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To study visual and neurological outcome after treatment according to ONTT protocol

Yogita Chaurasia¹, I D Chaurasia^{2,*}¹Dept. of Ophthalmology, Bundelkhand Medical College, Sagar, Madhya Pradesh, India²Dept. of Neuro Surgery, Gandhi Medical College & Hamidia Hospital, Bhopal, Madhya Pradesh, India

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ABSTRACT

Aims: To evaluate the visual and neurological outcomes of Optic Neuritis Treatment Trial (ONTT).**Background & Method:** 40 Patients presenting with optic neuritis were enrolled in this study to analyze the Visual and Neurological outcomes after treatment according to ONTT Protocol, with emphasis on signs of anaemia, protein calorie malnutrition, vitamin deficiency, generalized lymphadenopathy, sinusitis, septic foci. Patients were followed up for three subsequent visits to assess the rate of visual recovery.**Result:** Maximum patient 35(87.5) treated according to ONTT protocol while 5 (12.5%) treated with oral steroids alone. Maximum 33 eyes (70.2%) attain BCVA > 6/36 after 1st follow-up (with in 1 month) while 10(21.3%) eyes attain BCVA of 6/6 after 1st follow-up. 11 eyes (25.6%) attain BCVA 6/6 after II follow-up.**Conclusion:** General prognosis for recovery of vision was good and was slightly worse in more severely affected cases in the present series. Pallor of the optic disc and defect of vision did not always correspond—3 eyes which showed temporal of the disc at the end of follow up had a final vision of 6/9 or better in each eye.This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.For reprints contact: reprint@ipinnovative.com

1. Introduction

The optic nerve begins from the optic chiasma, runs forwards, laterally and slightly downwards to the optic foramen.¹ It is a flattened band, which is initially covered only by pia mater, but as it enters the optic canal, it gets a covering of arachnoid mater and the periosteum of the canal is a continuation of the duramater. Thus in the optic canal the optic nerve has all three sheaths and the cerebrospinal fluid lies between pia and arachnoid matter.²

Papillitis and intraocular optic neuritis – are synonymous terms; both indicate neuritis of the ophthalmoscopically visible part of the optic nerve. Papillitis is a form of optic neuritis characterised by swelling of the optic disc – an anteriorly situated form of optic neuritis.³

Retrobulbar Neuritis – is term which Walsh uses to indicate any neuritis located far enough behind the lamina cribrosa so that at onset its effect are not visible with the ophthalmoscope. The lesion may be confined to the core of the nerves or it may involve the entire cross-section of the nerve.⁴

The Optic Neuritis Treatment Trial (ONTT) randomized 457 acute optic neuritis patients within 8 days of onset to treatment with oral prednisone (1 mg/kg daily for 14 days), intravenous methylprednisolone (250 mg every 6 hours for 3 days) followed by oral prednisone (1 mg/kg daily for 11 days), or oral placebo. In almost all patients, regardless of treatment group and initial severity of visual loss, some improvement began within the first 30 days. Among the 278 patients with baseline visual acuity of 20/50 or worse, all patients improved by at least 1 line of visual acuity, and all but 6 patients improved at least 3 lines by 6 months.

* Corresponding author.

E-mail address: ide_345@yahoo.co.in (I. D. Chaurasia).

Although baseline visual acuity was the best predictor of the 6-month visual acuity outcome, even among those patients with severe visual loss of counting fingers or worse, visual recovery to 20/40 or better occurred in 81.8% of patients.⁵

We included 40 patients of optic neuritis in our study to evaluate the final ophthalmological and neurological outcome after treating them according to the ONTT protocol.

2. Materials and Methods

This study was conducted at Gandhi Medical College & Hamidia Hospital, Bhopal from the Eye OPD & Neurology OPD. 48 eyes 40 different patients suffering from optic neuritis were selected for the present study after obtaining approval from the institute's scientific and ethical committee

Each patient was examined in detail under the following headings. Detailed medical and ophthalmic history was taken especially about mode, duration and course of the disease. Especially drug intake, alcoholism. Smoking, pregnancy, lactation, convulsions, pyrexia, history suggestive of TB, syphilis, neurological deficit etc.

General physical examination - with emphasis on signs of anaemia, protein calorie malnutrition, vitamin deficiency, generalized lymphadenopathy, sinusitis, septic foci. Specific emphasis on neurological examination was made.

Females – Pregnancy, lactation, menopause were noted.

Ophthalmic Examination: Local – Lid, adnexa, anterior segment of eyeball were examined. Visual acuity – Using Snellens whole line opto types, the visual acuity was recorded. Best corrected visual acuity on three consecutive follow up visits, 1st (1 month) 2nd (1 month – 6 month) 3rd (6 months – 1 year), As soon as the patient was diagnosed to be suffering from optic neuritis, he was put on the following treatment.

1. According to optic neuritis treatment trial (ONTT) I.V. methyl prednisolone 1000 mg per day for three days than oral prednisolone (1 mg / kg daily) for 11 days.
2. Only oral steroids for patients who were not affording.
3. Multivitamins (especially BI, B6, B12)
4. Antacids

3. Results

Table 1: Treatment modalities in different cases

Total	ONTT (Optic neuritis treatment trial)	OS (Oral Steroids)
40	35	5
100%	87.5%	12.5%

Maximum patient 35(87.5) treated according to ONTT protocol while 5 (12.5%) treated with oral steroids.

Maximum 33 eyes (70.2%) attain BCVA > 6/36 after 1st follow-up (with in 1 month) table also shows 10(21.3%)

Table 2: BCVA after 1st follow-up

Visual acuity less than or equal to	No of eyes	Percentage
6/60	14	29.8
6/36	9	19.1
6/24	1	2.1
6/18	0	0
6/12	9	19.1
6/9	4	8.5
6/6	10	21.3
Total	47	100%

eyes attain BCVA of 6/6 after 1st follow-up.

Table 3: BCVA after 2nd follow up

Visual acuity less than or equal to	No of eyes	Percentage
6/60	11	25.6
6/36	6	13.9
6/24	1	2.3
6/18	0	0
6/12	8	18.6
6/9	6	13.9
6/6	11	25.6
Total	43	100%

11 eyes (25.6%) attain BCVA 6/6 after II follow-up

4. Discussion

As mentioned in the previous studies, time was a very important factor in the matter of rapid response of treatment. When started early, even seemingly worst cases recovered well.⁶ This is true in this series also, patients presented early recovered with 6/6-6/9 vision in 1st follow-up in comparison to patient presented after 1 week (13.2%), 2 weeks (0%), 3 weeks (0%).

In our study 39.5 patients presented with blurred hyperemic disc and at the time of IIIrd follow-up 25 (61%) out of 41 eyes showed normal color of the disc and 15 (36.6%) eyes showed a generalized pallor of the disc though vision in these eyes was 6/12 or better sowing thereby that pallor of the disc and vision do not always correspond, remarked that degree of pallor and defect of vision did not always correspond.⁷ There might be a vision of 6/6 together with definite pallor of the disc.

Most of the cases responded to i.v. steroids and 5 cases which had oral steroid treatment (due to non affordability) had a delayed recovery of visual acuity. Cleary et al⁶ stated that inflammation plays an important part in the product of clinical deficit and that its resolution is an important step in clinical remission. Thus steroids help in optic neuritis by controlling inflammation. A study found that although a trend towards faster recovery in favour of prednisolone was noted, no long term benefit was observed after 1 year.^{8,9}

5. Conclusion

General prognosis for recovery of vision was good and was slightly worse in more severely affected cases in the present series. Pallor of the optic disc and defect of vision did not always correspond—3 eyes which showed temporal pallor of the disc at the end of follow up had a final vision of 6/9 or better in each eye.

6. Source of Funding

None.

7. Conflict of Interest

The authors declare no conflict of interest.

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Author biography

Yogita Chaurasia, Senior Resident

ID Chaurasia, Associate Professor

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