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Letter to the Editor: New Observation

Atypical Bilateral Idiopathic Inflammatory Cavernous Sinus Syndrome Responsive to Cyclophosphamide

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Idiopathic inflammatory cavernous sinus syndrome, also termed idiopathic inflammatory pseudotumour or Tolosa-Hunt syndrome, is typically responsive to steroids. Here, we present a biopsy proven case of idiopathic inflammatory cavernous sinus syndrome with bilateral sequential involvement treated with cyclophosphamide. To the best of our knowledge, idiopathic inflammatory cavernous sinus syndrome responsive to cyclophosphamide has not been described previously.

A 20-year-old man presented with right-sided headache and a right cavernous sinus syndrome, including partial right 3rd and 6th nerve palsies, with magnetic resonance imaging (MRI) showing right cavernous sinus enhancement (Fig. 1a). Serum and cerebrospinal fluid were negative for infectious, autoimmune and neoplastic etiologies. Computed tomography of the chest was negative for hilar lymphadenopathy. After no response to oral prednisone 60 mg daily for two weeks, the right cavernous sinus was decompressed. Pathology showed a mixed T- and B-cell infiltrate with interspersed macrophages, consistent with pachymeningitis (Fig. 1b–j). No plasma cells were detected by CD138 immunohistochemistry, arguing against the possibility of a plasma cell neoplasm or IgG4 disease. On pathology, there was no evidence of vasculitis, necrosis, granulomata, neoplasm or microorganisms.

Oral prednisone 60 mg daily was resumed with a diagnosis of idiopathic inflammatory cavernous sinus syndrome. Five months later, the left cavernous sinus became involved similarly (MRI not shown). After three days of intravenous (IV) methylprednisolone 1g daily, initial IV rescue cyclophosphamide was trialed, followed by 200 mg orally daily. There was dramatic initial improvement of pain and diplopia with trace limitations of extraocular movements bilaterally at two months with significant improvement on MRI (not shown). Oral prednisone taper with cyclophosphamide monotherapy for 3 months was initiated. At follow-up 17 months after completing cyclophosphamide monotherapy and while on no immunosuppressive treatment (28 months after initial presentation), he had full extraocular motility bilaterally with normal visual fields (Fig. 2a) and optical coherence tomography (Fig. 2b). The extraordinary improvement with the use of cyclophosphamide in this case should alert physicians to the possibility of using cyclophosphamide as a rescue agent in atypical cases of idiopathic inflammatory cavernous sinus syndrome.

Author contributions. NN was directly involved in the patient's care, conceptualized the manuscript, wrote the first draft of the manuscript and provided critical feedback on the content of the manuscript.

KDC was directly involved in the patient's care and provided critical feedback on the content of the manuscript.

JJVG was directly involved in the patient's care and provided critical feedback on the content of the manuscript.

KK analyzed neuroimaging for the case and provided critical feedback on the content of the manuscript.

ATN analyzed pathology for the case and provided critical feedback on the content of the manuscript.

MT was directly involved in the patient's care and provided critical feedback on the content of the manuscript.

OHK was directly involved in the patient's care, conceptualized the manuscript and provided critical feedback on the content of the manuscript.

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Patient consent. The patient provided written consent for publication of this case.

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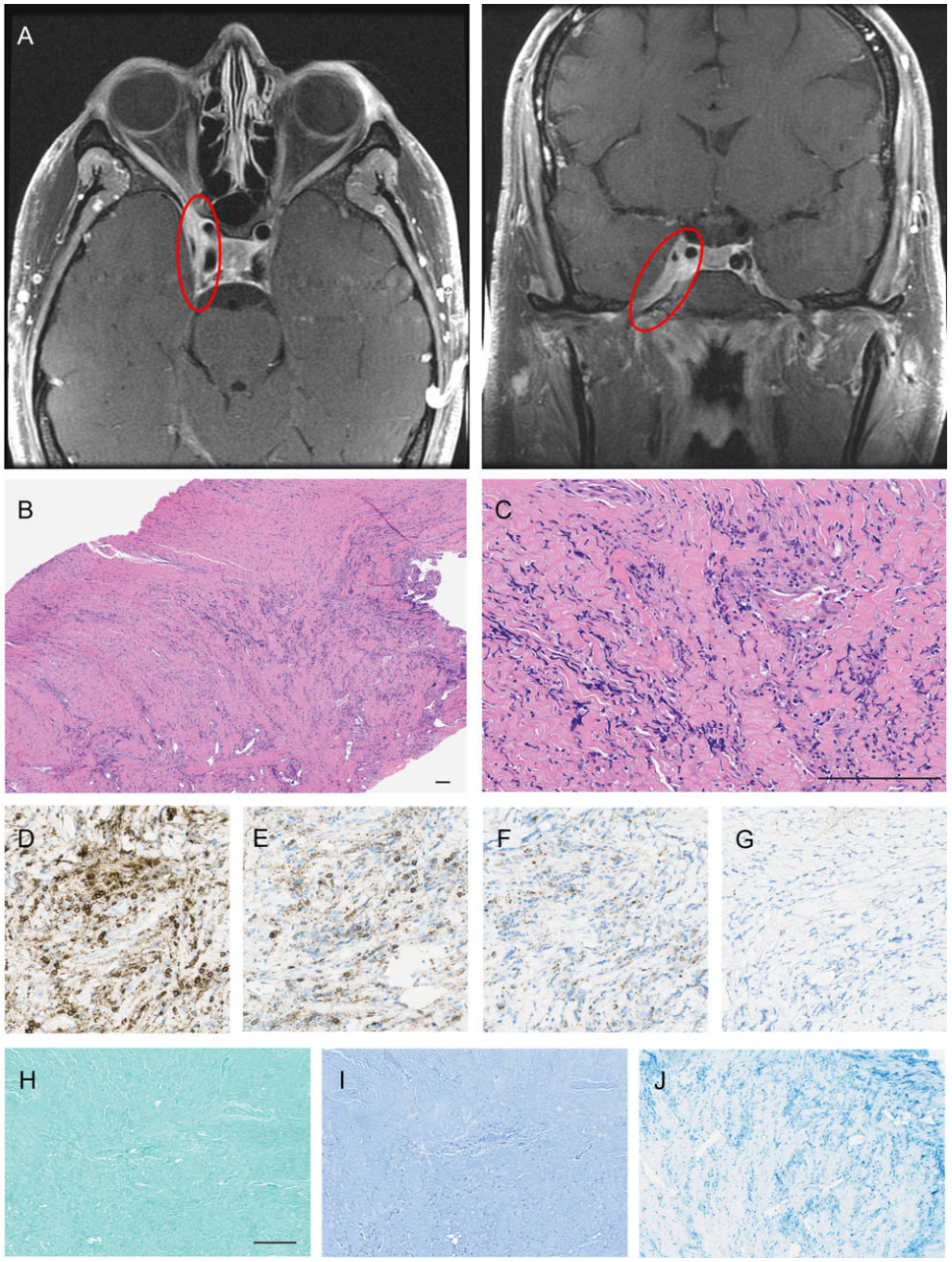

Figure 1: (***a***) Initial axial and coronal T1 post-gadolinium images showing right cavernous sinus enhancement (outlined in red). (***b***) Low and (***c***) high-power magnification of the dural biopsies, which demonstrate a mixed T- and B-cell infiltrate with interspersed macrophages, highlighted by (***d***) CD3, (***e***) CD20 and (***f***) CD68 immunohistochemistry, respectively. No plasma cells are detected by (***g***) CD138 immunohistochemistry. There is no evidence of vasculitis, necrosis, granulomata or neoplasm (e.g., no primary dural based tumor or metastatic tumor). No microorganisms are seen by special stains (***h***) GMS, (***i***) AFB and (***j***) Fite. Scale bar = 100μm.

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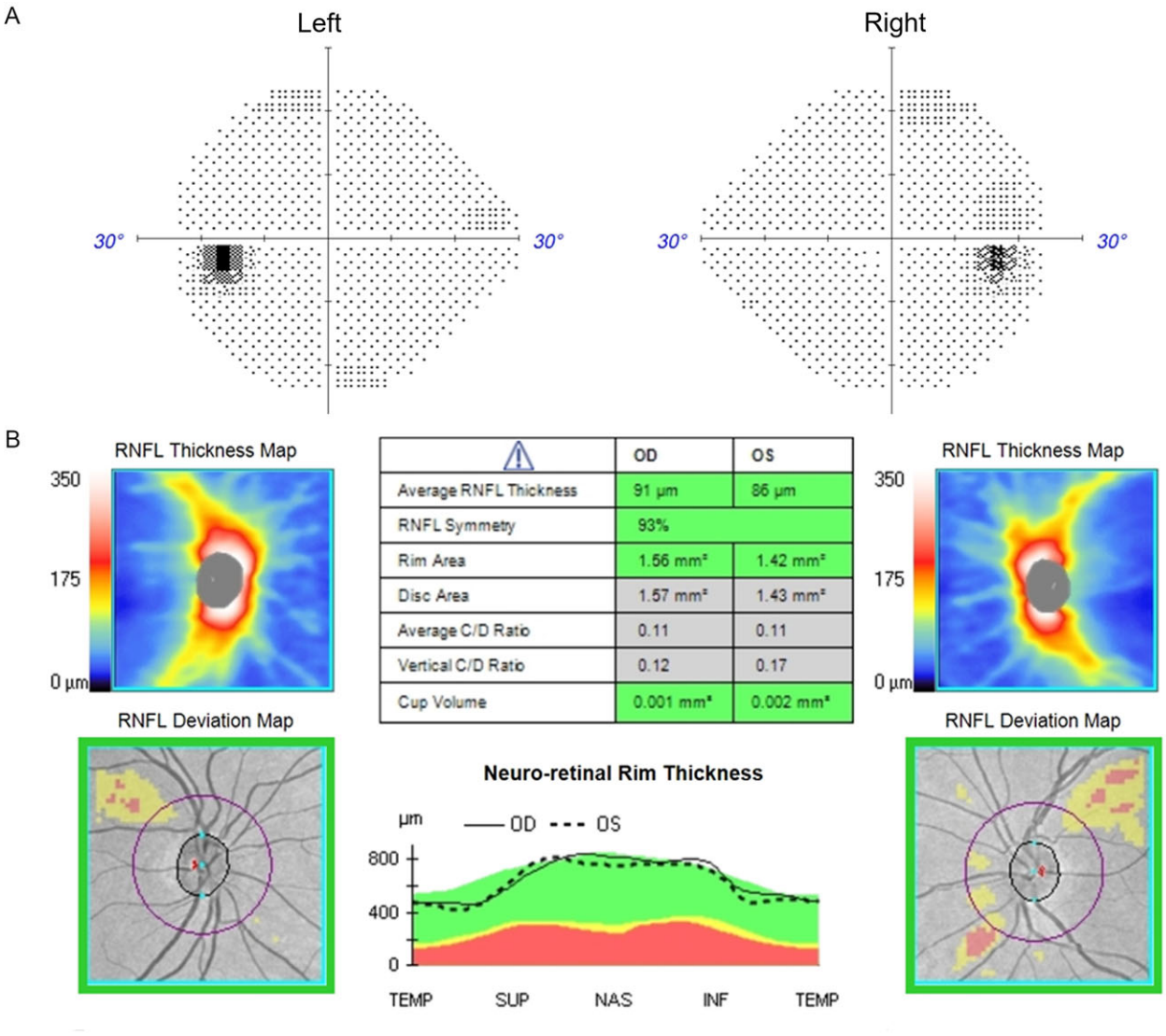

Figure 2: (***a***) Visual fields and (***b***) optical coherence tomography 17 months after completing cyclophosphamide monotherapy showing normal fields and normal retinal nerve fiber layer thickness.

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