A DIFFICULT CASE

Shrinking cerebral lymphomas with steroids can cause diagnostic confusion

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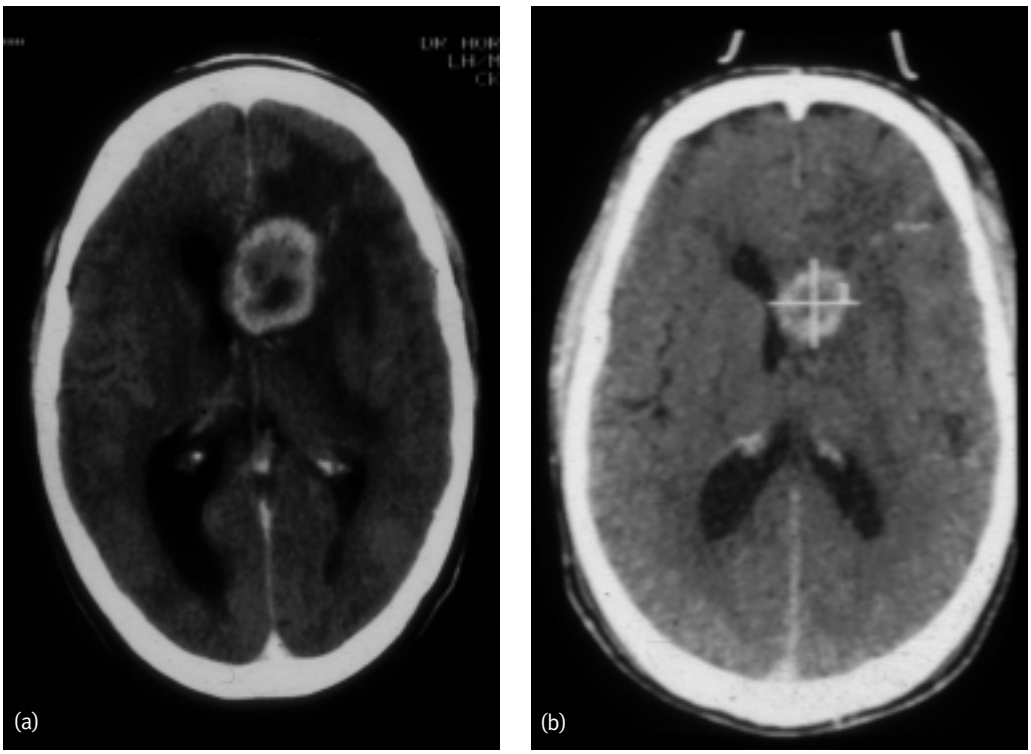
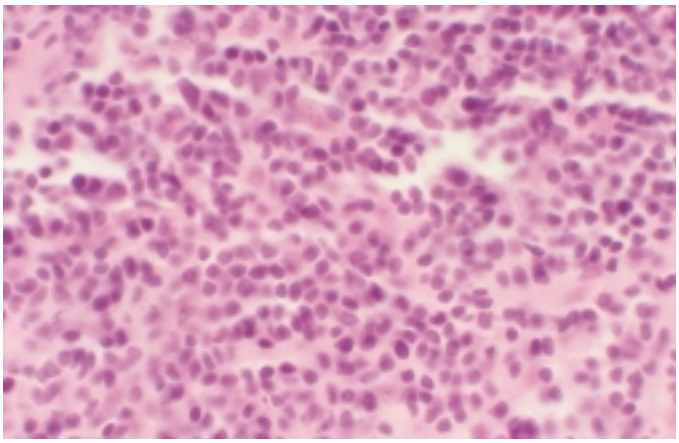
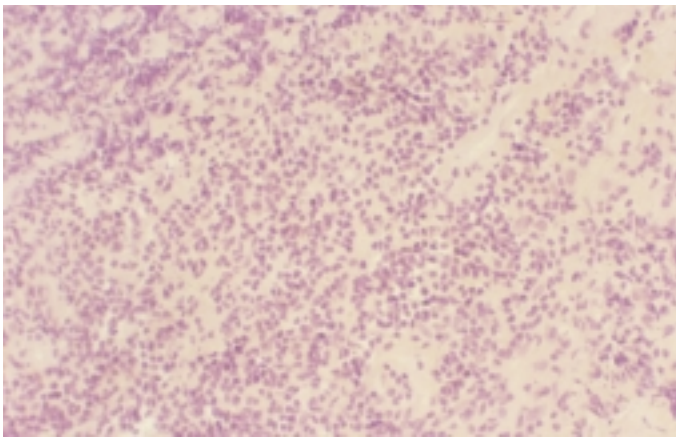


Figure 1 CT brain scan with contrast (a) before, and (b) five days after dexamethasone therapy. On steroids the frontal enhancing mass has shrunk markedly in size, with associated resolution of frontal oedema and the unilateral hydrocephalus.

A 60-year-old-woman was transferred to the Neurosurgical Department from a District General Hospital with some weeks of difficulty with walking, change of personality, headaches and poor memory. An initial CT scan (Fig. 1a) revealed an enhancing frontal mass. By the time of transfer, dexamethasone 16 mg daily had been started. Four days after starting dexamethasone, a scan-guided stereotactic biopsy was undertaken, by which time the enhancing mass was only half its original size (Fig. 1b), adjacent frontal lobe oedema was less, and the hydrocephalus affecting the opposite lateral ventricle had largely resolved. The histology was inconclusive. It did not show any evidence of tumour, only T lymphocytes were detectable, and the dense fibrous tissue with lymphoid infiltrate raised the question of a tuberculoma (Fig. 2). Anti-tuberculous therapy was started by the Infectious Disease Service, and phenytoin started as prophylaxis against seizures. Eight days later I was asked to see the patient because of nausea, dizziness and nystagmus, raising the question of phenytoin toxicity. Because of the inconclusive nature of the first biopsy, and the remaining question of cerebral lymphoma rather than tuberculoma, I stopped the dexamethasone for 16 days, and a second stereotactic biopsy was undertaken (Fig. 3). This confirmed the clinical and radiological suspicion of primary cerebral lymphoma of B cell type. Anti-tuberculous therapy was stopped, and oncological treatment started.



(a)



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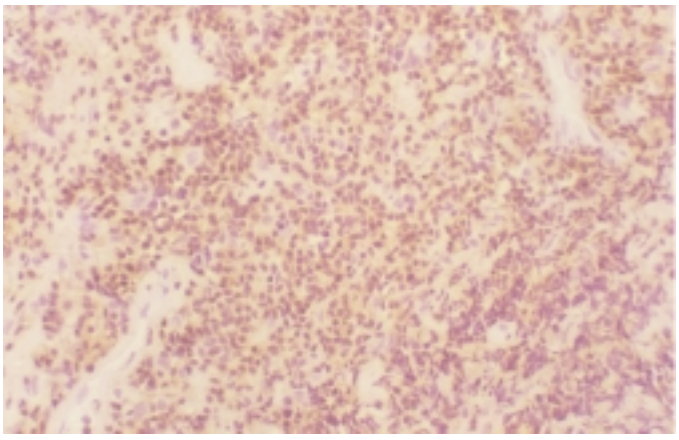


(c)

Figure 2 First cerebral biopsy, after 5 days of Dexamethasone. (a) H&E section showing mature reactive lymphocytes only. (b) Negative immunostaining for B lymphocytes. (c) Positive immunoreactivity for T lymphocytes. Conclusion: shows reactive lymphocytes only (courtesy of Professor M M Esiri).

FURTHER READING

DeAngelis LM, Yahalom J, Heinemann M-H *et al.* (1990) Primary CNS lymphoma: combined treatment with chemotherapy and radiotherapy. *Neurology* **40**, 80–86.

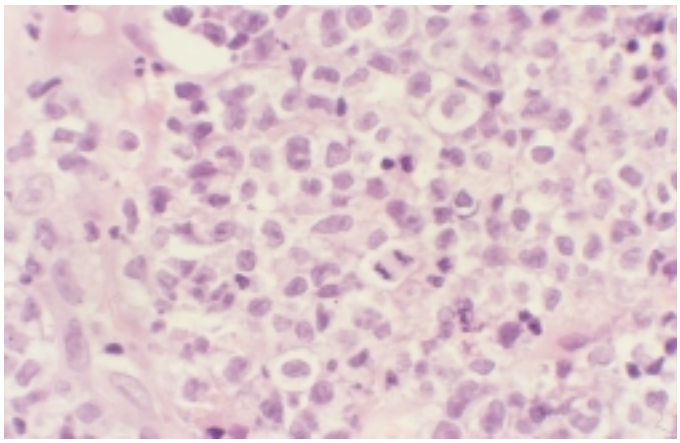
Hochberg FH & Miller DC (1988) Primary central system lymphoma. *Journal of Neurosurgery,* **68**, 835–853.

Murray K, Kun L & Cox J (1986) Primary malignant lymphoma of the central nervous system. Results of treatment of 11 cases and review of the literature. *Journal of Neurosurgery* **65**, 600–607.

Nasir S & DeAngelis L. (2000) Update on the management of primary CNS lymphoma *Oncology* **14**, 228–234.

Ng S, Rosenthal M, Ashley D & Cher L. (2000) High-dose methotrexate for primary CNS lymphoma in the elderly. *Neuro-oncology* **2**, 40–44.

Singh A, Strobes RJ, Singh BM *et al.* (1982) Steroid-induced remissions in CNS lymphoma. *Neurology* **32,** 1267–1271.



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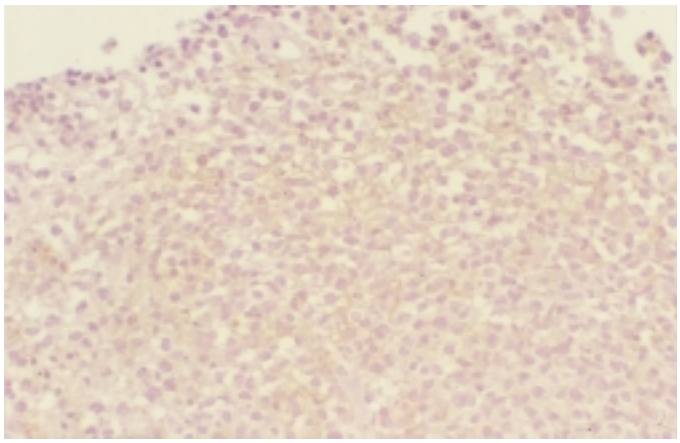
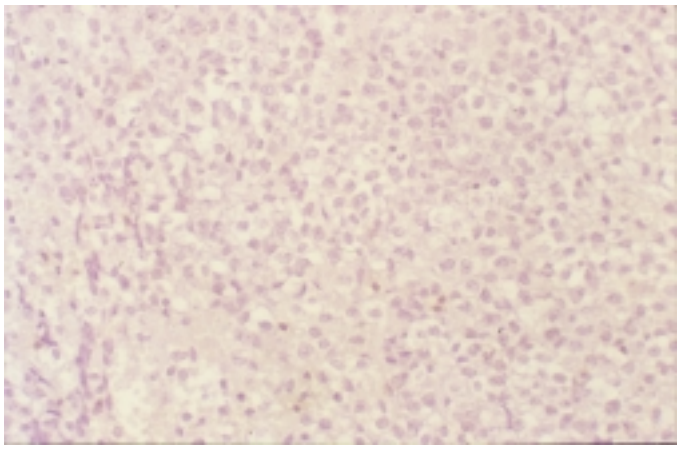


(b)



(c)

Figure 3 The second (repeat) cerebral biopsy 16 days after stopping steroids. (a) H&E section showing anaplastic tumour cells including mitoses. (b) Positive immunostaining for B lymphocytes. (c) Negative immunostaining for T cells. Conclusion: cerebral lymphoma of B cell origin (courtesy of Professor M M Esiri).

Lessons learned (or reminded of)

- High-dose steroid therapy causes rapid reduction in size of cerebral lymphoma, with loss of distinctive histological findings. Thus, if cerebral lymphoma is suspected, neurosurgical biopsy should be undertaken prior to starting steroids.
- Patients with cerebral mass lesions should only be started on steroids prior to biopsy if they have significantly symptomatic raised intracranial pressure that requires urgent treatment. Steroids prior to biopsy run the risk of a non-diagnostic biopsy in cerebral lymphoma (this case) or exacerbating a focal cerebral infection. The vogue for starting steroids in District General Hospitals as soon as a cerebral mass lesion is diagnosed, irrespective of whether the patient has symptomatic cerebral oedema, is to be discouraged because it can diminish the value of subsequent neurosurgical biopsy. Immediate transfer for expert assessment at a neurosurgical or neurology unit, prior to starting steroids, is the preferable management.
- Although cerebral lymphoma typically occurs in immuno-compromised patients, such as transplant recipients, it is becoming increasingly common in elderly patients with no history of a known immuno-compromising illness. Primary cerebral lymphoma is a B-cell tumour, is multifocal in a third of patients, and affects the cerebral hemispheres about 3.5 times as frequently as the brain stem or cerebellum. Even in immunocompetent patients, median survival is only 10–18 months, despite often occurrence of a dramatic initial response with steroids and cranial radiotherapy. Improved survival is reported with high dose cytosine arabinoside and intrathecal methotrexate combined with radiotherapy. Recent studies report benefit from high-dose methotrexate as a single agent in older patients.