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Time Is a Predictor: A Case of Idiopathic Optic Neuritis

Devanshi Dalal[1*] and Nita Makwana[1]

[1]*Bapubhai Desaibhai Patel Institute of Paramedical Sciences, Faculty of Medicine, Charotar University of Science & Technology, Nadiad, Gujarat, India.*

[*]devanshidalal30@gmail.com (Corresponding Author)

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ABSTRACT

Background: Optic neuritis is an inflammatory condition causing visual impairment, mainly affecting females aged 20-40. It's a rare condition, with idiopathic ON presenting unique diagnostic challenges.

Purpose: Early detection and intervention are crucial, with optometrists playing a key role in comprehensive evaluations using OCT and visual field testing.

Case Description: A 20-year-old male with progressively worsening vision experienced afferent pupillary defect, reduced contrast sensitivity, and color vision.

Results: A multidisciplinary team managed the condition, including methylprednisolone, oral prednisone, neurotrophic support, and antibiotics.

Conclusions: The case highlights the significance of early optometric evaluation in detecting and managing optic neuritis, facilitated by advanced diagnostic techniques. The improved visual acuity demonstrates the benefits of early intervention, emphasizing the role of optometrists in preserving vision and enhancing patient outcomes.

1. Introduction

Optic neuritis (ON) is an inflammatory, infectious, or demyelinating condition of the optic nerve that can lead to visual impairment and associated symptoms (Salmon, 2024; Shin & Costello, 2024). It is characterized by sudden vision loss, visual field defects, and often pain on eye movement. The prevalence of ON is estimated at 1 to 5 cases per 100,000 individuals annually, primarily affecting females aged 20–40 years. Idiopathic ON, which lacks a clear etiology, presents unique diagnostic challenges (Kale, 2016). Time plays a critical role in predicting disease progression and visual recovery, emphasizing the importance of early detection and intervention. Optometrists are key in comprehensive evaluations, utilizing tools such as OCT and visual field testing for diagnosis and management (Phu *et al.,* 2017).

2. Case Description

A 20-year-old African male, currently studying in India, presented with a three-month history of progressively worsening vision in both eyes. The patient reported experiencing intermittent headaches but denied having any systemic complaints or a history of ocular issues. During the presentation, the optometrist observed the following clinical findings.

3. Clinical Findings

The results of the present case study are discussed and also shown in Table 1.

- **Visual Acuity:** Unaided vision was 6/60 in both eyes; near vision was N/18 at 10 cm, indicating significant visual loss.
- **Pupillary Response:** A relative afferent pupillary defect (RAPD) was noted in the right eye, suggesting asymmetric optic nerve dysfunction.
- **Contrast Sensitivity:** Assessed using the Pelli-Robson chart, which revealed markedly reduced contrast sensitivity, indicating impaired visual function.
- **Color Vision:** Tested with the Panel D-15, revealing protanopia, a type of red-green color blindness, indicating optic nerve involvement.
- **Retinal Examination:** Examination showed tortuous retinal veins, more prominent in the left eye, and peripheral vitreous degeneration, suggesting possible vascular or inflammatory changes.

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- **Ocular Motility:** The patient was orthotropic, with no misalignment of the eyes, and full range of motion, indicating no extraocular muscle involvement.
- **Visual Fields:** Assessed with the SITA standard 30-2 test, which were found to be normal, indicating no peripheral visual field defects.

Table 1: Clinical Findings of the Case

	On the day of Presentation		After 3 Days		After 5 Days		After 15 Days	
	OD	OS	OD	OS	OD	OS	OD	OS
VA	6/60	6/60	6/60	6/60	6/36 P	6/36	6/36	6/24P
Near Vn @20 cm	N/18	N/18	N/18	N/18	N/12P	N/12P	N/12	N/12
VA with Ph	NI	NI	6/36 P	6/36	6/36 P	6/36	6/24P	6/18P
Objective correction	-1.00/-0.50*110	-1.00/-0.25*90	-1.50/-0.25*108	-1.75/-0.25*66	-0.50/-1.00*90	-1.50/-0.50*70	-0.25/-0.75*90	-0.25/-0.75*79
BCVA (Dist.)	-0.75 DS (6/36P)	-0.75 DS (6/36P)	-1.25 DS (6/24P)	-1.25 DS (6/24P)	-0.50/-0.75*90 (6/24)	-0.75 DS (6/24P)	-0.50/-0.75*90 (6/18)	-0.75*90 (6/18P)
BCVA (Near)	+2.50 Dsph N/12	+2.50 Dsph N/12	+2.00 Dsph N/12 P	+2.00 Dsph N/12 P	+1.50 Dsph N/10 P	+1.50 Dsph N/10 P	+1.00 Dsph N/8 P	+1.00 Dsph N/8 P
IOP (mm/hg)	11	10	8	10	10	9	12	11
CS (Log CS)	0	0	0.05	0.05	0.2	0.2	0.5	0.5

4. Discussion

Optometrists play a pivotal role in the early detection, diagnosis, and management of optic neuritis, a potentially vision-threatening condition. As primary care providers for patients presenting with unexplained visual symptoms, optometrists are uniquely positioned to identify hallmark signs of this condition and initiate timely interventions. Early detection and appropriate management can significantly impact visual and systemic outcomes, underscoring the importance of optometrists in the broader healthcare framework (Wylezinski *et al.,* 2019). In this case, a 20-year-old male presented with acute unilateral vision loss, defective color vision, and a relative afferent pupillary defect (RAPD)—classic signs of optic neuritis. Diagnostic precision was achieved through the use of advanced imaging technologies. Optical Coherence Tomography (OCT) revealed thinning of the retinal nerve fiber layer (RNFL), a structural hallmark of optic nerve pathology. Visual field testing further delineated the functional impact, identifying a central scotoma consistent with optic nerve dysfunction.

The absence of ocular pain was an atypical finding that necessitated a comprehensive differential diagnosis. Systemic evaluations, including blood work and neuroimaging, were conducted to exclude other potential causes such as multiple sclerosis (MS), sarcoidosis, and systemic lupus erythematosus (SLE) (Phuljhele *et al.*, 2021; Bergeron & Bouffard, 2024). Notably, the absence of demyelinating lesions on magnetic resonance imaging (MRI) and negative laboratory findings confirmed the diagnosis of isolated optic neuritis, ruling out systemic associations. This highlights the necessity of a thorough and systematic approach in evaluating such cases. The optometrist's prompt recognition of optic neuritis and immediate referral to a neuro-ophthalmology team were critical in ensuring timely treatment. Corticosteroid therapy, the gold standard for managing acute optic neuritis, was initiated promptly as per recommendation by Ophthalmologist (Petzold *et al.,* 2022; Benard-Seguin & Costello, 2023). High-dose intravenous methylprednisolone followed by an oral taper regimen is known to accelerate visual recovery and potentially reduce the risk of recurrence, especially in idiopathic cases.

This case emphasizes the significance of a comprehensive multidisciplinary approach. The collaboration among the optometrist, ophthalmologist, and neuro-ophthalmologist facilitated comprehensive care, ensuring the patient received both acute treatment and ongoing monitoring. Optometrists proficiency in advanced diagnostic techniques, such as OCT and visual field testing was instrumental in the initial diagnosis. Furthermore, their clinical acumen in recognizing systemic implications and coordinating care exemplifies their integral role in managing complex optic neuropathies. The proactive involvement of optometrists in cases like this not only enhances patient outcomes but also underscores their indispensable role in the healthcare system. By leveraging their expertise in both primary eye care and advanced diagnostic technologies, optometrists contribute to preserving vision and improving the quality of life for patients with vision-threatening conditions (De Lott *et al.,* 2022; Laviers *et al.,* 2024).

5. Conclusion

Early and thorough optometric assessment is crucial for diagnosing and managing optic neuritis. This case highlights the prompt identification of the condition through advanced diagnostics, enabling timely referral and treatment, leading to significant visual acuity improvement. It underscores the vital role of optometrists in diagnosis, care coordination, and interdisciplinary teamwork to optimize patient outcomes. Additionally, this case serves as a valuable teaching tool for interns, showcasing the application of clinical skills, the importance of a detailed

case history, and the use of advanced diagnostic techniques in real-world settings.

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Devanshi Dalal: Conceptualization and Writeup; Nita Makwana: Conceptualization and Data Collection

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Conflict of Interest

Authors declare that there is no conflict of interest.

Ethical Approvals

No ethical approvals were required for this study.

Declaration

It is an original article and has been neither sent elsewhere nor published anywhere.

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Chitkara University, Saraswati Kendra, SCO 160-161, Sector 9-C, Chandigarh, 160009, India

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