Short report

Intracranial angiolipoma

P R WILKINS, C HODDINOTT, M D HOURIHAN, K G DAVIES, S SEBUGWAWO, R D WEEKS

From the Departments of Pathology, Neurosurgery and Radiology, The University Hospital of Wales, Cardiff, UK

SUMMARY Fat containing tumours within the central nervous system are rare. The second reported case of intracranial angiolipoma is described.

The association of vascular tissue with lipomata was first described by Bowen in 1912,¹ but it was not until 1960 that Howard and Helwig² established the histological entity of angiolipoma. In their study angiolipomata accounted for 17% of all lipomata. They normally occur in the subcutaneous tissues of young adults, most commonly in the arms and upper trunk. Multiple lesions are common and an increased familial incidence is suggested.³

Angiolipomata are rare within the cranio-cervical axis, but have been described in the spinal canal, usually within the extra dural space.⁴ A single case of intracranial angiolipoma has been reported.⁵ This was suprasellar in position with extension into the cavernous sinus and temporal extradural space. We report here a further case of intracranial angiolipoma occurring in the region of the cavernous sinus.

Case report

A 69 year old female first presented in 1977 with a history of approximately 10 grand mal fits, over a 12 year period. An unusual complaint was of a severe throbbing headache over the right orbit in the post-ictal period. On examination the right eye was proptosed with limitation of adduction and elevation of the globe. The right pupil was dilated and unreactive to both direct and consensual light and accommodation. Visual acuity was 6/6 bilaterally and the left pupil was normal. Visual fields were full both in confrontation and formal testing. Computed tomography (CT) showed a large area of mixed density occupying the floor of the right middle fossa, extending medially into the suprasellar region. These features and the considerable enhancement with intravenous

contrast media were thought to indicate a meningioma of the medial third of the sphenoidal wing.

Because the symptoms were causing little inconvenience to the patient, she was treated with phenobarbitone, and no surgery was proposed.

The patient returned 6 years later at the age of 75 years with complaints of frequent falls, visual hallucinations and deteriorating memory. A repeated CT scan confirmed the

Fig 1 CT scan with contrast demonstrating an enhancing mass lesion in the right temporal lobe.¹ This extends to the mid line in the suprasellar region and contains low density areas of negative HU values suggesting fat.²

Address for reprint requests: Dr P R Wilkins, Department of Pathology, University Hospital of Wales, Heath Park, Cardiff CF4 4XW, UK.

Received 18 July 1986 and in revised form 30 August 1986.
Accepted 13 September 1986

Fig 2 Paraffin section showing a tumour composed of mature fat cells and congested blood vessels lined by a single layer of endothelium (Haematoxylin and eosin; $\times 116$).

presence of an enhancing lesion in the right temporal fossa which caused shift of the mid line structures and compression of the right lateral ventricle. Areas of low density were present which were suggestive of fat (fig 1). A right temporal craniotomy was performed and a highly vascular tumour attached to the lateral wall of the cavernous sinus over an area of 3×2 cm was partly removed (weight of removed tumour 16 g). The residual tumour on the cavernous sinus appeared to be directly supplied by the cavernous carotid. Profuse bleeding followed the incision of the tumour and haemostasis was obtained with difficulty. The post-operative course was uneventful and the patient remained well apart from a right oculomotor palsy. Histologically the tumour was composed of mature fat cells and numerous congested blood vessels lined by a single layer of endothelium (fig 2). The tumour was surrounded by a dense fibrous capsule which appeared continuous with the dural covering of the cavernous sinus. The vascular component was conspicuous towards the periphery of the tumour. The features were those of an angioliipoma.

Discussion

The angioliipoma is a well recognised entity outside the central nervous system. Histologically, there are two types. The non-infiltrating, encapsulated form is composed of mature fat cells with vascular proliferation of varying degree. Recurrence is rare after simple enucleation. Rarely, an infiltrating form of the tumour occurs, usually in muscle, without a periph-

eral capsule and recurrence may be seen even after wide excision.⁶

Lipomata are usually considered to originate from embryonic sequestrations of multipotential mesenchyme cells which remain dormant until stimulated by hormones of adolescence. Differentiation into mature fat cells and thence lipomata may then occur and it is possible that repeated trauma is a factor resulting in vascular differentiation and progression to angioliipoma.^{2,6}

Within the central nervous system, fat containing tumours are rare and are most common in the mid line, especially in relation to the corpus callosum (often associated with agenesis) and also the tuber cinereum and tegmentum of the mid-brain. Microscopically in addition to mature fat cells they may contain other elements such as striated or smooth muscle, neuroglial elements, ganglion cells and often calcification.⁷

Mature fat cells are not normally present in the central nervous system, but the presence of undifferentiated mesenchyme cells in the region of blood vessels with the potential to differentiate in the direction of lipid and vascular tumours under appropriate stimuli, is possible. In both the present case and that of Takeuchi,⁵ the tumours arose in the region of the cavernous sinus and were supplied by the cavernous carotid artery. In the Japanese case the

tumour was in direct communication with the sinus and associated with multiple aneurysms in the cerebral vessels, and a developmental relationship between the two was postulated. In our case the tumour was attached to the lateral wall of the sinus and received an arterial supply from the cavernous carotid. No associated vascular abnormalities were noted at the time of surgery but angiography had not been performed before operation.

Outside the central nervous system angioliipomata are rare over the age of 55 years, yet both intracranial angioliipomata have occurred in elderly females (aged 69 and 72 years). The parasellar situation and the presence of fat and contrast enhancement on CT scanning would appear to be characteristic. Should they be operated upon, they may well prove to be extremely vascular.

References

- 1 Bowen JT. Multiple subcutaneous haemangiomas together with multiple lipomas, occurring in enormous numbers in an otherwise healthy, muscular subject. *Am J Med Sci* 1912;**144**:189–92.
- 2 Howard WR, Helwig EB. Angioliipoma. *Arch Dermatol* 1960;**82**:924–31.
- 3 Enzinger FM, Weiss SW. *Soft Tissue Tumours*. St. Louis: CV Mosby, 1983:208–11.
- 4 Taylor J, Harries BJ, Schurr PH. Extrathecal haemangioliipomas of the spinal canal. *Br J Surg* 1951;**39**:1–7.
- 5 Takeuchi J, Handa H, Keyaki A, *et al.* Intracranial Angioliipoma. *Surg Neurol* 1981;**15**:110–3.
- 6 Lin JJ, Lin F. Two entities in angioliipoma. *Cancer* 1974;**34**:720–7.
- 7 Zettner A, Netsky MG. Lipoma of the corpus callosum. *J Neuropathol Exp Neurol* 1960;**19**:305–19.