▪ *Original Article*

# Demographic pattern, clinical profile and visual outcome of patients with optic neuritis in a tertiary level eye care center of eastern Nepal

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**Abstract**

**Introduction:** Optic neuritis is one of the common causes of sudden visual impairment. Early diagnosis and treatment with intravenous steroids can hasten visual recovery. **Objective:** To analyze the demographic pattern, clinical profile, and response to treatment with pulse methylprednisolone in patients presenting with optic neuritis. **Methods:** A hospital based retrospective analysis of records of patients with optic neuritis presenting at BPKIHS between April 2010 to February 2012 was carried out. Demographic pattern, clinical profile and visual outcome at the time of presentation and discharge were recorded. **Results:** Thirty-five patients (44 eyes) presented with optic neuritis. A total of 33 eyes (75%) had papillitis and 11 eyes (25%) had retrobulbar optic neuritis. Male to female ratio was 2.18:1. The mean age at presentation was 31.20 ± 17.07 years. Diminution of vision was the commonest mode of presentation. Bilateral involvement was seen in 9 patients (25.71%). The 38 eyes (86.36%) had abnormal pupillary reaction. Eight patients (22.85%) had preceeding history of trauma, 1 (2.85%) had ethmoidal sinusitis and 1 (2.85%) otitis media. At the time of discharge 32 **eyes** (72.7%) showed recovery in visual acuity after pulse I.V. methylprednisolone therapy. Duration at presentation, visual acuity at presentation and diagnosis did not affect the final visual outcome (p=0.486, p=0.162 and p=0.122 respectively). **Conclusion:** Majority of patients presented with papillitis of idiopathic origin. Most of the cases were unilateral. Most patients with visual acuity of at least perception of light or better at the time of presentation improved after pulse I.V. methylprednisolone therapy.

**Keywords:** optic neuritis, papillitis, retrobulbar neuritis, pulse steroid therapy.

## Introduction

Optic neuritis is the term used for inflammation of optic nerve.

Overall, 15%-20%[1] of patients with definite Multiple Sclerosis (MS) present with optic neuritis and an additional 35%-40%[2] develop optic neuritis at some point during the course of the disease. Seventy five percentage of patient with optic neuritis seek medical attention early, usually within two weeks of onset.[3]

Symptoms of optic neuritis generally involve a triad of sudden onset vision loss, ipsilateral eye pain and dyschromatopsia . However, some patients may experience other symptoms like movement phosphene, sound induced phosphene, visual obscuration in bright light and Uhthoff's phenomenon.

Majority of cases are idiopathic and some due to MS, viral prodrome, spread of infection from ocular adnexa, intraocular inflammation or following trauma.

Pulse methyl prednisolone therapy is the mainstay of treatment. Prompt diagnosis and treatment can restore useful vision. [4,5]

There is not much data regarding optic neuritis in this part of the world.

So, this study was carried out to analyze the demographic pattern and clinical profile in patients with optic neuritis and also to find out the response to IV pulse methyl prednisolone.

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## Methods

A hospital based retrospective analysis of records of all the patients with optic neuritis presenting at BPKIHS

was done from Febraury 2010 to January 2012. Detailed history of diminution of vision, duration and pain were recorded. Detailed **s**ystemic symptoms and presence of neurological symptoms if present were noted.A total of 44 eyes (35 patients) meeting the criteria of optic neuritis were included.

Diagnostic criteria for optic neuritis included the following

Sudden onset of diminution of vision.

Relative afferent pupillary defect.

Clinical examination including best corrected visual acuity on Snellen's chart, pupillary reaction (direct and consensual), extra-ocular movements, detailed slit lamp biomicroscopy, fundus examination under full mydriasis and colour vision with Ishihara pseudoisochromatic chart were noted.

Baseline CBC, RBS and CXRay were done in all of the cases.MRI brain was done in those patients who afforded it and reports were recorded.

All the pateints were treated with IV pulse methyprednisolone (1gm/day in four divided doses) for 3days followed by oral prednisolone (1mg/kg) for 11days with rapid tapering. Best corrected visual acuity at the time of discharge was recorded.

***Treatment given***

Intravenous methyl prednisolone 1 gram in four divided dosage daily for 3 days followed by oral prednislone 1mg/kg for 11 days was given to all the patients.

the data was entered into MS EXCEL spreadsheet and analyzed using SPSS version 11.5 and Epi info 2000. Relevant cross tabulations were done.Chi-square test and odd ratio were used to examine the statistical significance of differences. Alpha error was set at 5%.

**Results**

**F**orty four eyes of 35 patients were examined. The mean age of the patients was 31.20±17.070 years (Figure 1). There were 68.6% male and 31.4% female patients. Male: female ratio was 2.18:1. (Figure 2)

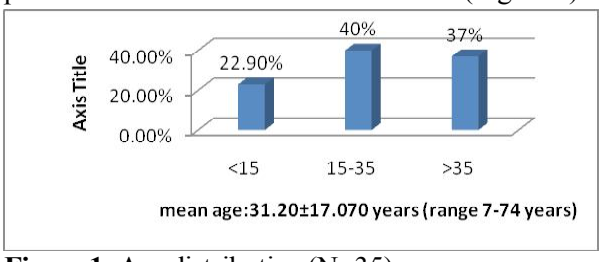


**Figure 1:** Age distribution (N=35)

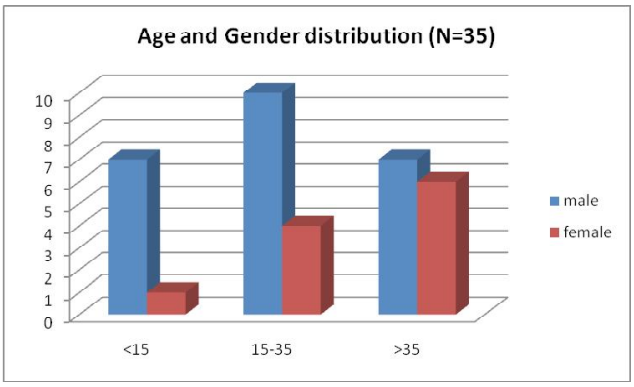


**Figure 2:** Distribution of age in relation to gender

There were 32 males (69%) and 12 females (31%).

Right eye was involved in 42.8% , left eye in 31.4% and both the eyes in 25.7%.

The mean duration at presentation was 8.30±5.90 days. The earliest presentation to the hospital was within one day and the latest was 25 days.

RAPD ( relative afferent papillary defect) was present in all the patients. Colour vision impairment was seen in 12 eyes (27.27%), 10 eyes (22.72%) had pain on extra ocular movements, 5 patients (14.28%) had history of fever and one patient had history of previous similar attack (Table 1).

**Table 1: Clinical features of patients at presentation**

| | |
|---|---|
| Fever | 5 patients (14.28%) |
| Previous attack | 1 patient |
| Pain on EOM | 10 eyes (22.72%) |
| Pupillary reaction (RAPD) | 44 eyes (100%) |
| Abnormal Color vision | 12 eyes (27.2%) |

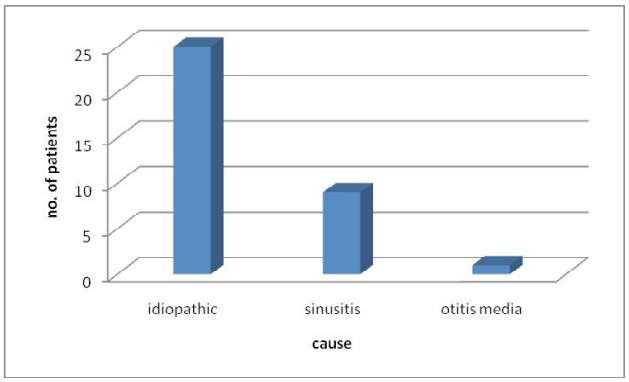


**Figure 3:** Causes of optic neuritis (n=35)

In twenty five patients (71%) no cause cause was found. Ethmoidal-sinusitis was noted in 9 patients (25.71%) and one patient (2.8%) had otitis media ( Figure 3).

**Table 2: Visual acuity at the time of admission (n=44 eyes)**

| Visual acuity | n=44 eyes |
|---|---|
| >6/60 | 10 (22.7%) |
| <6/60 | 34 (77.3%) |
| Total | 44 |

Ten eyes(22.7%) had visual acuity of 6/60 or better. Thirty four eyes had visual acuity of less than 6/60 (72.3%). ( Table 2)

On fundus evaluation 25% (n-11 eyes) had features suggestive of retrobulbar optic neuritis and 75% (n-33 eyes) had papillitis (Figure 4).

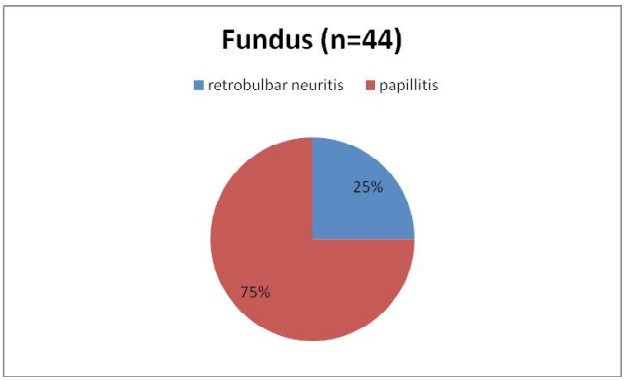


**Figure 4:** Fundus findings at the time of presentation

After three days treatment with i.v. methyl prednisolone 250 mg q.i.d. thirty two eyes (72.7%) had visual recovery and twelve eyes (27.3%) did not show any improvement in visual acuity which was not statistically found to be significant (p=0.474) ( Table 3).

**Table 3: Relation of visual acuity at presentation with final visual outcome**

| | | Visual outcome at discharge | | Total | P value |
|---|---|---|---|---|---|
| | | Good | Poor | | |
| VA at presentation | >6/60 | 9 | 1 | 10 | 0.163 |
| | | 90.0% | 10% | 100% | |
| | <6/60 | 23 | 11 | 34 | |
| | | 67.6% | 32.4% | 100% | |
| Total | | 32 | 12 | 44 | |
| | | 72.7% | 27.3% | 100.0% | |

Visual acuity at the time of presentation was not significant with the final outcome (p=0.163) (Table 3).

**Table 4: Relation of age and final outcome**

| Age group (years) | Result (visual outcome) | | Total | P value |
|---|---|---|---|---|
| | Improved | Not improved | | |
| 0-15 | 8 | 4 | 12 | |
| | 66.7% | 33.3% | 100.0% | |
| 16-35 | 13 | 5 | 18 | 0.792 |
| | 72.2% | 27.8% | 100.0% | |
| >35 | 11 | 3 | 14 | |
| | 78.6% | 21.4% | 100.0% | |
| Total | 32 | 12 | 44 | |
| | 72.7% | 27.3% | 100.0% | |

Association of age of the patient at the time of presentation was not significant with the final outcome (p=0.792) (Table 4).

**Table 5: Association of type of optic neuritis at the time of presentation**

| Optic Neuritis | | Result (visual outcome) | | Total | P value |
|---|---|---|---|---|---|
| | | Improved | Not improved | | |
| DIAG-NOSIS | Papillitis | 26 | 7 | 33 | 0.118 |
| | | 78.8% | 21.2% | 100.0% | |
| | Retro bulbar Optic Neuritis | 6 | 5 | 11 | |
| | | 54.5% | 45.5% | 100.0% | |
| Total | | 32 | 12 | 44 | |
| | | 72.7% | 27.3% | 100.0% | |

Association of type of optic neuritis at the time of presentation was not significant with the final outcome (p=0.118) (Table 5).

**Table 6: Time at presentation with final outcome**

| Duration at presentation | Result (visual outcome) | | Total | P value |
|---|---|---|---|---|
| | Improved | Not improved | | |
| <7days | 18 | 6 | 24 | 0.711 |
| | 75.0% | 25.0% | 100.0% | |
| ≥7days | 14 | 6 | 20 | |
| | 70.0% | 30.0% | 100.0% | |
| Total | 32 | 12 | 44 | |

Association of duration at presentation was not significant with the final outcome (p=0.711) (Table 6).

Age, gender, diagnosis (retrobulbar neuritis or papillitis) and duration at presentation were not found to be statistically significant in visual outcome at the time of discharge. (p=0.792, p=0.333, p=0.118, and p=0.711 respectively).

**Discussion**

This study was done to analyze the demographic pattern and clinical profile in patients with optic neuritis and also to find out the response to intra venous pulse methyl prednisolone.

The mean age of our patient was 31.20±17.07 years. This was comparable to similar study done by Das et al[6] and also with Optic Neuritis Treatment Trial (ONTT).[4,5] However, the mean age group was higher in population based study done in India by Saxena et al[7] and Wakaruka et al in Japan.[8]

In terms of gender distribution our study had male preponderance (68.60%).Male is to female ratio was 2.18:1. This was similar to the study done by Das et al[6] however ONTT trial [4,5] and study done by Saxena et al[7] and Wakaruka et.al[8]showed female preponderance.

Papillitis was seen in 75% of total cases in this study which was similar to study done by Das et al [6]and Wang et al. [9] ONTT showed retrobulbar neuritis as more common. [4,5]

Seventy three percentages of our patients presented with visual acuity less than 6/60. This was comparable to the study shown by Das et al. [6]

Thirty four (77%) of our patients responded to pulse methyl prednisolone therapy. This was similar to that of ONTT trial[4,5] and also similar to the study done by Das et al[6], Saxena et al [7]and Wakaruka et al. [8]

Response to pulse methyl prednisolone therapy was seen effective in patients with initial visual acuity of at least perception of light.[6]

ONTT trial showed no difference with regard to visual function at 1 year whether pulse methyl prednisolone was used or not. [4,5]

ONTT trial showed that the group treated with oral prednisolone had a high risk of recurrence. [4,5]

ONTT showed that at 2 year follow up, the group treated with pulse methyl prednisolone had 50% reduction in rate of development of MS. [4,5]

In this study 72.7% of patients had visual recovery.

In this stud improvement in visual acuity was not statistically significant with age of the patient, diagnosis and visual acuity at presentation. This could be due to limited sample size and short follow up.

**Conclusion**

Male were most commonly affected. Majority of the patients had paplillitis . Most of the patients responded with pulse methyl prednisolone. Larger sample size and long follow up is necessary to see the correlation between the variables and the visual outcome.

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