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Letter to the editor

Isolated third cranial nerve involvement as the presenting feature of diffuse large B-cell lymphoma

Isolated oculomotor nerve palsy caused by lymphoma is a rare clinical condition. Histopathologic diagnosis of lymphoma is mandatory in planning the appropriate treatment. However, early diagnosis represents a particular challenge when lesions involve critical structures, making biopsy considerably morbid. Here, we describe an unusual case of orbital lymphoma presenting in the form of isolated third cranial nerve involvement.

An 81-year-old man was admitted after developing painless third right cranial nerve palsy with mydriatic pupil. He denied alcohol and tobacco use and had no immunodeficiency, hypertension or diabetes, but complained of unintentional weight loss over the last 6 months. Routine laboratory tests including immunological and serological studies were negative. Brain magnetic resonance imaging (MRI) showed thickening and nonexpansile enhancement of the third right nerve (Fig. 1A). Initial cerebrospinal fluid (CSF) cytology and flow cytometry were unremarkable. Ophthalmologic evaluation did not detect cellular vitreal or subretinal infiltrates. Whole body 18-fluorodeoxyglucose positron emission tomography - computed tomography (FDG PET/CT), including the head and orbits, did not show any FDG uptake. Lymphoma was suspected but no biopsy was performed at that time due to the location of the lesion. Repeated CSF examinations did not show evidence of an underlying hematologic malignancy despite pre-analytical optimal conditions to increase cell yield. Four months later, the patient developed right proptosis and visual loss. Follow-up MRI showed progression along the right third cranial nerve extending to the mesencephalon, the cavernous sinus, the orbital apex as well as fusiform enlargement of the extraocular muscles compressing the right optic nerve (Fig. 1B–D). High B1000 and low apparent diffusion coefficient values were demonstrated on diffusion-weighted imaging (Fig. 1E,F). Biopsy of the right orbital apex showed diffuse infiltration of the tissues by monotonous neoplastic cells

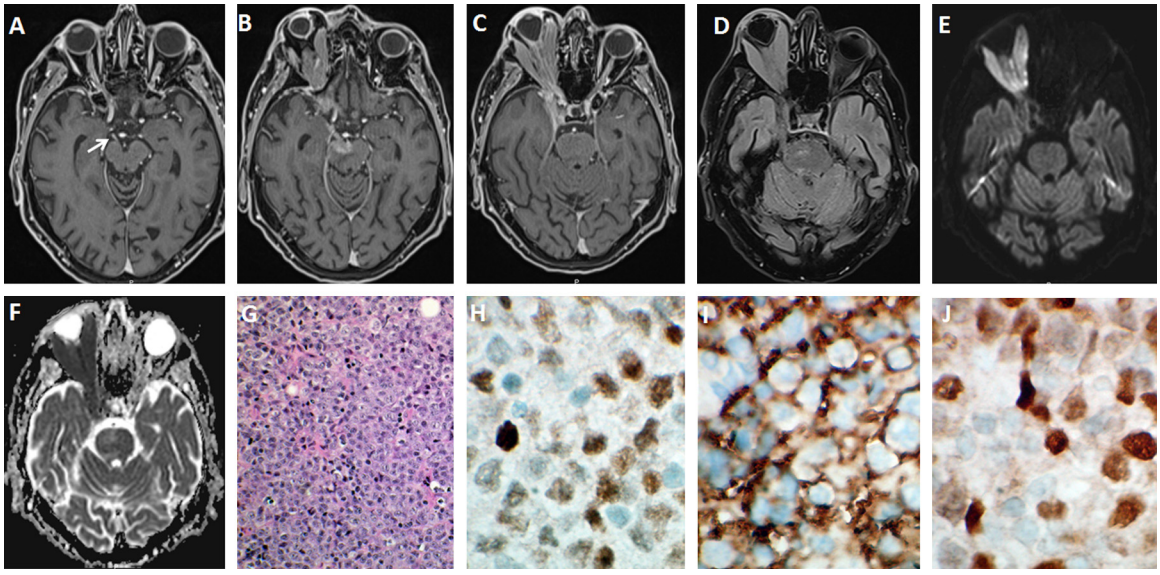

Fig. 1 – MRI and histopathological findings.

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suggestive of lymphoma. Immunohistochemical analyses showed CD45 (+), CD20 (+), Mum-1 (+), Bcl-6 (+), CD10 (+), and Ki-67 (proliferation index, 100%), but not Bcl-2 (-) staining of the neoplastic cells. The histologic features were consistent with a diffuse large B-cell lymphoma (Fig. 1G–J). Despite chemotherapy, the patient's condition worsened. Palliative care was given and the patient died 9 months after onset of neurological symptoms.

This case demonstrates the importance of keeping a high index of suspicion for lymphoma in case of isolated 3rd cranial nerve palsy, after common causes have been reasonably ruled out. Lymphoma represents a rare cause of isolated oculomotor nerve palsy [1–4]. Establishing the diagnosis in a timely manner is crucial for a prompt treatment. In the current case, the main obstacles for correctly diagnosing lymphoma at an early stage were the revealing symptoms and the initial imaging appearance that were not distinctive for the underlying disease as well as the impossibility of performing biopsy without causing *permanent oculomotor nerve deficit*. Clinicians should not be dissuaded to track down lymphoma when biopsy cannot be performed due to the location of lesions and should consider performing close clinical and MRI (±PET/CT) follow-up. A third cranial nerve biopsy should be avoided.

Axial contrast-enhanced T1-weighted MRI of the brain shows thickening and nonexpansile enhancement of right third cranial nerve (A, white arrow). Axial contrast-enhanced T1-weighted (B,C) and axial Fluid-Attenuated Inversion Recovery (D) MRI 4 months later showing lesion extension along the right oculomotor nerve, as well as fusiform enlargement of the right extraocular muscles, causing compression of optic nerve and proptosis.

Hyperintensity on B1000 sequence of the right extraocular muscles (E) and apparent diffusion coefficient map showing corresponding low signal (F). The tissue biopsy from the right orbital apex shows diffuse infiltration by neoplastic lymphocytes (G, hematoxylin-eosin, ×50). Immunohistochemical studies show that neoplastic lymphocytes express Bcl6 (H, ×50), CD20 (I, ×50) and Mum-1 (J, ×50).

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

For this type of study formal consent is not required.

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None.

Disclosure of interest

The authors declare that they have no competing interest.

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