Sudden visual loss and headache: important symptoms of pituitary disease

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CASE REPORT 1

A 63-year-old man presented to the ophthalmology department with a 24-hour history of loss of vision in the right eye and 3 days of severe frontal headache. Six weeks earlier a supero-temporal field defect was observed in the left eye during examination by his optician. A routine referral to the ophthalmology department for assessment of possible glaucoma was made.

On examination he was alert and orientated. The visual acuity was hand movements in the right eye and 6/12 in the left eye with a dense right relative afferent pupillary defect. Visual fields tested by confrontation demonstrated a bitemporal loss. This was confirmed by formal Goldmann visual fields (*Figure 1*). There was no papilloedema or external ophthalmoplegia and further ophthalmic examination was unremarkable. There were no focal neurological signs and his blood pressure was normal. Serum prolactin was 400U/litre (normal range: 100–500 mU/litre).

A computerized tomography scan (*Figure 2*) revealed an intrasellar mass expanding the sella turcica and extending into the suprasellar cistern. There were small high density foci suggesting a recent haemorrhage within a pituitary adenoma.

The patient underwent transphenoidal decompression of the pituitary tumour and histopathology confirmed haemorrhagic pituitary adenoma. Repeat visual fields within 1 week of surgery (*Figure 3*) illustrate dramatic recovery of visual function. Two weeks post-operatively, the patient's visual acuity had improved to 6/24 in the right eye and 6/9 in the left with continued improvement in the visual field. After 5 months his visual acuity was 6/18 right and 6/6 left with almost complete recovery of his visual fields and he was able to return to driving.

CASE REPORT 2

A 61-year-old man presented to the ophthalmology department with sudden loss of vision in the right eye. The day before he had woken with severe headache, nausea and vomiting. Over the preceding 18 months he had been investigated for right-sided visual loss. Automated visual field analysis had shown global depression of the right visual field and visually evoked potentials showed decreased amplitude but no delay from the right optic nerve. Ten days before presentation, the visual acuities were measured at 6/12 right eye and 6/6 left eye.

Examination revealed an alert, orientated but distressed man with perception of light vision in the right eye and 6/9 vision in the left eye. A right relative afferent pupillary defect and pallor of the right optic disc were observed. The right vision was insufficient for meaningful field testing, however, a left superior temporal quadrantinopia was elicited by confrontation fields, which was later confirmed with a Goldmann visual field test. Cranial, peripheral nervous and systemic examination was otherwise unremarkable. The serum prolactin level was 100 U/litre.

A magnetic resonance imaging scan showed a mass containing high density foci suggestive of recent haemorrhage, extending upwards from the sella (*Figure 4*). In view of the rapidly progressive visual loss the patient underwent transphenoidal resection of the lesion. Histology revealed a haemorrhagic and necrotic pituitary adenoma staining positively for adrenocorticotropic hormone. One month after surgery, the visual acuities were counting fingers (CF) right and 6/6 left with no change to the visual fields.

After 6 months his right visual acuity remained poor at CF with marked generalized constriction of the visual field. His left visual acuity, however, improved to 6/4-2 with good recovery of visual field, such that his binocular visual field was above that required for driving.

Pituitary apoplexy is an uncommon complication of pituitary tumours. It is frequently misdiagnosed in the early stages of the disease and is both a potentially blinding and fatal complication. If recognized early, however, the condition is eminently reversible. We describe two cases in which the presence of pituitary disease was unsuspected. Early visual field loss recorded before the event was mistaken for possible glaucoma until the patients presented with the typical symptoms of pituitary

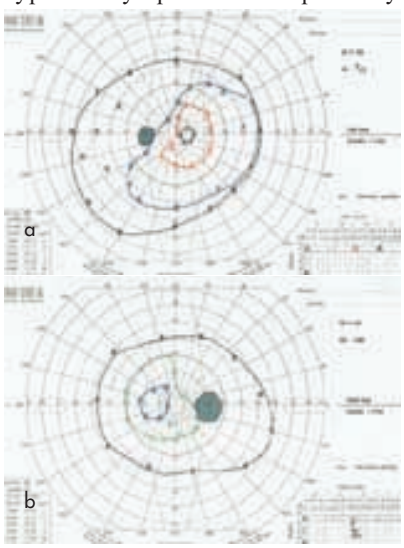

Figure 1. Left (a) and (b) right Goldmann visual fields at presentation. Note the bitemporal field loss and the enlarged blind spot.

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apoplexy. In one of the cases, early recognition and surgery enabled a dramatic recovery in visual acuity and field defect to take place.

DISCUSSION

Pituitary apoplexy is precipitated by the rapid expansion of the pituitary gland, most commonly as a result of infarction or haemorrhage within a pituitary tumour. It is characterized by the sudden onset of severe headache, visual deterioration and ophthalmoplegia, and may be accompanied by signs of meningeal irritation and loss of consciousness (Cordoso and Peterson, 1984).

Visual function may be profoundly depressed, but prompt treatment often leads to a dramatic improvement in both visual acuity and visual fields. This classical presentation is relatively rare, although subclinical haemorrhage associated with pituitary tumours has been shown to occur more frequently (Ostrov et al, 1989).

In a high proportion of cases, the apoplectic event is the first presentation of pituitary disease; in one study, 64% of patients were not previously known to have a pituitary tumour (Millazzo et al, 1996). Clinical features of endocrine dysfunction were absent in 50% of cases in another published series (McFadzean et al, 1991) and a classical bitemporal field defect was present in only 50% of cases. Oculomotor defects, however, are common, with a reported incidence of around 78% (Bills et al, 1993; Peter and Tribolet, 1995). Conservative management may be followed by some recovery of visual function, but early surgical intervention is advocated, particularly when vision is severely affected at the time of diagnosis (Cordoso and Peterson, 1994; Millazzo et al, 1996).

The sudden onset of severe headache is often attributed to an aneurysmal subarachnoid haemorrhage, particularly when meningeal irritation is present. The differential diagnosis also includes meningitis, intracerebral haematoma, encephalitis and midbrain infarction (Vidal et al, 1992). Rapid and accurate diagnosis is important because prompt steroid treatment may be life saving and early decompression may allow rapid visual recovery.

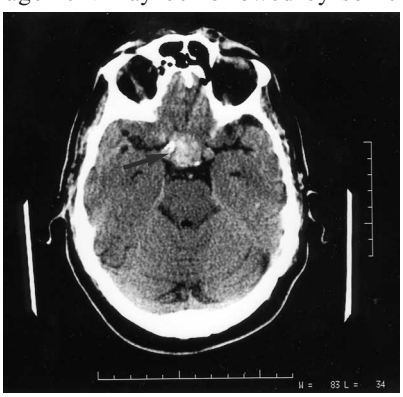

Figure 2. Unenhanced computed tomography scan showing pituitary haemorrhage (arrow).

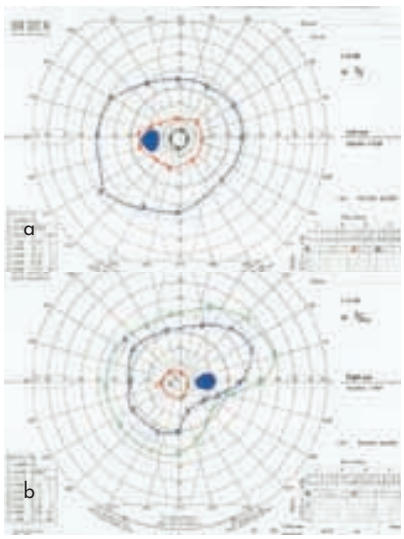

Figure 3. Left (a) and (b) right Goldmann visual fields 1 week post surgery. Note the improvement in the field defects for each target size and normal blind spot size.

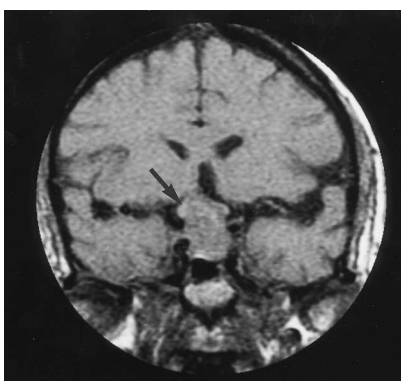

Figure 4. Coronal T1-weighted magnetic resonance image showing a pituitary mass of mixed signal intensity displacing and disotorting the optic chiasm (arrow).

When performed with thin sections through the sella turcica, computed tomography (CT) will demonstrate pituitary macroadenomas. These appear as a mass of similar or slightly decreased density extending into the suprasellar cistern from an enlarged sella turcica. Reformatted images in the coronal plane will often demonstrate the relationship of the adenoma to the optic chiasm and nerves. CT is particularly useful in demonstrating the acute haemorrhage seen in pituitary apoplexy.

Blood appears as high density foci within an adenoma and may also be seen in the subarachnoid space. With time (1–2 weeks) the high density seen in acute haemorrhage lessens so that the haematoma becomes isodense when compared with surrounding tumour (Wakai et al, 1981).

CT may be more readily available and is quick and relatively easy to perform, however, magnetic resonance imaging is considered to be the imaging modality of choice in pituitary apoplexy by some authors, especially for detecting subacute and chronic haemorrhages (Lacomis et al, 1988; Onesti et al, 1990). HM

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