Graefe's Arch Clin Exp Ophthalmol (2007) 245:911–913
DOI 10.1007/s00417-006-0529-6

LETTER TO THE EDITOR

# Enlargement of optic nerve resembling orbital mass in case of optic neuritis

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Received: 19 October 2006 / Revised: 9 December 2006 / Accepted: 16 December 2006 / Published online: 17 January 2007


Dear Editor,

Analyses of magnetic resonance images (MRI) and cerebrospinal fluid (CSF) can provide information to make a differential diagnosis of optic neuritis from other optic nerve diseases [1, 2]. In rare cases however, those findings resemble those of optic nerve tumors [3, 4]. We present a patient with acute visual loss and an unusual swelling of the optic nerve on MRI which resembled an optic nerve tumor but was found to have optic neuritis.

A 20-year-old woman complained of a sudden decrease of vision and periorbital pain associated with ocular movements in the right eye on April 7, 2005. The visual acuity was 0.05 OD and 1.2 OS, and a right relative afferent pupillary defect was present. The anterior chamber was quiet OU. Ophthalmoscopy revealed swelling of the right optic disc, and fluorescein angiography showed hyperfluorescence of the right optic disc (Fig. 1). Goldmann perimetry showed a peripheral island in the right eye (Fig. 1).

MRI of the brain and orbits demonstrated an unusually enlarged and twisted right optic nerve (Fig. 2). The visual evoked potentials stimulating OD were abnormal. Neither neurologic evaluation nor CSF revealed any abnormalities such as myelin basic protein and oligoclonal bands.

Although an optic nerve glioma was suspected from the MRI findings, the clinical symptoms were thought to be more consistent with optic neuritis. High dose intravenous corticosteroids were given for 3 days, and the right visual acuity improved to 1.2 after 8 days. Repeat MRIs showed no abnormalities and no recurrence has been found after more than one year. Although the possibility of lymphoma or metastatic cancer could not be completely excluded, the clinical course suggested optic neuritis.

The advancements in imaging technology, e.g., fast spin-echo and the short T1 inversion recovery method in MRI, have reduced the types of diseases from which a differential diagnosis of optic neuritis must be made [2, 5]. In some cases, however, the clinical presentations are so similar to that of an optic nerve tumor that a definitive diagnosis cannot be made [2–4]. A case with classic signs of optic neuritis, but was finally diagnosed as a pilocytic astrocytoma, was reported [4].

The clinical course in our case was compatible with optic neuritis in contrast to the MR images suggesting optic nerve glioma. Although an optic nerve neoplasm may have responded to corticosteroid therapy, we believe the most probable diagnosis was optic neuritis because the patient's symptoms and signs as well as the abnormal MRI findings disappeared quickly after the treatment and no recurrence has been observed.

Differentiating optic nerve neoplasms from inflammatory changes is not necessarily easy, and metabolic, infectious, and inflammatory work-ups as well as MRI are necessary. The response to corticosteroid can help in making a definitive diagnosis, and a biopsy of the optic nerve is done only after eliminating other possibilities.

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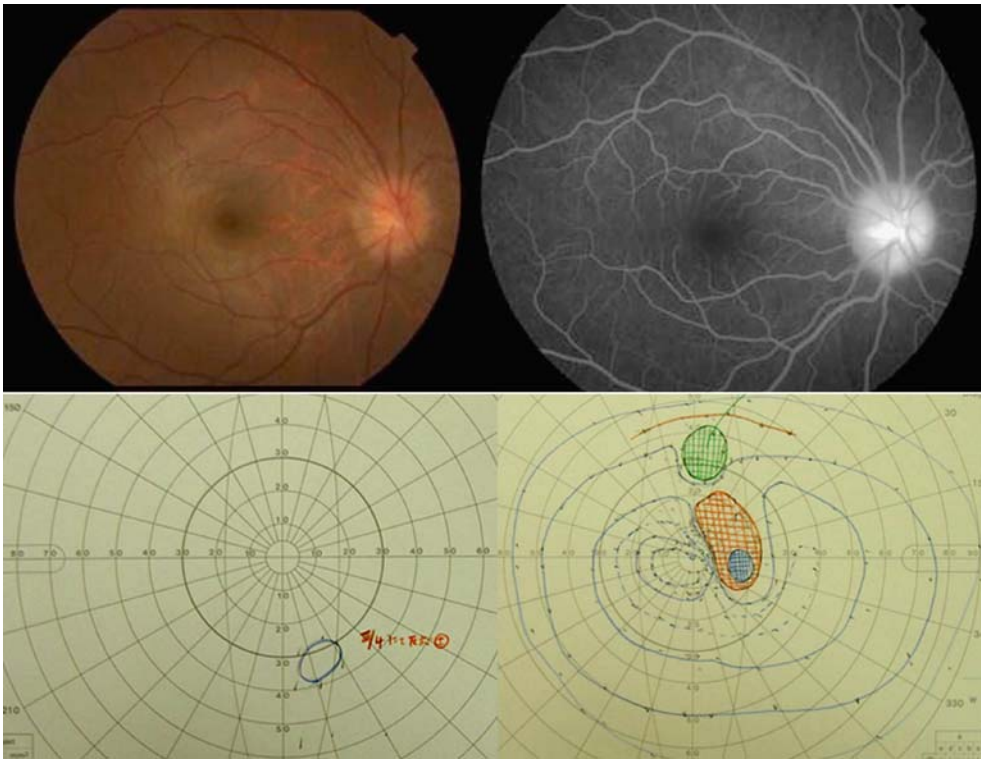

**Fig. 1** Fundus photographs and visual fields of the patient's right eye. Top left. Fundus shows swelling of the right optic disc. Top right. Fluorescein fundus angiogram showing fluorescein staining of the right optic disc in the late phase. Bottom left. Goldmann visual field in the acute phase showing only a very small peripheral island in the right visual field. The corrected visual acuity was 0.01 OD. Bottom right: Goldmann visual field 19 days after high-dose intravenous corticosteroid showing a recovery in the right visual field. Visual acuity was 1.5 OD

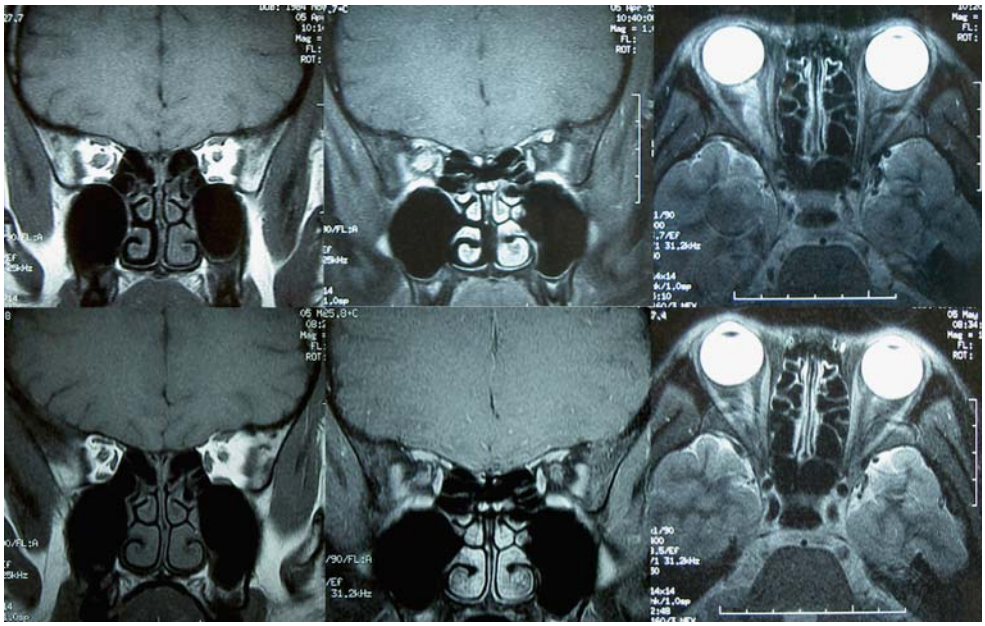

**Fig. 2** Magnetic resonance imaging (MRI) of the brain and orbits in the patient. Upper row shows MRIs in the acute phase. Upper left. T1 weighted image (T1WI) of coronal section showing a very enlarged right optic nerve. No pathological lesion was observed in other white matter or the spinal cord. Upper middle: The coronal section of MRI with the short T1 inversion recovery method showed a uniform intense gadolinium enhancement in the optic nerve that suggested that the optic nerve and not the subarachnoidal space was swollen. Upper right: T2 weighted image (T2WI) of axial section showing an unusually homogeneously enlarged and twisting right optic nerve of 7 mm diameter. The signal intensity in the right optic nerve was abnormally increased. Lower row. MRIs obtained 20 days after high-dose intravenous corticosteroid therapy. Each picture corresponds with the upper one. No abnormal findings are present in the right optic nerve compared with unaffected left optic nerve

The current findings indicate that clinicians should still consider optic neuritis in cases with MR images that suggest an optic nerve neoplasm but the symptoms are more in keeping with optic neuritis.

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