Papilloma of the choroid plexus is a rare tumour. Its incidence according to Herren is about 0.4 per cent of all tumours of the brain and less than 100 examples have been reported. The majority of these tumours have been found at autopsy. Some have been diagnosed in life and a few have been successfully removed.

Apart from its interest as a pathological curiosity, the tumour has a special interest in its relationship to hydrocephalus. Russell in her classical monograph on the pathology of hydrocephalus states that theoretically this condition may arise in three ways: through oversecretion of cerebrospinal fluid, through obstruction at some point in the cerebrospinal fluid pathway or through impairment of absorption. Kahn and Luros cited a personal communication from Russell in which she gives it as her opinion that although the first method of production of hydrocephalus may exist, there is not as yet a well enough documented case to give absolute proof that hydrocephalus can result from the overproduction of cerebrospinal fluid alone.

In the case here reported, evidence has accrued which suggests that overproduction of cerebrospinal fluid was in fact responsible for the hydrocephalus observed.

CASE REPORT

G.A.R., a 15-month-old girl, was admitted to Oldchurch Hospital on Nov. 11, 1957 as a case of suspected cerebral tumour.

Her development and health had been normal until the middle of October 1957 when she started to vomit after being fed and a cough developed. She was noticed to be irritable and lethargic. At the end of October she appeared to be suffering from headache and became drowsy.

She was first admitted to hospital on Oct. 31, 1957. Her temperature was 101°F. (38.3°C.) and she was lethargic and drowsy. There was no stiffness of the neck and Kernig's sign was negative. Circumference of the head was 17½ in. (44.5 cm.). She showed no abnormal neurological signs apart from bilateral extensor plantar responses. Her throat was a little reddened and the left ear drum was slightly injected. Count of white blood cells was 20,700 per c. mm. (polymorphonuclear cells 74 per cent); haemoglobin was 91 per cent, and urine was normal. Cerebrospinal fluid pressure was 180 mm. The fluid contained 50 red blood cells per c. mm., no white blood cells, protein 10 mg. per 100 ml., and chlorides 740 mg. per 100 ml. She was treated with trisulphon and penicillin and over the next few days her temperature became normal, her vomiting ceased and she became brighter. She was discharged home much improved on November 5.

Three days later the vomiting recurred, she again became lethargic and drowsy, and developed a high-pitched cry. She was readmitted to hospital on Nov. 11, 1957. She was now irritable and photophobic. The anterior fontanelle was bulging and she had bilateral early papilloedema. Her plantar responses were still extensor but she showed no other abnormal neurological signs. Roentgenograms of the skull showed diastasis of the sutures. The cere-
brospinal fluid was under a pressure of 300 mm. It contained 40 red blood cells per c.mm., 10 mg. protein per 100 ml., and 640 mg. chloride per 100 ml. She was transferred to the Neurosurgical Department at Oldchurch Hospital later the same day.

On November 12 ventriculography was carried out by passing a short lumbar puncture needle into the right lateral ventricle through the coronal suture. The cerebrospinal fluid pressure was 300 mm. and the fluid contained 35 red blood cells per c.mm., no excess of white blood cells and 10 mg. of protein per 100 ml.; 100 ml. of cerebrospinal fluid were replaced by air. Radiography demonstrated gross symmetrical dilatation of the lateral ventricles (Figs. 1-3). The right temporal horn did not fill, but the significance of this finding was not appreciated at the time. The third ventricle was moderately enlarged and in the midline. The fourth ventricle was small and appeared to be displaced to the left. There was a large amount of air in the cisterna magna.

The interpretation of these ventriculograms gave rise to considerable difficulty. The differential diagnosis at this stage seemed to be between a cerebellar tumour, otitic hydro-

![Figs. 1 and 2. Ventriculograms. (Left) Anteroposterior view, showing symmetrical dilatation of lateral ventricles. The right temporal horn does not fill. (Right) Lateral brow-up view, showing distended frontal horns.](image)

cephalus following her illness 2 weeks earlier, obstructive hydrocephalus resulting from adhesions around the brain stem and a primary failure of absorption of cerebrospinal fluid. The latter diagnosis was difficult to reconcile with her normal development up to the age of 15 months and the normal size of the head.

A posterior fossa exploration was carried out on Nov. 12, 1957. The cisterna magna was greatly enlarged and under tension. After the arachnoid had been opened, large quantities of cerebrospinal fluid were seen to be coming from a distended foramen of Magendie. The cerebellar hemispheres had been pushed upwards and outwards by the dilated cisterna magna. There was no evidence of a cerebellar tumour.

The child's immediate postoperative recovery appeared to be very satisfactory and within a week she was alert and apparently free from headache. Two weeks after operation, however, the posterior fossa decompression began to bulge and to become tense. It was aspirated daily for several days, about 50 ml. of clear cerebrospinal fluid being removed on each occasion. The protein content of the fluid was estimated on three separate occasions and found to be 10 mg. per 100 ml. each time. After each aspiration it was noted that there was a profuse leakage of cerebrospinal fluid for several hours from the site of the puncture. The dressings and the