**Pituitary apoplexy with optic tract oedema and haemorrhage in a patient with idiopathic thrombocytopenic purpura**

**Abstract** Bilateral optic tract oedema, left optic tract haemorrhage and subarachnoid haemorrhage occurred in a 70-year-old man with pituitary apoplexy associated with idiopathic thrombocytopenic purpura. Left optic tract haemorrhage was confirmed on MRI.

**Keywords** Optic tract haemorrhage · Optic tract oedema · Pituitary apoplexy · Idiopathic thrombocytopenic purpura

**Introduction**

Haemorrhage within pituitary adenomas may be associated with haematological disorders. We present the first reported case of pituitary apoplexy associated with idiopathic thrombocytopenic purpura (ITP). In this instance compression and distortion of the anterior visual pathways was associated with bilateral optic tract oedema and left optic tract haemorrhage. Optic tract haemorrhage is extremely rare and has been described only in patients with presumed cavernomas involving the optic tract and chiasm.

**Case report**

A 70-year-old hypertensive man presented with severe frontal headache and blurred vision. He had signs of meningism and a bitemporal hemianopia. CT demonstrated a haemorrhagic pituitary tumour, confirming the clinical diagnosis of pituitary apoplexy. There was no evidence of haemorrhage beyond the margins of the macroadenoma. A preoperative blood screen revealed a platelet count of $1 \times 10^7 /l$ (normal range 140–400 $\times 10^7 /l$) and a bone marrow aspirate showed megakaryocytes consistent with peripheral platelet consumption or destruction. The patient was treated with alphaglobulin and methylprednisolone for a presumed diagnosis of ITP, and surgery was delayed due to the risks of uncontrolled intracranial haemorrhage. Thirty-six hours after the ictus the platelet count had risen to $116 \times 10^7 /l$, but the visual impairment had progressed to complete blindness in both eyes.

MRI then showed a haemorrhagic pituitary mass traversing the chiasmatic cistern and extending into the floor of the third ventricle (Figs.1–3). Axial T2-weighted images showed low signal within the tumour, bilateral optic tract oedema, and low signal within the left optic tract (Fig.3). Fluid levels consistent with intraventricular haemorrhage were visible in both occipital horns.

On review 6 months following the ictus the patient remained blind with no perception of light in either eye.
Fig. 1 A coronal T1-weighted image 36 h after presentation shows the adenoma traversing the chiasmatic cistern and extending into the floor of the third ventricle. Blood products within the adenoma largely remain isointense with grey matter.

Fig. 2 A coronal T1-weighted image shows susceptibility artefact from intracellular deoxyhaemoglobin in the expanded left optic tract (arrow).

Fig. 3 An axial T2-weighted image shows a low-signal mass within the chiasmatic cistern, and confluent low signal within the left optic tract. Fluid levels within the lateral ventricles confirm subarachnoid haemorrhage.

Discussion

Pituitary apoplexy results from sudden expansion of a pituitary adenoma due to spontaneous haemorrhage or infarction [1–3]. Haemorrhage within pituitary adenomas is relatively common and occurs in up to 27% of cases [1]. Symptoms suggestive of pituitary apoplexy may occur in up to 40% of patients with haemorrhagic adenomas [2]. Reported predisposing factors include treatment with bromocriptine, oestrogens or anticoagulants, radiotherapy, trauma, lumbar puncture and angiography [2, 3]. Haemorrhage can extend beyond the gland into the subarachnoid space [4], ventricular system [5], brain parenchyma [6], or sphenoid sinus [7]. Haemorrhage within and extending beyond adenomas has been associated with haematological disorders, including anticoagulant therapy [4], multiple myeloma [5] and von Willebrand’s disease [8].

Rapid upward expansion of a haemorrhagic pituitary adenoma results in compression of adjacent structures including the optic nerves, chiasm and tracts and the floor of the third ventricle. This is typically associated with visual field abnormality, and less frequently with impaired consciousness, disturbed thermoregulation and variable heart rate and blood pressure due to compression of the hypothalamus [4].

To our knowledge optic tract oedema and haemorrhage have not been reported with either pituitary apoplexy or ITP. Optic tract oedema has been reported as a useful MRI finding for the diagnosis of craniopharyngioma [9], and in up to 40% of patients following stereotactic pallidotomy for Parkinson’s disease [10]. Haemorrhage within the optic tract is extremely rare and has been reported only with presumed cavernomas within the optic chiasm and tract [11]. Subdural and intracerebral haemorrhage are well-recognised complications of ITP, but this condition has not been reported previously as a cause of pituitary apoplexy [12].

Nagahata et al. [9] detected optic tract oedema in five of eight patients with craniopharyngiomas; its presence was independent of tumour size [9]. There was no evidence of optic tract oedema in 15 consecutive patients with pituitary adenomas large enough to compress the optic chiasm. Unfortunately the description of the clinical presentation of the adenoma cases did not extend beyond visual field defects; specifically, presentation with apoplexy was not mentioned. It was postulated that optic tract oedema in patients with craniopharyngioma was due to local tumour invasion, or to transudation of the contents of the tumour cysts, resulting in inflammation, rather than to compression [9].

In our case there was high signal within both optic tracts on the T2-weighted images and we speculate that the most likely cause was compression and distortion of the proximal optic tracts by the rapidly expanding pituitary adenoma. The optic tract haemorrhage may have extended directly from the adenoma or occurred primarily within the ischaemic optic tract. Either mechanism would have been facilitated by thrombocytopenia.