Clinics in Diagnostic Imaging (34)

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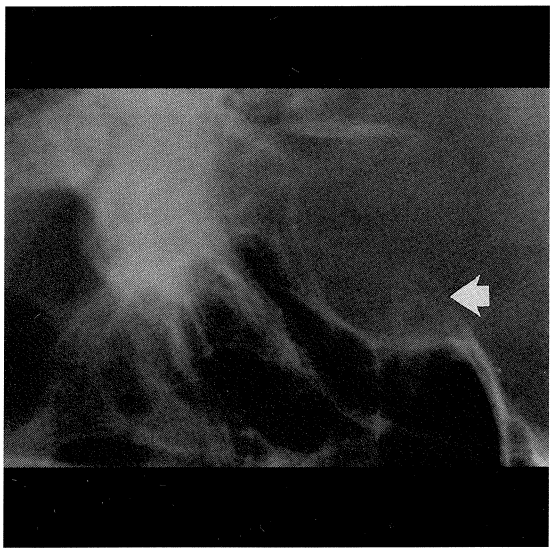

Fig 1 – Lateral radiograph of the skull, coned to the pituitary fossa.

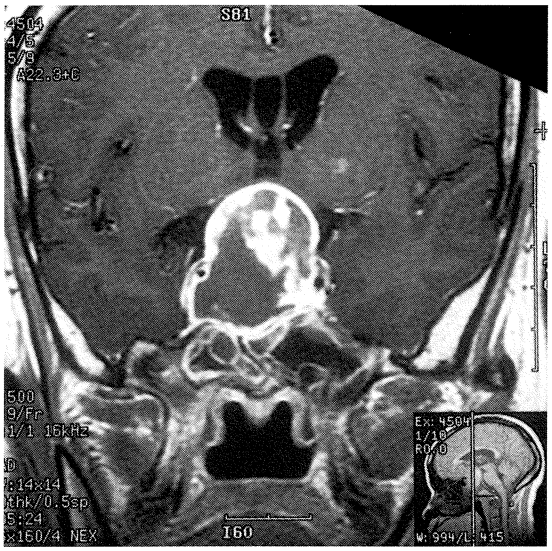

Fig 2b – Coronal post-Gd-DTPA SE T1-W MR image of the brain, at the corresponding level to figure 2a.

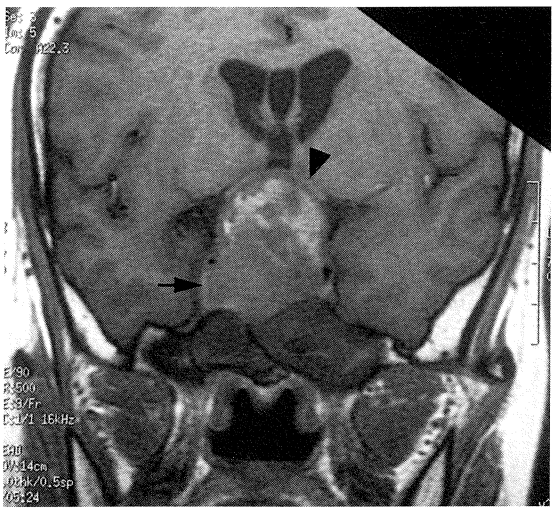

Fig 2a – Coronal SE T1-W MR image of the brain, at the level of the pituitary fossa.

Fig 3 – Sagittal post-Gd-DTPA SE T1-W MR image of the brain, taken in the midline.

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CASE PRESENTATION

A 44-year-old woman presented with a 6-month history of headaches and decreased visual acuity. Physical examination demonstrated bilateral temporal visual field loss and early papilloedema. The other cranial nerves were normal.

A skull radiograph (Fig 1) and magnetic resonance (MR) scans (Figs 2a-b and 3) were performed. What are the radiological findings? What is the differential diagnosis and most likely diagnosis?

IMAGE INTERPRETATION

The skull radiograph showed a ballooned pituitary fossa (Fig 1) with destruction of the posterior clinoids (arrow). The MR scans demonstrated a large pituitary tumour with cystic and solid components. There was suprasellar and infrasellar tumour extension, as well as involvement of the right cavernous sinus (arrow). Compression of the optic chiasm was seen (arrowhead) (Figs 2a-b). There was prominent rim enhancement after contrast injection, with non-enhancement of the central portion, due to tumour necrosis (Fig 3).

DIAGNOSIS

Invasive pituitary macroadenoma

CLINICAL COURSE

The patient underwent a subfrontal craniotomy to debulk the tumour. Because of invasion of the sphenoid sinus and left cavernous sinus, it was not possible to remove the tumour completely. The patient is now undergoing radiotherapy to the residual tumour.

DISCUSSION

Pituitary macroadenomas are common intracranial mass lesions, accounting for 10% of all primary intracranial tumours, and between one third and one half of all sella and parasellar masses[1]. Macroadenomas are defined as adenomas are > 10 mm diameter while microadenomas are < 10 mm diameter. Macroadenomas are benign tumours but they may be locally invasive, as in our patient[2]. Macroadenomas are usually slow-growing and clinically silent until they present with pressure symptoms. Suprasellar extension is most common, followed by lateral extension into the cavernous sinus. Tumour necrosis, haemorrhage and cyst formation are all common complications in larger tumours, presumably due to the tumour outgrowing the blood supply.

Clinically, 75% of macroadenomas are hormonally active[3]. The most common secreting tumour is the prolactinoma, which occurs in 30% of patients, followed by growth hormone adenomas in 15% of patients and ACTH producing tumours in 5 – 10% of patients. In the other 25% of patients, the tumours are non-functional, as in our patient[1].

On computed tomography (CT) and MR scans, the tumours are either solid, or both solid and cystic. There may be contrast enhancement but there is usually no focal calcification. The presence of calcification should suggest an alternative diagnosis such as craniopharyngioma. Necrosis and tumour haemorrhage are not uncommon, even in asymptomatic patients. It is particularly important to exclude the possibility of a giant carotid aneurysm. Aneurysms have a laminated intramural thrombus, as well as areas of signal void on MR imaging but can be confused with macroadenomas, which may also have intratumoural haemorrhage. If there is any doubt, a carotid angiogram is recommended to exclude this possibility.

REFERENCES

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ABSTRACT

A 44-year-old woman presenting with headache and decreased visual acuity was found to have bilateral papilloedema. Radiograph showed an enlarged pituitary fossa. MR scans demonstrated a large solid tumour with central necrosis, and both suprasellar and infrasellar extension. The invasive pituitary macroadenoma was surgically debulked, followed by radiotherapy. The clinical and imaging features of pituitary macroadenomas are discussed.

Keywords: cranial tumours, magnetic resonance (MR) imaging, pituitary macroadenoma