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Hypothalamic-pituitary disease as the sole manifestation of sarcoidosis

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Summary

Hypothalamic-pituitary disease is a well-recognized, although uncommon, occurrence in sarcoidosis. Almost always the endocrine manifestations occur in a patient with widespread disease involving the lungs, skin or liver. A case is reported of central nervous system (CNS) sarcoidosis with no other clinical, biochemical or histological evidence of the disease.

Introduction

The overall frequency of neurological involvement in sarcoidosis is 5% (Delaney, 1977). Infiltration of the hypothalamic-pituitary region by sarcoid granulomata may cause anterior pituitary hormonal deficiencies, hyperprolactinaemia or diabetes insipidus. Hypothalamic-pituitary dysfunction almost always occurs in a patient with widespread disease involving lungs, skin or liver (Stuart, Neelon and Lebovitz, 1978). It is usually assumed that the cause of the endocrine manifestations is sarcoidosis and, apart from replacement hormone therapy, the treatment is that of the condition itself. We report a case of hypothalamic-pituitary disease due to sarcoidosis in which a major diagnostic problem occurred due to the absence of any other clinical, biochemical or histological evidence of the disease.

Case report

A 31-year-old white woman was referred with an 18-month history of deteriorating vision in her left eye, amenorrhoea, galactorrhoea and symptoms compatible with diabetes insipidus. Previous investi-

gations including X-ray of pituitary fossa, carotid angiography, computed tomographic (CT) scan and air encephalogram were all normal.

Examination revealed marked visual field loss (tunnel vision left eye and temporal field loss right eye), anosmia and galactorrhoea. The remainder of the physical examination was completely normal. Endocrine investigations showed a basal serum prolactin level of greater than 1600 mu/litre (normal <360 mu/litre), a peak growth hormone (GH) response of 10 mu/litre (normal >20 mu/litre) and peak cortisol response of 305 nmol/litre (normal >550 nmol/litre) to insulin hypoglycaemia, and low basal serum tri-iodothyronine, and thyroxine concentrations of 1.1 and 45 nmol/litre respectively (normal 1.2-2.8 nmol/litre and 50-150 nmol/litre). There was no thyroid stimulating hormone (TSH) response to thyrotrophin releasing hormone stimulation and barely detectable gonadotrophin responses to luteinising hormone releasing hormone. During an 8-hr fluid deprivation test whilst on replacement therapy with cortisone and thyroxine, the urinary osmolality did not rise above 269 mosmol/kg whilst the serum osmolality rose to 314 mosmol/kg (normal subject urine osmolality will rise to 600 mosmol/kg or more and the plasma osmolality will not rise above 300 mosmol/kg). The endocrine studies had indicated that she was partially growth hormone (GH), gonadotrophin, TSH and ACTH deficient with hyperprolactinaemia and diabetes insipidus.

Chest X-ray, sellar and parasellar tomography, liver and muscle biopsies, skeletal survey, lung function tests and electrocardiogram were all normal. The serum calcium, cerebrospinal fluid protein and serum angiotensin-converting enzyme levels were also normal. The Mantoux test was negative and the serum IgG level was raised at 25 g/litre (normal 8-16).

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A repeat CT scan suggested an area of high density in the midline extending up from the region of the cribriform plate. At this time she was on replacement therapy with thyroxine, cortisone and desmopressin. A metrizamide cisternogram showed a small filling defect in the region of the anterior communicating artery and a bilateral carotid angiogram suggested the presence of a meningioma in the region of the posterior end of the olfactory groove. In March 1980 she had a craniotomy.

Operation findings included multiple arachnoid adhesions and thickening, the dura was abnormally vascular and the optic nerves were displaced by a small tumour mass which arose out of the pituitary fossa and was attached to the floor of the third ventricle. This mass was partially resected. The histology showed multiple non-caseating granulomata typical of sarcoidosis. She is currently being treated with thyroxine, desmopressin and pharmacological doses of prednisolone.

Discussion

Central nervous system involvement in sarcoidosis usually occurs in the early phase of the disease but even at this stage further investigation often reveals peripheral dissemination in 'isolated CNS disease'. Fifty to eighty per cent of asymptomatic patients have a positive muscle biopsy or abnormalities in the cerebrospinal fluid (Delaney, 1977). Our patient had severe disease of the hypothalamic-pituitary axis, optic nerves and possibly olfactory nerves with no evidence of disease elsewhere. The only other bioche-

mical or histological abnormalities consistent with the diagnosis of sarcoidosis were the raised IgG levels and the negative Mantoux test.

The lack of evidence of systemic involvement with sarcoidosis contributed to the delay in making the diagnosis. Early diagnosis and prompt treatment appear to be important because recently developed lesions respond more completely than long-standing disease (Stuart *et al.*, 1978).

Now that the diagnosis has been confirmed, she is currently receiving treatment with high doses of steroids. A major problem concerns the monitoring of her progress. The CT scan is reputed to be the most useful investigation in cases of CNS sarcoidosis, (Kendall and Tatler, 1978) but this investigation was not very helpful in our case. We continue to assess visual field perimetry and look for systemic involvement at regular intervals. The chance of hypothalamic-pituitary function recovering is very poor but this at least can be adequately treated with replacement hormonal therapy. Unfortunately there has been no improvement in her vision after one year of steroid therapy.

References

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