# Optic Neuritis Against the Rule: An Unusual Presentation of Optic Neuritis

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**Case:**

A 48-year-old female with a history of hypertension and latent tuberculosis (TB) currently on antimycobacterial therapy presented to the emergency department with complete vision loss of the left eye and pain with extraocular movements. Ocular history was significant for retinal holes in the left eye treated with laser retinopexy. On exam, her left eye had no light perception (NLP) vision, a relative afferent pupillary defect, normal intraocular pressure, and mild optic disc edema. An MRI revealed left optic neuritis and perineuritis. The patient underwent an autoimmune and infectious workup to determine the etiology. Lumbar puncture findings did not suggest infection, raising clinical suspicion for autoimmune pathology. The patient received IV and oral steroids with rapid improvement in her symptoms and a visual acuity of 20/20 one month after initial presentation.

**Discussion:**

Optic neuritis (ON) refers to inflammation of the optic nerve that classically presents with sudden onset of moderately painful vision loss with an unremarkable fundus exam. Etiology is variable and includes autoimmune, infectious, paraneoplastic, and idiopathic causes. Typical ON describes an autoimmune process that results in demyelination of the optic nerve, usually unilaterally, and is classically associated with multiple sclerosis (MS). Typical ON is most common in Caucasian females ages 20 to 45, especially in patients who live further from the equator. Atypical ON is much rarer and describes a heterogeneous group of disorders including neuromyelitis optica (NMO), Myelin Oligodendrocyte Glycoprotein Immunoglobulin G-Associated Disorder (MOGAD or MOG), and optic neuropathy associated with infections (such as TB). These disorders can have a more uncommon ocular presentation, such as bilateral involvement, subacute onset, and optic nerve edema on exam, and are more likely than typical ON to occur in male patients outside of the 20-45 age range.

Determination of the etiology of a patient's ON is important to guide treatment, as autoimmune causes are treated with steroids, which could worsen a patient's condition if infection is instead the culprit. All patients' serum and CSF should be tested for anti-AQP4 and anti-MOG antibodies (associated with NMO and MOGAD, respectively) and undergo systemic workup for tuberculosis, syphilis, sarcoidosis, and lupus. There should be a low threshold to image the spine to evaluate for lesions associated with MS or NMO. However, these test results take days to weeks to result, so clinical assessment is crucial for medical decision-making. Our patient's presentation was somewhat unclear, as she exhibited characteristics of both typical and atypical ON, in the setting of a known tuberculosis infection. Workup was eventually positive for anti-MOG IgG, and the patient was diagnosed with MOGAD. This case highlights the importance of

clinical assessment in the management of optic neuritis and presents a somewhat unusual presentation of MOGAD, an extremely rare cause of ON.

**References**


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