

SHORT REPORT

Brain stem stroke associated with epidermoid tumours: report of two cases

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Two cases of cerebello-pontine angle epidermoid tumour presented with the clinical findings of brain stem stroke. Preoperative imaging showed stretching of branches of the basilar artery. Brain stem stroke as a presenting feature of cerebello-pontine angle epidermoid tumour has not been reported before.

Intracranial tumours may rarely present with stroke, which is mostly related to invasion, compression, or encasement of intracranial vessels by the tumour mass.^{1–3} Intracranial epidermoid tumours often develop in the cerebello-pontine angle where they cause symptoms and signs of a slowly expanding mass lesion.⁴ Although epidermoid tumours are known to produce a mass effect and occasionally to narrow intracranial vessels, it is very unusual for them to present with sudden ischaemic symptoms.⁵ Reduced blood flow from mechanical stretching of the pontine arteries by intrarachnoidal expansion of the tumour may be one possible cause of a stroke.

We report two cases of cerebello-pontine angle epidermoid tumours presenting with signs of brain stem stroke. This phenomenon has not been reported before.

CASE REPORTS

Case 1

This 45 year old man presented with a sudden attack of slurred speech, nausea, vertigo, and impaired coordination of the right hand, which resolved partially within three hours. His personal history was unremarkable. On neurological examination, in addition to dysarthria he had a left hemiparesis and hemihypoesthesia. Magnetic resonance imaging (MRI) of the brain showed right sided cerebello-pontine angle and cerebellar peduncle lesions, which were hypo- and hyperintense on T1 and T2 weighted images, respectively. On diffusion weighted (DW) MRI, both lesions were hyperintense, which suggested that they were a cerebello-pontine angle epidermoid tumour and a cerebellar peduncle infarct (fig 1). Routine laboratory tests and echocardiography were normal. Following a course of medical treatment for two weeks, the patient underwent a right suboccipital retrosigmoid craniotomy, which showed a classical pearly tumour encasing and stretching the branches of the basilar artery and anterior inferior cerebellar artery. The tumour was totally removed and the patient did well after surgery.

Case 2

This 39 year old woman presented with sudden neurological deficits including vertigo, nausea, and numbness on the right side of her face and the left side of her body. Her personal history was otherwise normal. On neurological examination she reported hypoesthesia in dermatomes 2 and 3 of the

fifth cranial nerve and she had a left hemiparesis with a positive Babinski sign. Cranial MRI showed left cerebello-pontine angle and left cerebellar peduncle lesions that were hypo- and hyperintense on T1 and T2 weighted images, respectively. Both the lesions showed high signal intensity on DW images, again suggesting a left cerebello-pontine angle epidermoid tumour and a left cerebellar peduncle infarct (fig 2). Following a course of medical treatment the patient underwent a left sided suboccipital retrosigmoid craniotomy, which revealed tumour related stretching of the perforating branches of the basilar artery. The tumour was removed except for a piece of capsule which was adherent to the pons. The postoperative course was uneventful without additional deficits.

DISCUSSION

Cerebello-pontine angle epidermoid tumours may present with symptoms of cranial nerve, cerebellar, and brain stem compression as well as with obstructive hydrocephalus and meningeal irritation.^{6–8} They tend to spread along the cerebello-pontine angle/prepontine cisterns and compress or encase but not invade the adjacent structures. A sudden neurological deficit as a presenting symptom, however, is a very exceptional event which has been reported only once for a parasellar dermoid cyst.⁹ Meningiomas are known to cause stenosis or occlusion of intracranial vessels, and recently cases of vessel wall invasion by glial tumours have been also reported.^{1–3} However to the best of our knowledge, this type of presentation has never been described for epidermoid tumours.

Epidermoid tumours have a thin capsule consisted of stratified keratinised squamous epithelium which may rupture spontaneously causing bouts of chemical meningitis. Although the resulting inflammatory reaction has been suggested as a cause of capsular adherence to brain stem, there is no evidence that this type of inflammation induces a vasculitic response of the brain stem vessels. Our patients did not report any previous complaints suggesting a bout of chemical meningitis. Epidermoid tumours have been reported to cause facial palsy by impairing blood supply (as well as causing other cranial neuralgias by direct compression), by pushing the cranial nerve against a blood vessel, or by local irritation from cholesterol spillage.¹⁰ Presentation with sudden ischaemic symptoms is extremely unusual^{11–13} and our review of published reports did not reveal any such case of an epidermoid tumour that caused brain stem infarction as a presenting symptom. Diffusion weighted MRI of the brain is very useful not only in differentiating among epidermoid tumours, cerebello-pontine angle arachnoid cysts, and infarction, but also in evaluating postoperative follow up of residual tumour and recurrences.^{14 15}

Although it is generally believed that the clinical course of epidermoid tumours is benign, awareness of presentation with brain stem ischaemia is important. In these two cases

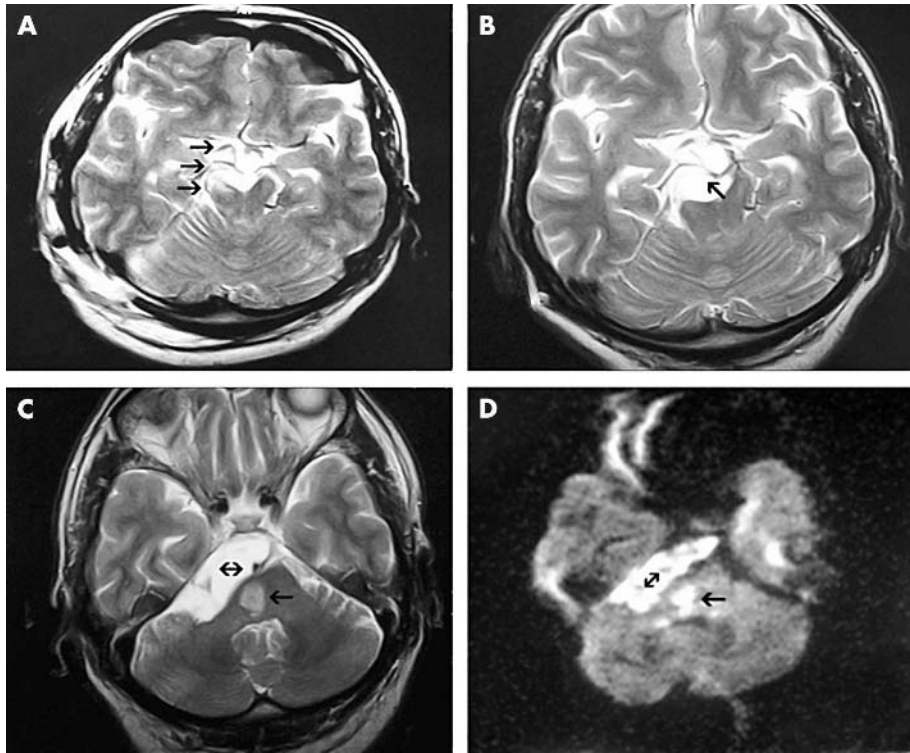


Figure 1 (A,B) Axial T2 weighted magnetic resonance imaging (MRI) of case 1 showing stretching of the basilar artery (arrow) and its branches (arrows) by the tumour. (C) A hyperintense right mid-pontine lesion consistent with infarction (arrow) and right cerebello-pontine angle epidermoid tumour (double tip arrow). (D) Diffusion weighted MRI showing an infarct (arrow) in the right upper pontine level, and stretching of the basilar artery and its branches (double tip arrow) by the cerebello-pontine angle epidermoid tumour.

both patients were relatively young, non-smokers, and otherwise healthy individuals. We conclude that tumour induced stretching of the branches of the basilar artery,

especially of the anterior inferior cerebellar artery, led to stroke. Preoperative imaging studies as well as intraoperative findings further supported this assumption.

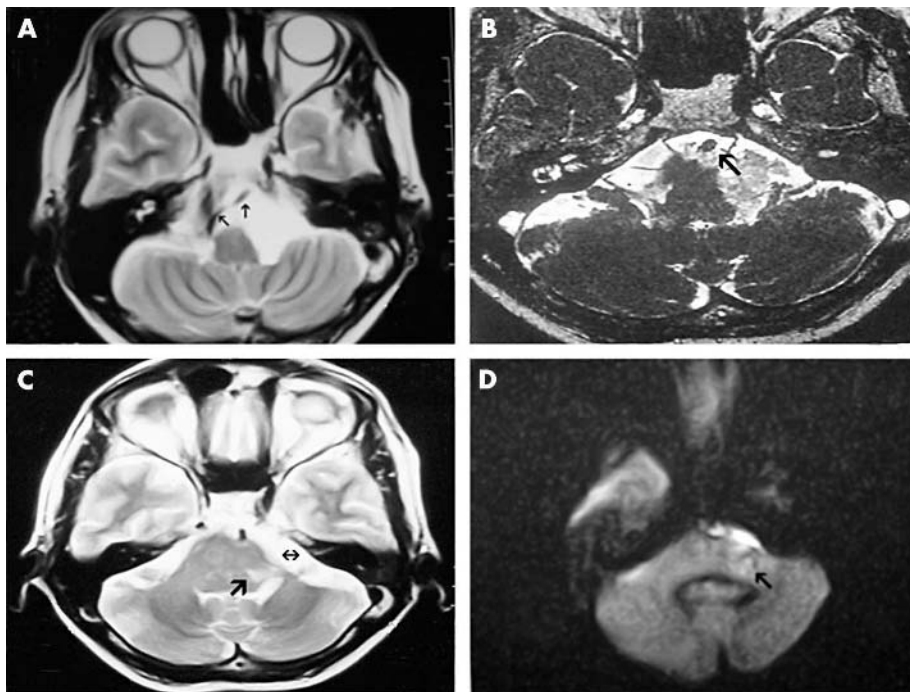


Figure 2 (A, B) Axial T2 weighted and CISS magnetic resonance imaging (MRI) of case 2 showing stretching of the verteobasilar artery (arrows) and its pontine perforating branches (arrow). (C) Axial T2 weighted MRI of case 2 documenting the left cerebello-pontine angle epidermoid tumour (double tip arrow) and brain stem infarct (arrow) at the mid-pontine level. (D) Diffusion weighted MRI showing the cerebello-pontine angle epidermoid tumour with prominent high signal intensity and infarction at the mid-pontine level (arrow).

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