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**Brain Biopsy in a Patient
Suffering from Primary CNS Lymphoma
Treated with Steroids**

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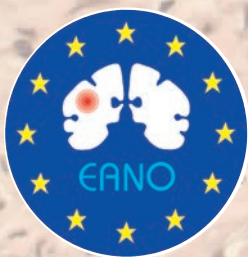
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Brain Biopsy in a Patient Suffering from Primary CNS Lymphoma Treated with Steroids

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■ Case Study

A 72-year-old woman presented at her local hospital with headache, vomiting, and a right hemiparesia for the past 5 days. Cranial MRI showed in the left hemisphere a large temporo-parietal mass with 2 enhancing lesions (Figure 1a). As she deteriorated rapidly, she received 80 mg methylprednisolone per day intravenously with rapid resolution of her symptoms. An MRI performed one week later showed a dramatic response (Figure 1b). Methylprednisolone was reduced to 16 mg/day given *per os*. An exhaustive work-up for presumptive primary central nervous system lymphoma (PCNSL) was negative (thoraco-abdomino-pelvic CT scan, HIV serology, ophthalmologic examination, bone marrow biopsy, CSF analysis). A biopsy targeting the residual enhancing lesion was performed and showed an important macrophagic proliferation with perivascular tropism. Identification of CD20-positive large cells within the perivascular space allowed the diagnosis of diffuse large B-cell lymphoma with post-steroid macrophagic detersion (Figure 2). The patient was transferred to our institution where a high-dose methotrexate-based

polychemotherapy was given. The patient achieved a complete response and is still in complete remission 2 years after the diagnosis.

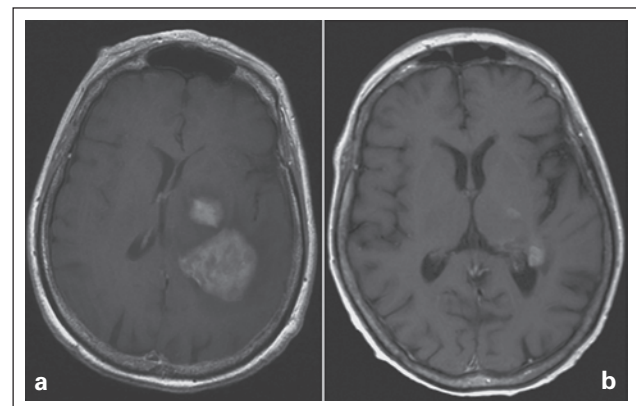


Figure 1. MRI axial T1-weighted sequences with gadolinium injection (a) before steroid administration and (b) after one week of steroid administration major partial response.

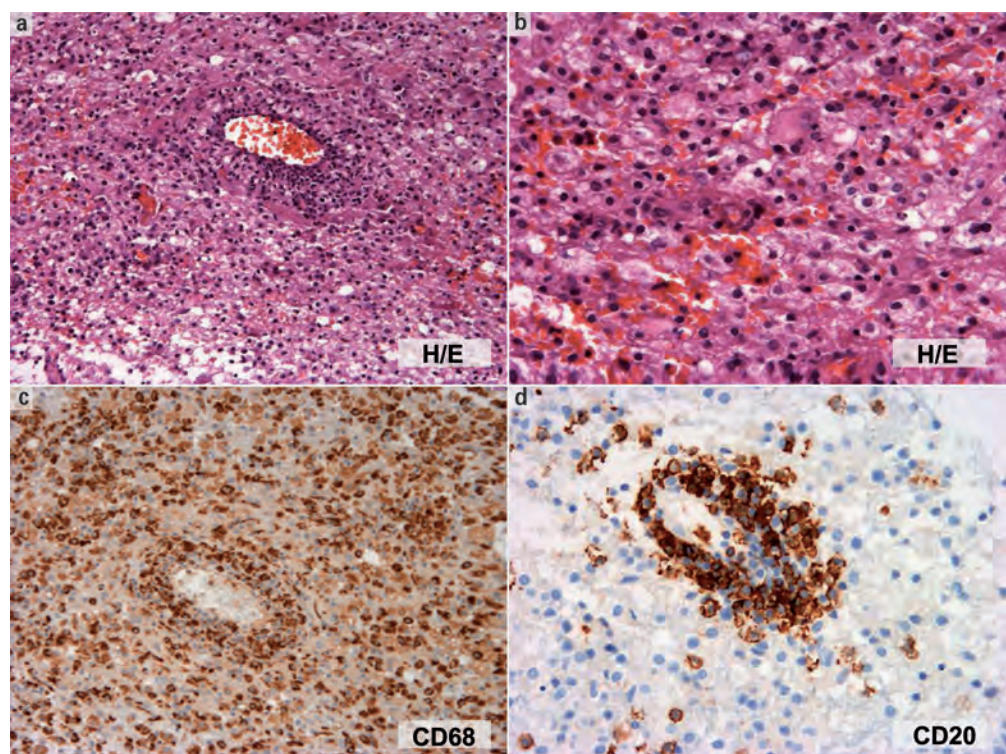


Figure 2. Brain biopsy. (a) Large macrophages with a perivascular tropism. (b) High magnification: prominent astrocytic and microglial response without atypical cells. (c) Expression of CD68 by macrophagic cells. (d) Accumulation of large CD20-positive cells within the perivascular space, suggesting a primary, diffuse large B-cell lymphoma with post-corticosteroid macrophagic detersion.

■ Comment

It is well known that PCNSL is potentially highly sensitive to corticosteroids, which act not only by restoring the impaired blood-brain barrier but also by a specific cytotoxic activity on the lymphoma B-cells [1, 2]. An objective radiological response is achieved in approximately 40 % of cases [3] and some authors have suggested that initial response to steroids may be associated with a better prognosis [4]. Tumour shrinkage or disappearance of PCNSL may occur even after a short exposure to steroids (sometimes only after 24 hours). Therefore, unless patients are rapidly deteriorating with suggestive radiological features of PCNSL, it is usually recommended not to give corticosteroids until histological confirmation has been obtained. Recently, in order to determine whether corticosteroid administration before biopsy prevents histopathological diagnosis of PCNSL, the Mayo Clinic conducted a retrospective analysis on their patients who received steroids before biopsy [5]. Interestingly, only 8 patients out of 68 (12 %) needed a repeat brain biopsy to confirm PCNSL. In addition, this rate was not significantly different from that observed in patients who had not received any steroids (5 out of 39 patients, 13 %). However, in this series, the vast majority of patients were not corticosteroid-sensitive, most of them retaining the original contrast-enhancing lesions on their serial preoperative neuroimaging. In the present case, a major partial response (> 90 %) was obtained. The biopsy performed on the remaining contrast-enhancing lesion showed prominent infiltration of macrophages, T-lymphocytes, and reactive gliosis, with apparent lack of large lymphoma cells on haematoxylin/eosin staining. Only a few scattered CD20-positive large cells were detected by immunohistochemistry around

vessels corresponding to residual lymphoma tumour cells after steroid response. Hence, if no significant change in contrast enhancement is observed after administration of corticosteroids, a biopsy can be performed with a high probability of yielding a diagnosis. In the case of major partial response, pathological changes induced by steroids may obscure the diagnosis of PCNSL, as illustrated here. Thus, an immunohistochemical or molecular characterization of tumour cells is needed, but since the diagnosis may remain uncertain, tapering corticosteroids and delaying biopsy until tumour regrowth would be a reasonable option.

References:

1. Gametchu B. Glucocorticosteroid receptor like antigen in lymphoma cell membranes: correlation to cell lysis. *Science* 1987; 236: 456–61.
2. Weller M. Glucocorticoid treatment of primary CNS lymphoma. *J Neurooncol* 1999; 43: 237–9.
3. Pirotte B, Levivier M, Goldman S, et al. Glucocorticoid-induced long-term remission in primary cerebral lymphoma: case report and review of the literature. *J Neurooncol* 1997; 32: 63–9.
4. Mathew BS, Carson KA, Grossman SA. Initial response to glucocorticoids. *Cancer* 2006; 106: 383–7.
5. Porter AB, Giannini C, Kaufmann T, et al. Primary CNS lymphoma can be histologically diagnosed after previous corticosteroid use: a pilot study to determine whether corticosteroids prevent the diagnosis of Primary CNS lymphoma. *Ann Neurol* 2008; 63: 662–7.

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