Isolated B-cell lymphoma of the pituitary region: a rare clinical entity

JW Stephens, DL Morganstein, JE McLaughlin, N Dorwood, MP Vanderpump

INTRODUCTION

Metastatic carcinoma in the pituitary region is a well-recognized clinical entity (Teears and Silverman, 1975), and lymphomatous involvement as part of systemic disease is well documented (Mathiasen et al, 2000). This article describes the unusual case of a B-cell lymphoma localized to the pituitary region without systemic involvement.

CASE REPORT

A 79-year-old woman presented to her local hospital with a 3-month history of nausea, anorexia and headache. She also complained of sudden visual deterioration such that she had difficulty reading a newspaper. Examination showed a visual acuity of 1/60 in the right eye and 6/24 in the left eye. Formal visual field assessment with Goldmann charts revealed a right inferior field quadrantanopia.

A computed tomography (CT) scan of the brain showed a mass arising in the region of the pituitary gland (*Figure 1*). Baseline endocrine investigations revealed secondary hypothyroidism with thyroid-stimulating hormone 0.13 mU/litre (normal range = 0.27–4.2 mU/litre) and free thyroxine 9.0 pmol/litre (normal range = 12–22 pmol/litre). The prolactin was elevated at 778 mU/litre (normal range = <425 mU/litre), and she had inappropriately suppressed gonadotrophins for a postmenopausal woman, with follicle-stimulating hormone 1.4 IU/litre (normal range = 37–125 IU/litre) and luteinising hormone 0.1 IU/litre (normal range = 10.5–42 IU/litre). A short synacthen test gave a normal response, with the plasma cortisol rising from a basal value of 227 nmol/litre to a 60-minute level of 743 nmol/litre. An 8-hour water deprivation test gave a peak plasma osmolality of 300 mosmol/kg with a corresponding urine osmolality of 270 mosmol/kg, implying partial diabetes insipidus.

Eight days later, she was referred to the endocrinology department for further evaluation. A magnetic resonance imaging (MRI) scan of the pituitary showed evidence of extensive infiltration and destruction of sphenoid bone and pituitary fossa. There was also an area of high signal at the level of the optic chiasm. A transphenoidal exploration was performed during which multiple sphenoid biopsies were obtained. These showed a sparse, non-specific chronic inflammatory cell infiltrate with a dense spindle cell stroma. Multiple opinions were sought, but no diagnosis could be made to exclude a soft tissue mass.

Postoperatively (14 days after presentation) a 9 a.m. cortisol measurement was 94 nmol/litre. A formal water deprivation test was also performed. After 11 hours of fluid deprivation, the plasma osmolality was 302 mosmol/kg, with a corresponding urine osmolality of 67 mosmol/kg rising to 470 mosmol/kg following the administration of desmopressin 2 μg intramuscularly. Her medication was therefore amended to hydrocortisone 20 mg in the morning and 10 mg in the evening, thyroxine 100 μg daily and desmopressin 100 μg daily orally. One month later, a repeat transphenoidal exploration with a hypophysectomy was undertaken. The histology was identical to that obtained previously. Other systemic investigations were performed, including an autoantibody and antineutrophil cytoplasmic antibody screen, CSF examination, an ultrasound scan of the abdomen and pelvis, a mammogram, a CT of the abdomen, chest and pelvis, and an isotope bone scan, all of which were normal.

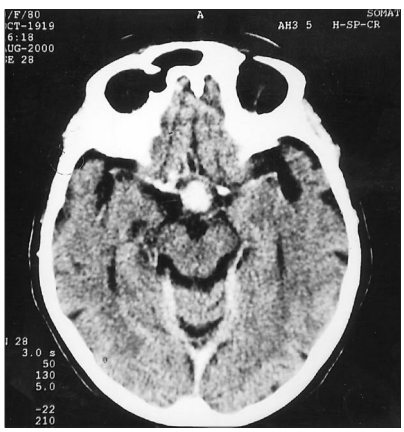
One week later, she had a further sudden deterioration in vision such that counting fingers became difficult. Her visual acuity had decreased to 1/60 in both eyes. Formal visual field testing demonstrated a right homonymous hemianopia. A repeat MRI scan of the pituitary showed a progression of the circular lesion situated on the optic chiasm (*Figure 2*). A craniotomy was performed to obtain a biopsy of the optic chiasm mass. The histology showed a cellular tumour composed of uniform cells with convoluted nuclei and frequent mitoses. Immunostaining with CD79a showed the tumour to be composed of B lymphocytes in keeping with the appearances of a large B-cell malignant lymphoma.

She went on to receive ten fractions of external beam radiotherapy (30 Gy). Following this the vision improved subjectively, but before this could be formally assessed she suddenly died. The family declined a post-mortem examination.

DISCUSSION

Hypothalamic or pituitary metastasis occurs in 2–5% of cancer patients, usually originating in the breast, lung, rectum or pancreas (Singer et al, 1997). Primary CNS lymphoma accounts for approximately 3% of all intracranial neoplasms (Masse et al, 1973; Fine and Mayer, 1993). There is an increased incidence associated with age and in immunocompromised patients. In patients with acquired immunodeficiency syndrome (AIDS), the absolute risk is 2–6% (Shaw et al, 1997). From the limited literature, treatment is highly unsatisfactory and mainly palliative, using either symptomatic relief with local radiotherapy or intensive systemic chemotherapy (O'Malley et al, 1991; Shaw et al, 1997).

Figure 1. Computed tomography scan of brain on admission showing a mass arising in the pituitary.



Dr JW Stephens is Specialist Registrar, Department of Diabetes and Endocrinology, University College Hospitals, London W1N 8AA, **Dr DL Morganstein** is Senior House Officer in the Department of Endocrinology, **Dr JE McLaughlin** is Consultant Histopathologist in the Department of Histopathology, **Dr N Dorwood** is Consultant Neurosurgeon in the Department of Neurosurgery and **Dr MP Vanderpump** is Consultant Physician in the Department of Endocrinology, Royal Free Hospital, London

Correspondence to: Dr JW Stephens

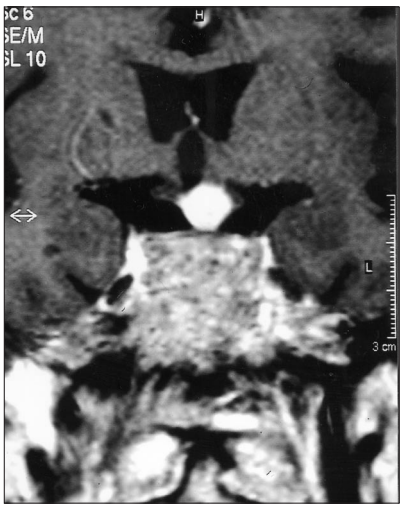


Figure 2. Magnetic resonance image of the pituitary showing destruction and infiltration of the pituitary and sphenoid with optic nerve deposit.

Previously, nine cases of primary CNS lymphoma affecting the pituitary have been described (Landman et al, 2001). Six of these presented with headache, five with cranial nerve palsies and four with visual impairment. On endocrine testing, four had evidence of anterior pituitary failure, but only one had evidence of cranial diabetes insipidus. Interestingly, only one case had clinical features of systemic lymphoma at the time of diagnosis.

This case illustrates several important issues. Diagnosis proved difficult, being made following the third transcranial exploration. The histology from the first two biopsies showed features of chronic inflammation. This appearance is well recognized with lymphomatous infiltration. It is also interesting to note the pattern of pituitary failure. At presentation, the patient had deficiencies of luteinising hormone, follicle-stimulating hormone and thyroid-stimulating hormone, as well as partial diabetes insipidus. It may have been that she also had adrenocorticotrophin hormone deficiency, but this was only assessed by a short synacthen test, which shows a normal cortisol response in the early stages of pituitary failure, as adrenal atrophy does not occur immediately. **HM**

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O'Malley J, Colman A, Khaleeli A, Williams JG (1991) Intracerebral lymphoma causing diabetes insipidus, adipsia, dementia and hypopituiarism. *Hospital Update* 436–7

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IN THE PUBLIC'S VIEW...

Give us the stability to try and fix the NHS

The *Daily Mail* thunders on about the Third World NHS. The *Independent* and the *Guardian* publish thoughtful essays from people in the service. Primary care trusts (PCTs) have taken over from the health authorities. They've taken over commissioning and local organization of health care (but are still constrained by centrally defined targets), and they've inherited the money from the health authorities (but also their debts). I sincerely hope that the PCTs work and stay around for a long time. Not because they are the best way to run the NHS. I don't what that is any more than anyone else does. But just one more bright idea really could be the end of the NHS as we know it. The Tories lack any ideas at all, let alone bright ones; but the risk is that Labour will have another one when they gain their third term.

On balance, the public mood – I think – is of gradual acceptance that the problems of the NHS are more than a lack of money. People are beginning to realize that when dry rot has got your foundations, it's best to repair the damage before trying to build more storeys. The government could divert all the money from defence and give it to health, commission scanners galore and build gleaming new hospitals, but they would be obsolete before there were the staff to run them. And gradually, the *Daily Mail* notwithstanding, people have cottoned on.

It's pleasing to know that doctors again topped the MORI poll of trustworthiness, despite the politicians' trying to convince the public that we think only of our own vested interests. But there's work still to be done: in another MORI poll, 61% of the public expect 100% guarantees on the safety of medicines.

And then there is the new consultant contract. It was never likely that it would be agreed by the original target date – 2 days ago as I write – but the vibes are discouraging. The BMA negotiators are letting little slip, and the government is saying nothing. We seem to be demolishing a contract for a profession and erecting a contract for piece-work. Will there really be prices for daytime and night work, routine and emergency work? Will we all be able to agree among ourselves about who is worth what when? And when we are pinned down more securely to being where we say we'll be during our clinical sessions, how will we get to the increasing number of management and interdisciplinary meetings? If the new contract allows us to attend these meetings, where are the trainees to do the clinical work?

In common with some other Royal Colleges, the anaesthetists worked hard to produce a sensible portfolio document for appraisal. It was available a year ago. Bingo! The government produced a different one. More complicated, requiring reference to all sorts of other documents, and producing paperwork for chief executives that will pile up somewhere in basements because they won't have time to read it.

There is too much going on. We are confused and long for stability. And now even the Queen Mother is dead. **HM**

Dr Neville W Goodman is Consultant Anaesthetist at Southmead Hospital, Bristol