Section: Ophthalmology

Original Research Article

CLINICAL PROFILE OF NEW-ONSET OPTIC NEURITIS IN HEALTHY INDIVIDUALS, A TERTIARY CENTRE EXPERIENCE FROM NORTHERN INDIA

Shruti Muddebihal[1], Rupali Sharma[2], Prashant Bellad[3]

[1] Assistant Professor, Department of Ophthalmology, Military Hospital, Srinagar. J&K India
[2]Assistant Professor, Department of Ophthalmology, Military Hospital, Srinagar. J & K, India
[3]Assistant Professor, Department of Dermatology, Military Hospital Ahmedabad, Gujrat India

Received : 23/12/2024
Received in revised form : 11/02/2025
Accepted : 27/02/2025

Keywords:
Optic neuritis, clinical profile.

Corresponding Author:
Dr. Shruti Muddebihal,
Email: drshruti.ms@gmail.com

DOI: 10.47009/jamp.2025.7.1.184

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (1); 940-942

Abstract

Background: Optic neuritis is an inflammatory disorder of the optic nerve and is often the initial manifestation of systemic demyelinating diseases such as multiple sclerosis (MS), neuromyelitis optic spectrum disorder (NMOSD), and myelin-oligodendrocyte glycoprotein (MOG) antibodymediated disease. There are ethnic variations in the etiology of optic neuritis across the world. While multiple sclerosis is common in the West, NMOSD and MOG are more common causes in Asian patients. The objective is to study the demographic and clinical features of patients with new onset optic neuritis in a main tertiary care center. **Materials and Methods:** A retrospective study of cases with new-onset optic neuritis at a tertiary care center between 2022 and 2024. The clinical and demographic characteristics were obtained from medical records and were summarized using descriptive statistics. Univariate analysis and multivariate analysis to assess the short-term visual outcome. **Result:** Twenty- two patients with new-onset unilateral optic neuritis were included in the study. The mean age was 25.3 years, they were predominantly males (83 %), and most of the cases were idiopathic optic neuritis (62.3 %) followed by MS (33 %) Final visual acuity of at least 20/40 was seen in at least 91.5 %. **Conclusion:** While the clinical profile of patients in this study closely resembles the Optic Neuritis Treatment Trial with a high incidence of idiopathic optic neuritis and MS and a good visual outcome in most patients and a good response to intravenous steroids, there is a significant proportion of idiopathic optic neuritis cases that may need to be better characterized with longer follow up and repeated serum biomarker testing.

INTRODUCTION

Optic neuritis is an inflammatory disease of the optic nerve that typically manifests as an acute visual loss and pain upon eye movements. The causes of optic neuritis could be from demyelinating optic neuritis, which eventually develops into clinically definite Multiple Sclerosis (MS), or from severe immune-mediated demyelinating disease affecting optic nerves as part of Neuromyelitis Optica Spectrum Disease (NMOSD), infection, autoimmune disease, vaccination, and idiopathic.[1-4]

The optic neuritis treatment trial (ONTT) was the principal trial in characterizing the clinical features, treatment, and prognosis of optic neuritis.[5,6] However, it was based on a Western white population, and overwhelmingly included patients with MS-associated optic neuritis. There are few studies on the clinical and epidemiological features of optic neuritis in Indian patients. In this study, we describe the clinical features of a cohort of patients with new-onset optic neuritis in ophthalmology tertiary care center in Northern India.

MATERIALS AND METHODS

We have reviewed the medical records of patients admitted to the ophthalmology unit in a tertiary care centre diagnosed with new-onset optic neuritis from 2022 to 2024. The clinical and the demographic characteristics were obtained from medical records (Age, ender, follow up-duration, pain at onset, disc edema at onset, final diagnosis, visual acuity at onset and follow-up, dose of intravenous steroids, oral steroid taper, administration of plasma exchange or intravenous immunoglobulins, MRI T-2 and gadoliniumenhancing brain lesion, MRI optic nerve lesions). The diagnosis of optic neuritis was made based on the clinical features of acute vision loss, afferent pupillary defect in unilateral cases, and a decrease in visual acuity or color vision and a visual field defect. All patients did not have any previous neurological disease, or prior history of optic neuritis

or other optic neuropathy. All patients had MRI of the brain and orbit. The minimum follow-up period to assess the visual outcome was 30 days following treatment of intravenous (IV) steroids. Patients were classified as idiopathic optic neuritis (if the MRI did not show lesions fulfilling the McDonald criteria for MS). All patients received initial IV methylprednisolone treatment for 3 days with oral steroid taper.

Statistical Analysis: The data were entered into Microsoft Excel spreadsheet, and statistical analysis was performed with STATA statistical software (StataCorp, College Station, TX, USA). Continuous variables were expressed as mean (±standard deviation), and categorical variables were expressed as proportions. McNemar test was used to compare baseline and final follow up status of variables. A two tailed P value of 0.05 was taken as the level of statistical significance.

RESULTS

Our study included 22 patients, of whom all were unilateral bilateral optic neuritis. The mean age of patients in this study was 25.3± 3.2 and they were predominantly males (83%). Age range was 18-50 years, with highest incidence between 24 to 32 years. The most common complaint was visual loss (96.3%), followed by headache (45%), fever (31%), and ocular pain (26%). At presentation, visual acuity was 6/6 in two eyes (3.7%), ranged between 6/9 and 6/36 in eight eyes (14.8%), and 6/60 and worse in 44 eyes (81.46%).

Pupillary light reflex abnormality was seen in the majority of patients, with a trace relative afferent pupillary defect (RAPD) in 11 (50%) eyes and a RAPD of grade 1 or greater in 11 (45.45%) eyes. At presentation, fundus appeared normal in three (13.6%) of 22 eyes. Disk edema was the most common finding, being present in 19 eyes (86.4%).

Neuroimaging was done in all patients, out of which no obvious pathology was found in 16 patients, remaining 6 patients had thickening and enhancement of optic nerve in the affected eye.

The final visual acuity in the affected eye was 20/33, and over 90 % of patients had a final visual acuity of at least 20/40, while 88% had a final visual acuity of at least 20/20 or better.

DISCUSSION

The most common cause of optic neuritis in this study was idiopathic and MS, while NMOSD and MOG optic neuritis were infrequent. Almost half of patients were diagnosed with MS either at onset or during follow-up after fulfilling the McDonald criteria for MS. The clinical profile of optic neuritis patients in this study and similar ethnic groups reported suggest that it is similar to the ONTT.[5,7]

The presentation of ON in adults varies considerably from that in children. In adults, the involvement is more commonly unilateral with a female predominance. The most common presenting features are visual loss and periocular pain.[8,9]

The mean age of patients in this study was 25.3± 3.2 which correlates with study by Behbehani R et al.[10]

In our study, disk edema was present in 77.77% of the eyes, which is comparable with other studies and revealed the fact that optic disk edema is a more common feature.

The choice of neuroimaging in suspected demyelinating ON is MRI brain and orbit with contrast, FLAIR sequence, and fat suppression of orbit. FLAIR sequence allows better delineation of periventricular plaques. No obvious pathology was found in 16 patients, remaining 6 patients had thickening and enhancement of optic nerve in the affected eye. Longitudinally extensive ON (LEON) on MRI is a useful biomarker in neuromyelitis optica (NMO), being present in up to 81% of the cases. The lesions are likely to extend up till the intracranial portion of the visual pathway, including the optic chiasma.[11]

A recovery trend similar to that seen for visual acuity was also observed in color vision (79.6%), visual fields (85.18%), and brightness sensitivity (61.1%).

This study is limited by its retrospective nature and selection bias from referrals to a tertiary care hospital and therefore the clinical profile of patients in this study may not necessarily reflect the clinical profile of the population. It is also not designed to study the visual outcome since the regimen of IV and oral steroids were not standardized, and the follow up period was variable.

CONCLUSION

The clinical profile of patients with optic neuritis in the northern India is similar to the Western clinical profile as reported in the Optic Neuritis Treatment Trial but there was a significant proportion of idiopathic cases that may need to be better characterized with longer follow up and more targeted testing for NMOSD and MOG antibodies. The short-term visual outcome of optic neuritis seems favourable with good response to IV steroid therapy.

REFERENCES

1. Beck R.W., Cleary P.A., Anderson M.M., Jr, Keltner J.L., Shults W.T., Kaufman D.I., Buckley E.G., Corbett J.J., Kupersmith M.J., Miller N.R., et al. The Optic Neuritis Study Group A randomized, controlled trial of corticosteroids in the treatment of acute optic neuritis. N. Engl. J. Med. 1992;326(9):581–588. doi: 10.1056/NEJM199202273260901. [DOI] [PubMed] [Google Scholar]
2. 2.Optic Neuritis Study Group The clinical profile of optic neuritis. Experience of the optic neuritis treatment trial. Arch. Ophthalmol. 1991;109(12):1673–1678. doi: 10.1001/archopht.1991.01080120057025. [DOI] [PubMed] [Google Scholar]
3. 3.Toosy A.T., Mason D.F., Miller D.H. Optic neuritis. Lancet Neurol. 2014;13(1):83–99. doi: 10.1016/S1474-4422(13)70259-X. [DOI] [PubMed] [Google Scholar]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

4. 4.Stübgen J.P. A literature review on optic neuritis following vaccination against virus infections. Autoimmun. Rev. 2013;12(10):990–997. doi: 10.1016/j.autrev.2013.03.012. [DOI] [PubMed] [Google Scholar]
5. The clinical profile of optic neuritis. Experience of the optic neuritis treatment trial. Optic neuritis study group, Arch. Ophthalmol. 109 (12) (Dec 1991) 1673–1678, https://doi.org/10.1001/archopht.1991.01080120057025.
6. R.W. Beck, J.D. Trobe, P.S. Moke, et al., High- and low-risk profiles for the development of multiple sclerosis within 10 years after optic neuritis: experience of the optic neuritis treatment trial, Arch. Ophthalmol. 121 (7) (Jul 2003) 944–949, https://doi.org/10.1001/archopht.121.7.944
7. Neuritis Study G. Optic, Multiple sclerosis risk after optic neuritis: final optic neuritis treatment trial follow-up, Arch. Neurol. 65 (6) (Jun 2008) 727–732, https://doi.org/10.1001/archneur.65.6.727.
8. Rizzo JF. Optic neuritis and ischemic optic neuropathy: Overlapping clinical profiles. Arch Ophthalmol1991;109:1668.
9. . Saxena R, Phuljhele S, Menon V, Gadaginamath S, Sinha A, Sharma P. Clinical profile and short term outcomes of optic neuritis patients in India. Indian J Ophthalmol2014;62:265 7
10. Behbehani R, Ali A, Alakool A, Farouk S, Alroughani R. The clinical profile of new-onset optic neuritis in arabs, a tertiary center experience in Kuwait. Heliyon. 2024 Jul;10(13):e33985.
11. Mealy MA, Whetstone A, Orman G, Izbudak I, Calabresi PA, Levy M. Longitudinally extensive optic neuritis as an MRI biomarker distinguishes neuromyelitis optica from multiple sclerosis. J Neurol Sci 2015;355:59 63.

ISSN (O): 2687-5365; ISSN (P): 2753-6556