Headache, vomiting and diplopia

Ana Cantón, Rafael Simó, Luis Gil, Arantxa Ortega, Jordi Mesa

A 47-year-old woman was admitted to the hospital with a history of sudden headache, vomiting and slight diplopia on left lateral gaze, without alteration in the level of consciousness. The patient had been diagnosed as suffering from stage II breast cancer, 10 months earlier, after detection of a 2-cm mass in the left breast. A total mastectomy and axillary dissection was performed. Pathological examination revealed an invasive ductal carcinoma without axillary involvement. Tamoxifen and adjuvant chemotherapy with cyclophosphamide, 5-fluorouracil and methotrexate was administered.

On physical examination the patient appeared well. Blood pressure was 90/60 mmHg. No lymphadenopathy was found. Examination of the gastrointestinal, respiratory and cardiovascular system was unremarkable. Neurological examination showed bitemporal hemianopsia and a complete third cranial nerve palsy on the left side.

Findings on haematology, urine analysis, serum chemistry, electrocardiography and chest X-ray were normal. Hypothalamic and pituitary function tests show deficiency of adrenocorticotropin, thyroid-stimulating hormone, growth hormone, luteinising hormone and prolactin. Cranial magnetic resonance imaging (MRI) was performed (figure). Staging work-up including bone scan and abdominal ultrasound did not disclose metastatic lesions.

Questions

- 1 What does the MRI show?
- 2 What is the most probable diagnosis in this case?
- 3 What are the presenting signs and symptoms of this pathology?

Figure T1-weighted MRI with Gd-DTPA enhancement

**Hospital Vall
d'Hebron,
Barcelona, Spain**
**Department of
Endocrinology**
A Cantón
R Simó
J Mesa
**Department of
Neurosurgery**
L Gil
**Department of
Pathology**
A Ortega

Correspondence to
Dr A Cantón, Servicio de
Endocrinología, 7ª planta
impares, Hospital Vall
d'Hebron 119-129,
08035 Barcelona, Spain

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Answers

QUESTION 1

MRI with Gd-DTPA enhancement showed (T1-weighted image) a well-defined heterogeneous sellar mass, measuring 2-cm in diameter, with suprasellar extension and rim enhancement.

QUESTION 2

The patient had a sudden onset of headache, vomiting and diplopia which suggests a pituitary apoplexy in the setting of a sellar mass. The most frequent sellar mass is pituitary macroadenoma, nevertheless other causes, including breast metastases, have been described.

QUESTION 3

The clinical presentation of pituitary apoplexy is widely variable and not always symptomatic (box).

Treatment

The patient underwent transsphenoidal surgery with a provisional diagnosis of a non-secreting pituitary tumour with partial hypopituitarism. Microscopically, a massive necrosis was the most important pathological finding and it was difficult to identify tumoural cells. The tumour, as well as the original breast carcinoma, showed a well-defined glandular differentiation without pleomorphic nuclei or mitotic figures. A mononuclear inflammatory infiltrate was present at the interface between tumour and the stromal component. The postoperative course was uneventful. Three months later the patient was neurologically intact and doing well with replacement doses of thyroxine and hydrocortisone.

Discussion

Pituitary apoplexy is caused by the sudden expansion of a normal or neoplastic gland secondary to bland or haemorrhagic infarction.¹ Pituitary metastases have been reported to occur in 1% to 27% of patients with cancer and, usually, are detected as an incidental *post-mortem* finding.²⁻⁴ The most common causes of metastatic disease in this region are breast and lung carcinomas.⁴ The bulk of cases are discovered in the setting of widespread disease⁵ and few patients with solitary pituitary metas-

tasis have been reported.^{6,7} Shi *et al*⁸ reviewed the cranial computed tomography manifestations of brain metastases in 304 patients with carcinoma of the breast and only in one case was a single lesion in the pituitary gland detected. Branch and Laws reviewed 1353 patients treated by transsphenoidal microsurgery for sellar lesions.⁹ Only 1% of these patients had cancer metastases to the pituitary gland and none of them presented as a pituitary apoplexy. In an autopsy series of 71 patients with breast cancer, Smulders and Smets found 20 metastases (28%) to the pituitary gland, most of which caused no symptoms.¹⁰

Our patient has several interesting features that require some additional comments. Hypothalamic and pituitary function tests showed low prolactin levels. Low prolactin is very characteristic of pituitary apoplexy, but rare with pituitary tumours otherwise. Therefore, in a patient with a pituitary tumour and low prolactin levels a pituitary apoplexy must be excluded. On the other hand, she developed an anterior pituitary insufficiency, a theoretically infrequent initial symptom of a sellar metastasis. Metastatic lesions in the anterior pituitary are more often the result of extension from an original metastatic focus in the hypothalamus or posterior hypophyseal lobe. Therefore, anterior pituitary insufficiency generally follows diabetes insipidus in patients with pituitary metastases, but this feature was absent in our patient. Nevertheless, Branch and Laws observed that 64% of their patients had anterior hypopituitarism.⁹ This high frequency probably reflects the current availability of sensitive tests for the evaluation of pituitary function. On the other hand, the patient described was admitted because of a pituitary apoplexy, probably related to the effect of polychemotherapy administered previously. Intratumoural haemorrhage within pituitary adenomas is a known and common complication although it has hardly been reported in the setting of pituitary metastasis.³ Management of pituitary apoplexy includes medical treatment, and sometimes, surgery. Immediate administration of corticosteroids in 'stress dosages', (hydrocortisone 100 mg intravenously initially, then every 6–8 h) is mandatory due to the high incidence of acute adrenal insufficiency. Neurosurgical decompression is generally indicated in severe cases. Electrolytes and hydration status must be monitored closely for diabetes insipidus. Replacement of other hormones is not usually required in the acute setting, but monitoring for hypothyroidism and hypogonadism should be done during convalescence.

Final diagnosis

Pituitary apoplexy caused by a solitary metastasis from breast carcinoma.

Keywords: pituitary metastases, breast carcinoma, pituitary apoplexy, sellar metastases

Presenting signs and symptoms of pituitary apoplexy

- headache
- visual disturbance
- ocular palsies
- nausea/vomiting
- altered mentation
- meningismus
- hemiparesis
- fever

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An acutely painful leg

A Wedderburn, P Carter, G Morris

A 29-year-old man was admitted from casualty with an acutely painful left leg. He was a known intravenous drug abuser being treated with methadone but had no other serious illnesses.

On examination he was cardiovascularly stable. The left leg below the knee appeared acutely threatened, displaying skin changes, anterior compartment and calf tenderness. Femoral, popliteal, dorsalis pedis and anterior tibial pulses, however, were palpable, the latter being marginally reduced.

Department of
Surgery, Royal South
Hants Hospital,
Southampton SO9
4PE, UK
A Wedderburn
P Carter
G Morris

Correspondence to Mr G
Morris, Department of
Surgery, Southampton
General Hospital,
Tremona Road,
Southampton SO16 6YD,
UK

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Figure

Questions

- 1 What is likely to have occurred to cause this problem?
- 2 What specific treatment is indicated?
- 3 What does the photograph show?
- 4 What are the early and late complications of this problem?