after moderate pressure was exerted. Upon withdrawal there was a gush of cerebrospinal fluid. Direct inspection of the lower end of the aqueduct revealed that all that remained of the closure was a fringe of thin translucent membrane. Because this region of the aqueduct gripped the catheter upon reinsertion, it was thought that stenosis might recur. Therefore, a 2-inch length of siliconed plastic tubing was placed through the opening into the 3rd ventricle. Aside from a mild postoperative aseptic meningitis the patient’s recovery was uneventful and she remains well.

Case 2. M.M. (14258-64). At birth this 2-year-old boy’s head measured 14½ inches but he walked at 13 months and could put 3 words together at 18 months. One month before admission he fell and struck his forehead. The first of 5 grand mal seizures occurred a week later.

Examination. He appeared well and ran about and talked. The head circumference was 22½ inches. There was fine nystagmus on lateral gaze but no other abnormal neurological signs.

Skull films showed a large vault without separation of the sutures. Lumbar air injection filled only the 4th ventricle (Fig. 3). Ethiodian was placed in the right lateral ventricle together with a little air. There was gross hydrocephalus. The contrast medium filled the dilated aqueduct which was rounded at the obstructed lower end. After the child had been left in the brow up position for ½ hour a tiny drop of contrast medium passed into the 4th ventricle (Fig. 4). When the ventriculogram was superimposed on the pneumoencephalogram, the upper end of the 4th ventricle was seen to approximate the lower end of the aqueduct (Fig. 5). A diagnosis of membranous obstruction of the aqueduct was made.

Operation. The 4th ventricle was exposed and in the lower end of the aqueduct a thin translucent membrane was seen which bulged downward with each pulsation of the brain (Fig. 6). A small catheter was easily passed into the aqueduct and when withdrawn a circular opening was visible in the membrane. A larger catheter was then introduced leaving a defect 3 mm. in diameter. A fringe of membrane could be seen around the circumference attached to the wall of the aqueduct.

No catheter was left in the aqueduct. The patient recovered quickly from the operation and has been well since.

Case 3. C.M. (15,310-64). The parents of this 9-year-old girl sought medical advice because of an increasing tendency to turn over her left ankle when walking. She had developed slowly, not walking until she was 18 months old. She had always been clumsy and had recently complained of headache about once a month, occasionally associated with vomiting.

Examination. Her head was enlarged (24½ inches) and her speech was nasal and slurred. Sev-
FIG. 1. Membrane occludes aqueduct of Sylvius at its lower end.