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Giant cell tumour of the skull base: MRI appearances

Case report

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Case report

A 27-year-old white woman presented with a 7-year history of blurring of vision in the right eye, associated with headaches, which were worse on movement. One month previously, when 36 weeks pregnant, she developed loss of vision in the right eye, and deterioration of vision on the other side. A healthy infant was delivered by caesarean section, and her symptoms responded to intravenous dexamethasone. On examination, there was pallor of the optic discs, a left sixth nerve palsy, and minor inequality of pupil size, the right being larger than the left and reacting sluggishly to light. The visual fields were full to confrontation, with no other abnormality.

Skull radiographs demonstrated expansion of the upper end of the clivus, with upward displacement of the floor of the pituitary fossa. MRI revealed a large soft tissue mass in the midline, giving high signal on T2-weighted images, and low signal on T1 weighting, occupying the position of the sphenoid sinus, but extending superiorly and posteriorly, displacing the pituitary gland upwards and the pons backwards, without evidence of direct invasion of intracranial structures. The optic chiasm was impinged upon by the elevated pituitary gland, but was not itself displaced. T2-weighted images showed a fine "soap bubble" appearance of the tumour matrix. The right internal carotid artery was partially encased by the tumour, and the left displaced (Fig. 1).

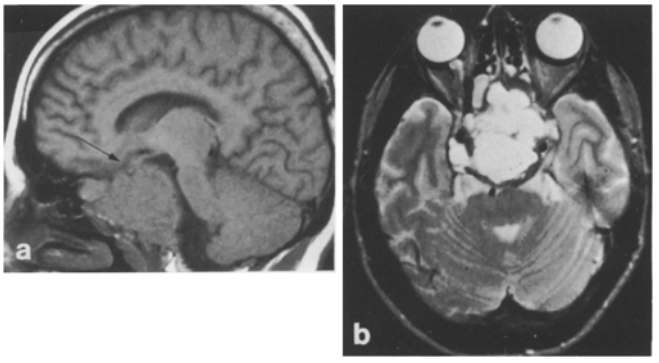

Fig. 1. **a** Sagittal SE 500/15 MRI. A large mass occupies the position of the sphenoid sinus. The pituitary gland is displaced upwards, and impinges upon the optic chiasm *(arrows)*, and the pons is deviated posteriorly, but there is no evidence of invasion of these structures by tumour. **b** Axial SE 3000/90 image. The tumour is clearly extra-axial, and appears to have a "soap bubble" matrix. Compression of the brain stem is again seen

The tumour was debulked through a Le Fort maxillotomy. At surgery it was composed of brown and yellowish components; the appearance was of a lesion which had bled in the past. Complete removal was not technically possible, and postoperative radiotherapy was arranged. There was no neurological deficit on discharge; visual acuity returned to normal, and the patient's headache was relieved. The visual fields remained full to confrontation.

Discussion

Giant cell tumour is the fifth or sixth commonest tumour of bone, and is most commonly seen at the metaphysis of a long bone, or at an apophysis. The patient is most often in the second or third decade of life, and females preponderate [1]. In a typical location, there is usually little difficulty in making the diagnosis, but in an unusual location the correct diagnosis may be overlooked.

The radiological features in this patient are typical of a slowly growing tumour of bone, and the upward displacement of the intact sella turcica in particular supports this. Partial encasement of a carotid artery was noted; this has been reported previously [2]. The "soap bubble" appearance seen on the T2-weighted images, although not suggested by the plain films, militates against the potential differential diagnosis of a sphenoid sinus mucocoele. It is interesting to note the surgical finding of previous haemorrhage within the tumour: the hypointense "septa" seen on T2-weighted MR images may represent haemosiderin deposits.

Other possible radiological diagnoses would include aneurysmal bone cyst, or intradiploic meningioma, but the plain film and MR appearances exclude more invasive lesions, such as chordoma or metastasis, and the lack of

calcification within the tumour matrix makes chondroma and chondrosarcoma unlikely; normal serum electrolytes excluded brown tumour.

Ninety-five per cent of giant cell tumours occur outside the skull [3]; those within the skull base are usually within the sphenoid bone [2, 4–7].

Although this is a rare tumour, the radiological features, in a woman of this age, should allow the correct diagnosis to be made.

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