

Ayurvedic Management of Toxic Nutritional Optic Neuropathy: A Case Report

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ABSTRACT:

Toxic Nutritional optic neuropathy (TNON) is a condition caused by chronic exposure to toxins or nutritional deficiencies, particularly involving B-complex vitamins. It commonly presents with bilateral, painless visual impairment, color vision defects, and central or centrocaecal scotomas. This study reports a case of 47-year-old male with a history of chronic alcohol and tobacco use who developed Toxic nutritional optic neuropathy with severely reduced vision in the right eye. He was managed with therapies including *Virechana with Trivrut lehya* (70gms) preceded by *Snehapana* with *Mahatriphaladya ghrita* in *arohana matra*, *Nasya with Bhringaraja taila* (10drops) for 7days, *Tarpana with Mahatriphaladya ghrita* for 7 days once daily, *Anjana* with *Neelotpaladi anjana* for 30 days, and internal medicines for 30days which included *Saptamruta Louha* 2 Tab with 10ml ghee and 5ml honey at night after food and *Triphala kashaya* 30ml mixed with 5ml of *Mahatriphaladya ghrita* at bed time. Post-treatment, the patient showed notable visual improvement in the right eye (from HM+ to 4/60) along with partial recovery in color vision. Ayurvedic treatments focusing on detoxification, ocular rejuvenation, and *dosha* balance played a critical role in cessation of pathology and enhancing vision. This case highlights the potential of classical Ayurvedic management in improving outcomes in toxic nutritional optic neuropathy when applied early and appropriately.

KEYWORDS: *Anjana, Nasya, Tarpana, Toxic Nutritional Optic Neuropathy, Virechana.*

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INTRODUCTION:

The toxic and nutritional optic neuropathies include a group of diseases characterized by damage to the papillomacular fibers of the optic nerve resulting in visual impairment secondary to exposure to certain toxins or because of deficiency of essential nutrients.^[1] Both toxicity and malnutrition acting independently or together have been implicated in the pathogenesis of these disorders. Though classified under optic neuropathy, the primary lesion may be localized to even retinal ganglion cells, nerve fiber layers, chiasm, or even the optic tracts. Most patients have multifactorial etiologies which include alcohol, tobacco abuse, and malnutrition.^[2] In case of nutritional neuropathies, damage to mitochondria is due to the lack of some crucial nutrients needed for their correct function, such as copper and group B vitamins, in particular B12 (cyanocobalamin), B1 (thiamine), and B9 (folic acid). These deficiencies cause an interruption of electron transport, and consequently a reduction of ATP production, leading to poor vitality of cells.^[3] Visual loss occurs, ranging from mild [6/7.5 (20/25)] to severe (finger-counting). Other clinical signs include disturbed colour perception and field defects typically characterized by a centrocaecal scotoma. Later, a temporal pallor of the disc becomes evident.^[4] Bilaterality is the rule, although in the early stages, one eye may be affected before the other becomes symptomatic.^[5] Treatment includes removing the toxic substance (e.g. discontinuation of the drug), stopping smoking or consumption of alcohol.^[6] Optic neuropathy, induced by nutritional deficiencies, is treated with appropriate supplementation, so it is crucial to accurately determine the missing vitamins and

elements.^[7] Prognosis is good, if complete abstinence from tobacco and alcohol is maintained. Visual recovery is slow and may take several weeks to months.^[8]

Clinical features like vision loss, field defects found in optic neuropathy are some of the features found in *Timira* of *Triteeya Patala*, a *Drishhtigata Netra Roga* (diseases of vision) in *Ayurveda* which is characterized by blurred appearance of even big objects, as if covered with clothes, visualization of only a part of the objects including field defects. Features like visualization of the darkness (scotoma) and foggy vision seen in toxic nutritional optic neuropathy is also found in *Raktaja timira*.^[9] The classical management of *Timira* includes *Snehapana*, *Raktamokshana*, *Virechana*, *Nasya*, *Anjana*, *Shirobasti*, *Basti*, *Tarpana*, *Lepa* and *Seka*.^[10]

A case of toxic nutritional optic neuropathy which was effectively managed with Ayurvedic treatment has been reported in this article.

CASE REPORT:

A 47-year-old male patient approached *Shalakya tantra* OPD on 14/5/2024 complaining of painless diminution of vision for both distant and near objects in Right eye since 8 years and in left eye since 1 month. The condition was also associated with watering, burning sensation and itching in both eyes since 1 month. Patient was reported to have normal vision in both the eyes 8 years back. Patient initially said to have experienced mild diminution of vision in right eye but ignored as his daily routine was not affected. Later over the years blurring of vision in right eye gradually increased but he neglected as he was able to carry out his daily activity with left eye which had normal vision.

Patient was a chronic alcoholic and cigarette smoker since 25+yrs. Patient was reported to have liver pathology (Data of which is not available except for yellowish discoloration of eyes and urine and pain abdomen as reported by the patient) which he developed 1 year ago and therefore had stopped consumption of alcohol as advised by the physician. Since one month patient observed increased diminution of vision in right eye and also blurring of vision in left eye for which he consulted an ophthalmologist at Bangalore medical college and research center where he was diagnosed with toxic/nutritional optic neuropathy of right eye and refractive error of left eye. He was prescribed with Inj Vitcofol 2cc IM (once in a day for 1 week, once in a week for 1 month and once in a month for 1 year) as his Serum Vit B12 was low (168.7) and for left eye powered glasses was prescribed which he used for some time and found mild relief.

Since the patient did not find satisfactory relief, he approached our OPD. On presentation, his visual acuity was HM+ (Hand movement) in right eye and 6/12 in the left eye. There was no improvement in visual acuity with pinhole. His best corrected visual acuity (BCVA) was 6/9 in left eye and in right eye correction could not be done. Color vision with Ishihara chart was found to be normal in left eye and it could not be assessed

in right eye due to lowered visual acuity. Anterior segment examination was found to be normal. His conjunctiva and cornea were clear in both eyes. Pupils in both the eyes were round, regular and reactive. Crystalline lens revealed Grade 1 Nuclear sclerosis in both the eyes. Fundus examination revealed temporal pallor of the disc in RE whereas it was normal in left eye. Perimetry (GHT) of RE was outside normal limits, Visual field index was 0% and Mean deviation was -32.71 with $p < 0.05$. Perimetry of left eye was within normal limits. Retinal nerve fiber layer thickness was reduced ($44\mu\text{m}$) temporally in right eye. Intra ocular pressure was 14 and 16 mm Hg in RE and LE respectively.

Treatment was aimed to improve the vision and to arrest the progression of visual impairment in right eye and to prevent the possible neuropathy changes in left eye by proper advocacy of medicines along with usage of *Pathya* including food habits and life style.

Color vision test with Ishihara chart:

Before treatment- RE- Could not be assessed due to reduced visual acuity, LE- Within normal limits

After treatment- RE- Was able to identify 11 plates out of 15 in Ishihara chart, LE- Within normal limits.

Table-1: Therapeutic intervention:

Treatment given	Drugs and dosage	Duration
<i>Bidalaka</i>	<i>Triphala + Yashti + lodhra churna</i>	3days
<i>Seka</i>	<i>Yashti + darvi + lodhra kashaya</i>	3days
<i>Shodana karma</i> <i>Internally</i> <i>Snehapana</i>	<i>Avipattikara churna</i> 6gms twice a day before food <i>Mahatriphaladya ghrita</i> (In dosage of 35ml, 75ml and 105ml) <i>Murchitha tila taila</i>	12days

<i>Sarvanga abhyanga</i> F/B <i>Bashpa sweda</i> <i>Virechana</i>	<i>Trivrit Lehya</i> – 70g	
<i>Samsarjana krama</i> advised	<i>Manda</i> (on the day of <i>virechana</i>), <i>peya</i> (on 1 st day), <i>vilepi</i> (on 2 nd day), <i>kbichdi/pongal</i> (on 3 rd day)	3 days
<i>Nasyakarma</i>	<i>Bhringaraja taila</i> (10 drops in each nostril)	7 days
<i>Tarpana</i>	<i>Mahatriphaladya ghrita</i> once daily in the morning	7 days
<i>Putapaka</i>	<i>Aja mamsa</i> , <i>ghrita</i> , <i>madhu</i> , <i>vasa</i> , <i>guduchi</i> , <i>punarnava</i>	3 days
<i>Padabhyanga</i>	<i>Murchita tila taila</i>	30 days
<i>Internally</i>	<i>Saptamruta louha</i> (2 Tab with 10ml ghee and 5ml of honey at bed time after food) <i>Triphala kashaya</i> (30ml HS with 5ml of <i>Mahatriphaladya ghrita</i>)	23 days
<i>Anjana</i>	<i>Neelotpaladya anjana</i> once in a day	30 days

Table-2: Result:

Unaided Visual acuity Distant vision	Before treatment (14/5/2024)	After <i>virechana</i> (25/5/2024)	After <i>nasya</i> and <i>tarpana</i> (18/6/2024)	After follow up (20/7/2024)
BE	6/12(P)	6/12(P)	6/12	6/12
RE	HM+	FC+	3/60	4/60
LE	6/12(P)	6/12(P)	6/12	6/12

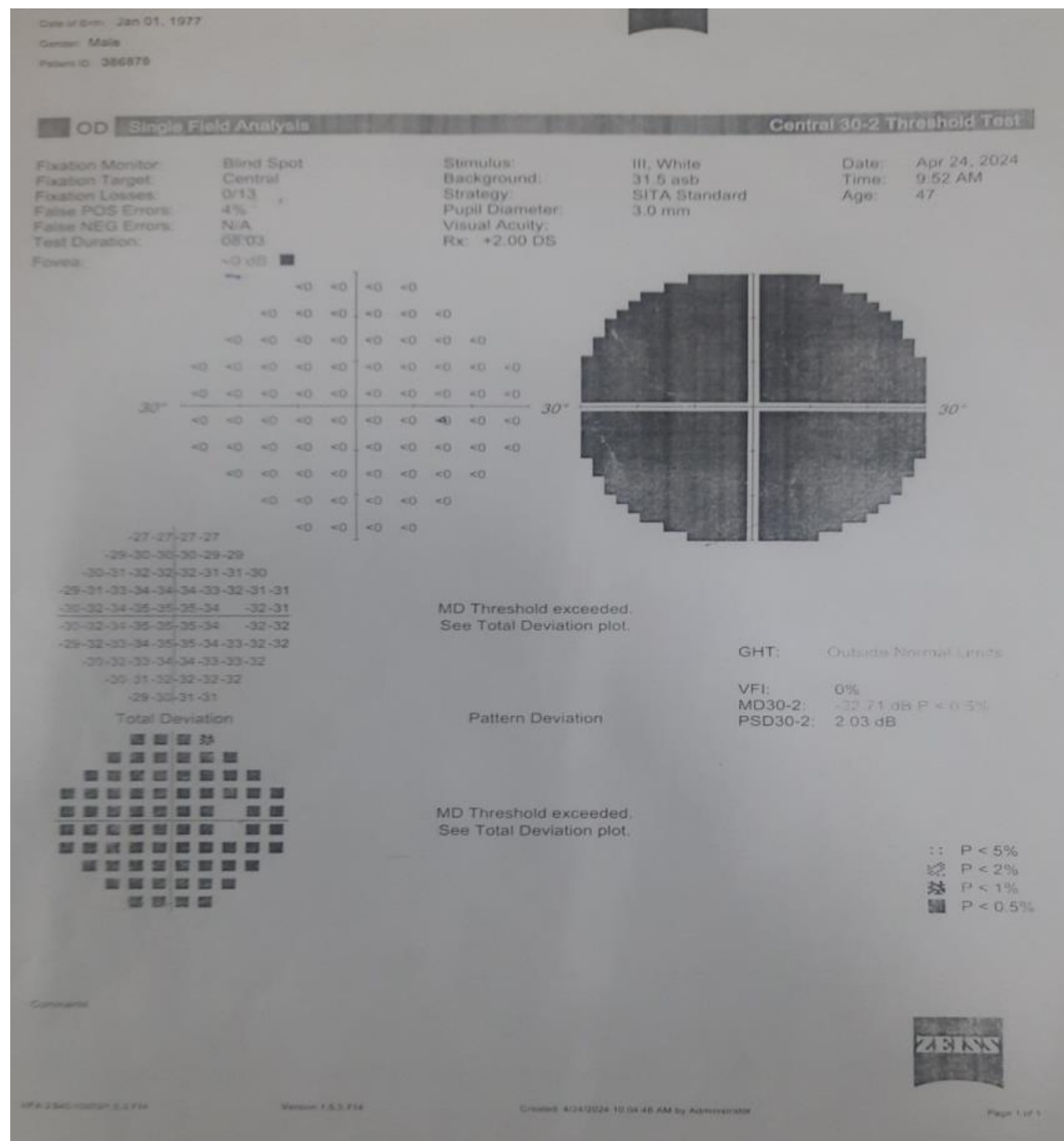


Figure-1: Perimetry findings of patient before treatment

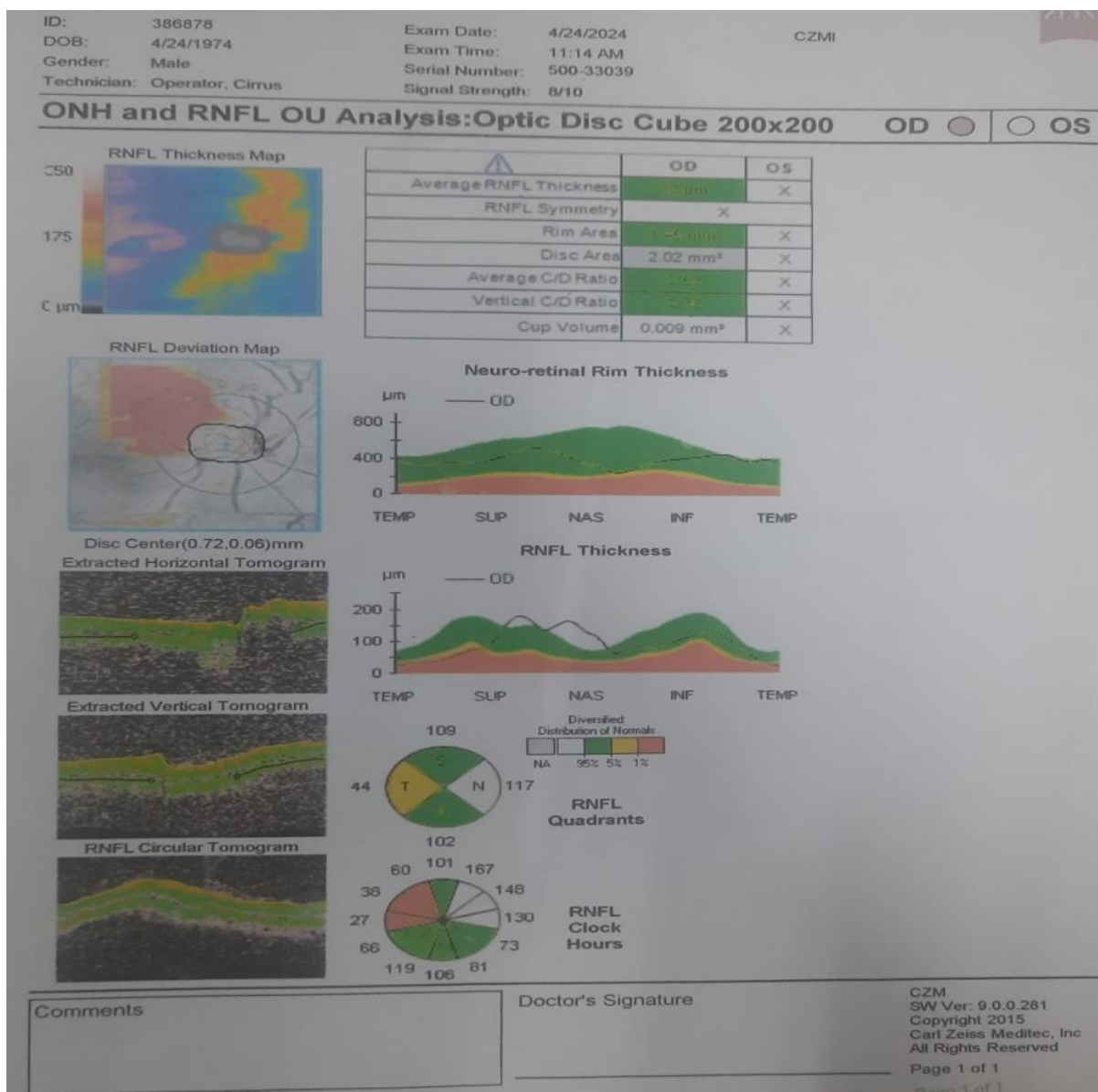


Figure-2: ONH and RNFL thickness before treatment

DISCUSSION:

Though the condition is usually bilateral, in this case, unilateral optic neuropathy was observed. One eye may be affected earlier in early stages of this disease and therefore there is a possibility of the other eye being affected in future. Some of the features of *triteeya patalagata timira* and *raktaja timira* are similar to clinical features of Nutritional optic neuropathy; hence treatment of *timira* was

adopted in this condition. Etiological factors observed in the above condition were excessive alcohol consumption and excessive smoke inhalation which is also mentioned in *Ayurveda* classics under the etiology of *netra rogas*. These factors lead to *agni dushti* followed by vitiation of *pitta pradhana tridosha* and *rakta*. These vitiated *doshas*, moving upward through *urdhwagami siras*, localize in the *drushti mandala*, and subsequently cause *Triteeya*

patalagata raktaja timira. In this condition, *Bidalaka* with *Triphala*, *Yashti* and *Lodhra churna*, and *Seka* with *Lodhra*, *Darvi* and *Yashti kashaya* were administered for 3 days, as patient exhibited *Saama lakshanas* such as mild burning sensation and watering at presentation.

Virechana (purgative therapy) a *panchakarma* procedure which pacifies *pitta dosha* and also mentioned in *timira chikitsa* was undertaken as the first line of treatment. *Avipattikara churna* was given for *ama pachana* for 2 days. *Snehapana* was given for 3 days with *Mahatriphaladya ghrta* which has *tridoshashamaka* and *chakshushya* properties followed by *vishrama kala* for 3 days. *Virechana* was given with *Trivrut lehya* indicated in *timira*. *Virechana* by virtue of its *sukhma* and *vikasi guna* spreads throughout the body and expels the morbid *doshas* and toxins from the body. After *virechana*, *Visual acuity in right eye* had improvement from HM+ to FC+.

Acharya Charaka has mentioned *nasa* as *dvara* for *shiras* and when medicine is instilled through the nostrils, it reaches *shringataka marma* from there it spreads through the vessels of eyes, nose, throat, ears and so on to the head and expels the morbid *doshas*. *Nasya karma* with *Bhringaraja taila* mentioned in *vangasena sambhita* for *timira* which promotes vision instantly was incorporated. *Bhringaraja taila* contains *bhringaraja*, *yashtimadhu* and *godugdha* possessing *pitta shamana* properties and has *rasayana*, *balya* and *vata shamana* properties.^[10]

Tarpana is one among the *kriyakalpas* offering both preventive and curative benefits for maintaining healthy eyes. *Tarpana* with *Mahatriphaladi ghrta* having *tridosha shamaka* and *chakshushya* property which is said to cure *timira*, *kaca*, *adrushiti* and *mandadrushiti*,

imparting vision of that of *grudhra* was used in this condition.^[11] *mahatriphaladi ghrta* possesses amphipathic properties i.e having both lipophilic and hydrophilic characteristics since it is processed with herbal decoctions and pastes and hence it can readily cross cornea. Higher viscosity of *ghrita* allows increased tissue contact time and hence higher local bioavailability of the medicine due to which active components can penetrate into the deeper ocular tissues and even cross blood retinal barrier, promoting effective nourishment and therapeutic action. Majority of the drugs in *ghrita* contain antioxidants, which reduce the free radicals that cause oxidative damage to the eye. *Ropana* type of *putapaka* which included drugs like *aja mamsa*, *tikta dravyas* like *guduchi* and *vasa* along with *madhu* and *ghrita* was incorporated as there was involvement of *rakta dosha*. Internally *Saptamruta louha* indicated in *timira* was given with *ghrita* and *madhu* as *anupana* at bed time for 30 days.^[12]

After *nasya* and *tarpana* patient had improvement in visual acuity in right eye from FC+ to 3/60 at the time of discharge. *Neelotpaldya anjana* containing *Neelotpala*, *triphala*, *raktachandana* having *vata pitta shamaka* property which is mentioned in *netrarogadhikara* of *chakradatta* as *sadyo timira nashaka*^[13] was given. *Padabhyanga* was advised with *Moorchita tila taila* which is processed with *triphala*, *musta*, *manjishta* and *haridra* and hence possesses *chakshushya* property. *Acharya Vagbhata* stated that, two *Nadis* originating from the foot's midpoint ascend to the *Shirah Pradesh* and extend to the *Netra*, promoting vision.^[14] *Pathya ahara* advised included *amalaki* (Indian gooseberry), *shigru* (Drum stick leaves), *patola*, *karavella* (Bitter gourd), *vartaka* (Brinjal), *draksba* (Grapes), *matsyakshi*,

raktashali, mudga, java, punarnava, kukkuta and aja mamsa rasa. After follow up for 30 days visual acuity had improved to 4/60.

CONCLUSION:

This case report highlights the successful management of a patient diagnosed with toxic nutritional optic neuropathy through various ayurvedic treatments mentioned in our *sambitas*. Right eye was severely affected in this case and found significant level of improvement with treatment modalities such as *virechana* which helped in detoxification, *tarpana* and *nasya* which facilitated the rejuvenation of ocular tissues along with medicines with *chakrabhysya, pitta and rakta shamaka* properties which led to effective management of this condition. Early diagnosis, removal of causative factors and implementing appropriate Ayurvedic treatment, along with lifestyle and dietary corrections, can help in stabilizing and improving vision in this condition.

Limitation of study:

As this study was confined to a single case, larger sample size is required to confirm significant results of the treatment given.

Declaration of patients consent:

Informed consent was taken from the patient for publication of the case and for furnishing of the clinical details.

Consent of patient:

The written consent of the patient has been taken for publication and procedure without disclosing the identity of the patient.

Conflict of interest: The author declares that there is no conflict of interest.

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