CHOROID PLEXUS PAPILLOMA
A New Presentation of von Hippel-Lindau (VHL) Disease

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SUMMARY

A definite association between Von Hippel-Lindau [VHL] disease and choroid plexus tumour has not been described previously. A 24-year-old patient was found to have a choroid plexus tumour in the left cerebellopontine angle and involving the temporal bone. Examination of her fundi revealed bilateral retinal angiomatosis, thus making a diagnosis of von Hippel-Lindau disease. Later, an abdominal scan showed renal and pancreatic cysts. An important point is that molecular analysis of the choroid plexus tumour tissue showed chromosome 3 allele loss as described for other tumour types associated with von Hippel-Lindau disease.

CASE REPORT

A 24 year old Caucasian female originally presented with an eight year history of deafness in the left ear and a three year history of progressive left facial weakness, which had led to a total palsy. More recently she had had pain in the left ear, vertigo with nausea and occasional vomiting and generalised headaches. At this time she was found to have a pulsatile red mass in the middle ear, producing a bulging of the posterior half of the left tympanic membrane. Computed tomography, as shown in Figure 1 demonstrated a large mass in the cerebellopontine angle, with extensive destruction of the petrous temporal bone. The mass was biopsied through the tympanic membrane under general anaesthesia, and the histopathological diagnosis was a choroid plexus papilloma.

The patient was transferred to this hospital for further management. Four vessel cerebral angiography showed that the tumour was mainly supplied by the ascending pharyngeal branch of the external carotid artery (Fig. 2). Shortly after this investigation the patient complained of blurred vision in the inferior peripheral field of her left eye and was seen in the eye clinic. Her visual acuities were RE 6/5, LE 6/6 and her visual fields were unremarkable. Fundal examination showed a large angioma in the right eye, surrounded by exudate, with a smaller one nearby (Fig. 3). Interestingly, the left fundus had a white lesion: apparently an angioma which had spontaneously regressed (Fig. 4)[1,2] Bilateral retinal angiomatosis establishes a diagnosis of von Hippel-Lindau disease, which is associated with vascular brain tumours, but these are haemangioblastomata, most commonly of the cerebellum. Because of this the histopathology of the biopsy was reviewed and again it was considered to be choroid plexus papilloma (Fig. 5).

The tumour was removed by a combined neurosurgical and otolaryngological approach.

Later the right eye angiomata were treated with cryotherapy under general anaesthetic using a single freeze technique.

The first abdominal scan which was done on our patient showed a tiny lesion, of doubtful significance, on the right

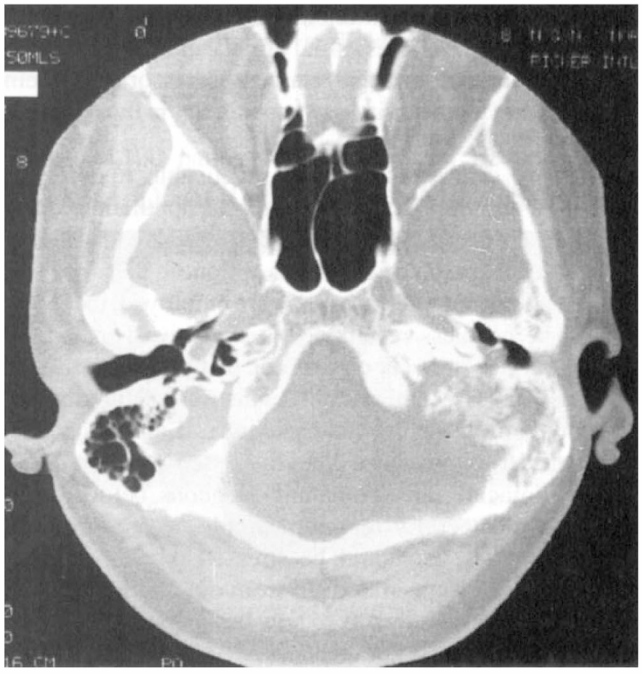

Fig. 1. *CT scan of brain show destruction of the petrous temporal bone by the tumour.*

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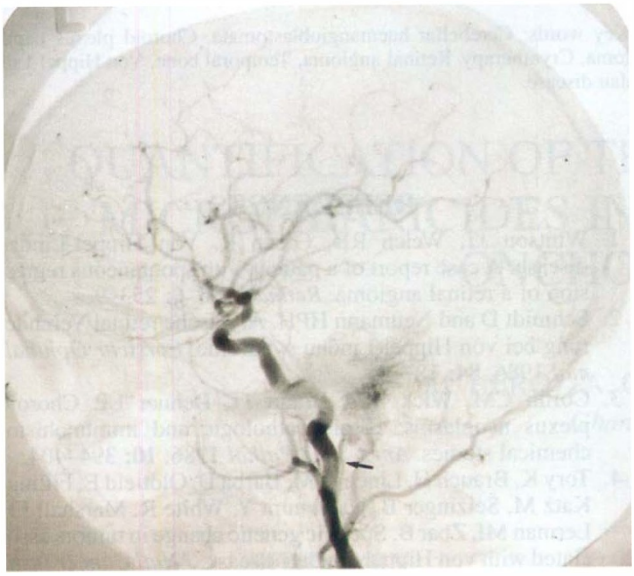

Fig. 2. *Four vessel cerebral angiography showing the blood supply to the tumour arising from the ascending pharyngeal artery (arrowed).*

kidney but a second abdominal scan (10 months later) showed both renal and pancreatic cysts (Fig. 6).

PATHOLOGY

Histopathology of a typical choroid plexus tumour showed papillary fronds lined by one or more layers of cuboidal to columnar epithelium (Fig. 5)[3]. Light microscopical and immunocytochemical studies on the tumour from our patient confirmed a benign choroid plexus tumour.

Molecular genetics studies on the choroid plexus papilloma in this case showed chormosome 3 allele loss as described for other tumour types associated with VHL disease[4,5,6,7,8]. This confirmed that the association of VHL

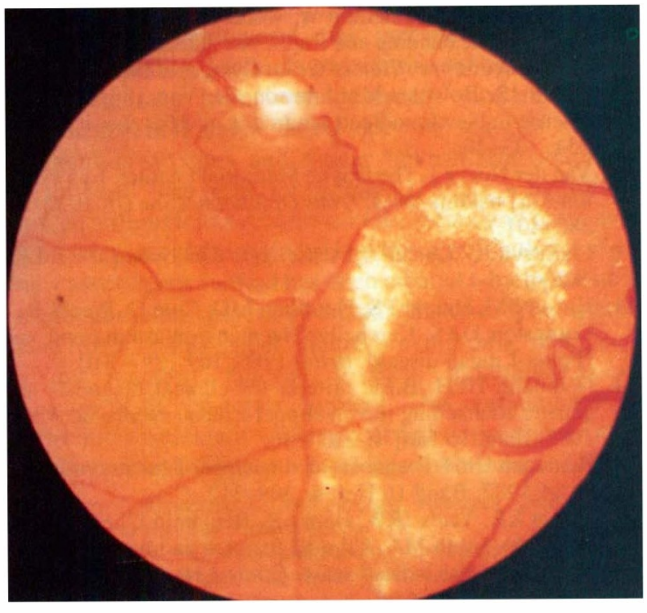

Fig. 4. *Left fundus showing an angioma, presumed to have undergone spontaneous regression.*

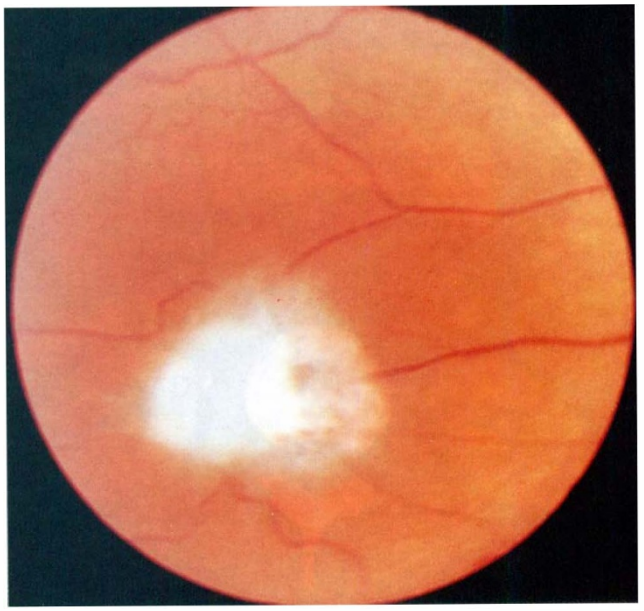

Fig. 3. *Right fundus showing a large angioma, surrounded by exudate, with a smaller one nearby.*

disease with choroid plexus papilloma is causal rather than coincidental.

DISCUSSION

Inheritance of Hippel-Lindau disease is autosomal dominant with incomplete penetrance[8,9,10,11]. There was no family history for our patient. The patient is an only child. The eyes of both parents were examined and found to be normal, as were abdominal scans. It is likely that our patient represents a new mutation. Genetic linkage studies have mapped the VHL disease gene to the tip of the short arm of chromosome 3[4,5,6,7,8]. Genetic counselling and screening of kindreds is important, and our current routine screening is:[12,13,14,15,16]

(1) annual physical examination
(2) annual eye examination
(3) annual renal ultrasound with CT scan every three years
(4) annual 24-hour urine collection for VMAs

Some people advocate three yearly MRI or CT brain

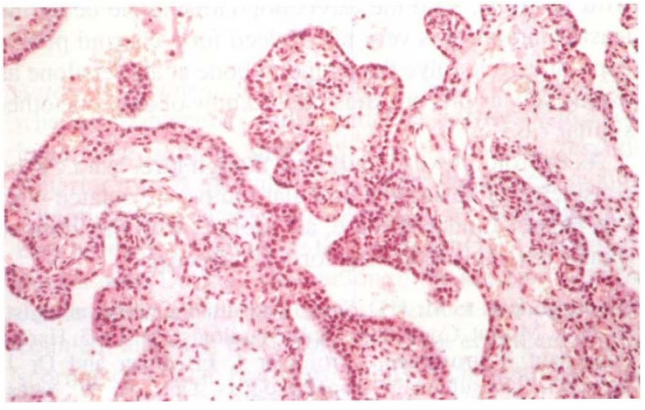

Fig. 5. *H & E stain showing the typical papillary structure of a choroid plexus tumour.*

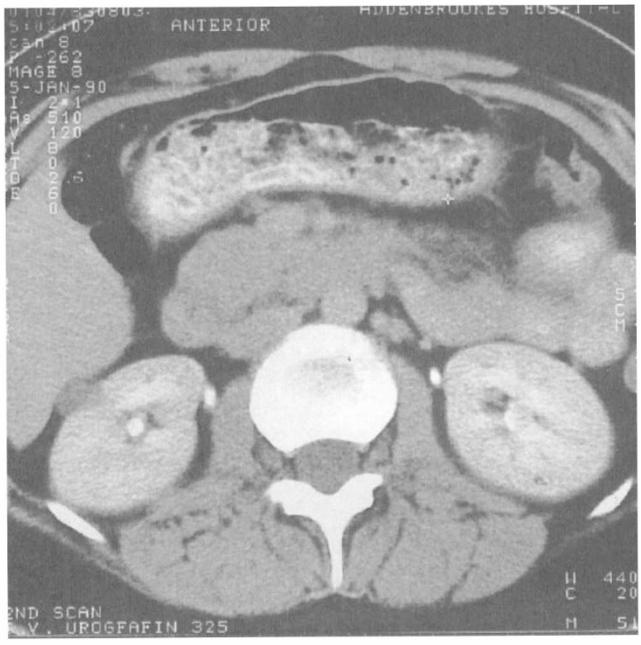

Fig. 6. *Abdominal CT scan showing renal cyst and pancreatic cysts.*

scanning, although no action is normally taken in the absence of symptoms. Any central nervous system symptoms need prompt and thorough investigation.

This is the first case, to our knowledge, where molecular genetics studies on a choroid plexus papilloma have demonstrated a definite association with this vascular tumour and VHL disease. This adds another vascular tumour to the list of retinal angioblastomata, cerebellar, cerebral and spinal haemangioblastomata, and renal tumours, already known to be associated with VHL disease. Renal, pancreatic, epididymal and ovarian cysts and also renal cell carcinoma and phaeochromocytoma are part of the syndrome. A patient with a choroid plexus papilloma was observed in a VHL kindred, but he had epididymal cysts only and there was no definite evidence of VHL disease in that patient[12].

Tumours of the choroid plexus are rare, particularly in adults. They account for only 0.5-0.6% of all intracranial tumours in adults. The IVth ventricle is the most common site (50%), followed by the lateral ventricle and then the IIIrd ventricle, with the cerebellopontine angle being the least common. It is very rare indeed for a choroid plexus papilloma to involve the temporal bone at all, let alone as extensively as this one did and we know of only one other similar case[17].

As choroid plexus papilloma, though rare, can now be considered to be another vascular tumour associated with von Hippel-Lindau disease, all patients with this tumour should have full screening for VHL disease.

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