



Ayurvedic Management of Pediatric Axial Myopia – Case Report

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KEYWORDS

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Loha, Masuradi
Ghrita.

ABSTRACT:

Objectives

The study aims to evaluate the efficacy of Ayurvedic management in Axial length and thereby reducing the Axial myopia in a pediatric patient, using a combination of traditional therapies, dietary guidelines, and lifestyle modifications.

Methods

A 11-year-old male with axial myopia, characterized by blurred distant vision, headaches, and eye strain, was treated over 28 days. The treatment protocol included:

1. Internal Therapy: Saptamrita Loha for systemic antioxidant and neuroprotective effects.
2. External Therapy: Netra Tarpana with Masuradi Ghrita for ocular nourishment.
3. Adjuvant Therapy: A regimen of 10 prescribed eye exercises to improve ocular strength and accommodative power.

The patient was advised on dietary modifications and lifestyle adjustments, such as limiting screen time and incorporating outdoor activities. Follow-up assessments were conducted on the 28th and 56th days to monitor treatment efficacy.

Findings

post-treatment results showed a reduction in axial length (A-scan: Right eye from 25.03 mm to 24.77 mm; Left eye from 22.91 mm to 22.50 mm), alleviation of symptoms, and improved visual acuity. Netra Tarpana enhanced blood circulation and reduced dosha imbalances, while Saptamrita Loha provided antioxidant and restorative benefits. Eye exercises further strengthened ocular muscles and improved accommodative power.

Conclusion

This case highlights the potential of Ayurvedic management, particularly Netra Tarpana and systemic Rasayana therapies, in treating axial myopia. These findings suggest a promising alternative to conventional therapies for refractive errors, warranting further large-scale studies.

Introduction

Axial myopia is a refractive condition caused by an increase in the axial length of the eyeball¹. This elongation alters the normal refraction of light, resulting in light focusing in front of the retina instead of directly on it². Individuals with axial myopia often experience

difficulty in seeing distant objects clearly, with symptoms such as blurred vision, eye strain, and headaches³. This condition typically manifests during childhood, often stabilizing by the mid-twenties⁵.

Lifestyle factors like prolonged screen time, excessive near work, and lack of outdoor activities have



contributed to a global rise in cases of axial myopia, especially among children and adolescents⁶⁻⁸. Current management strategies include prescription glasses, contact lenses, and surgical options^{9,10}. However, these approaches primarily address the symptoms rather than targeting the underlying pathophysiological changes, such as increased axial length. In Ayurveda, axial myopia is closely aligned with *Prathama Patalagata Timira*, a condition characterized by impaired distant vision caused by imbalances in the *Vata* and *Pitta doshas*⁴.

This Article discusses a comprehensive Ayurvedic treatment approach for axial myopia in an 11-year-old male patient using a combination of internal medicines, external therapies, ocular exercises, and dietary and lifestyle interventions. The results provide valuable insights into the potential of Ayurveda in managing refractive errors by addressing both symptomatic relief and anatomical changes.

Case Details

Demographic Information

- **Name:** XYZ
- **Age:** 11 years
- **Gender:** Male
- **Religion:** Muslim
- **Residence:** K.R. Nagar
- **Socioeconomic Status:** Lower middle class

Chief Complaints

The patient presented with the following complaints:

Blurring of vision for distant objects in both eyes for the past six months.

Associated headaches and eye strain, especially during reading and watching television, for four months.

History of Present Illness

The patient was reportedly asymptomatic until six months ago when he started experiencing difficulty in seeing distant objects clearly. The blurring of vision was insidious in onset and gradually progressed over time. It was accompanied by headaches and eye strain, particularly during prolonged near work, such as

reading or screen exposure. The patient denied any associated symptoms like pain, watering, or double vision.

Past Medical History

The patient had no history of systemic illnesses, trauma, or previous ocular surgeries.

Family History

There were no similar complaints in closely related family members, ruling out hereditary factors.

Personal History

- **Screen time:** 6-7 hours per day
- **Bowel habits:** Constipated
- **Sleep:** Sound
- **Diet:** Mixed diet with a preference for salty and spicy foods
- **Habits:** No addictions or other relevant habits

Examinations and Investigations

General Examination

The patient was cooperative during the examination. His general physical health appeared normal, with no signs of systemic illnesses.

Ocular Examination (Table 1)

1. **Visual Acuity:**

Reduced in both eyes for distant vision.

2. **Slit Lamp Examination:** (Table 2)

No apparent abnormalities or deformities observed in the cornea, lens, or anterior chamber.

3. **Fundus Examination:** (Table 3)

Normal findings, with no signs of Myopic Crescent or Tigroid Fundus.

Pre-Treatment Investigations

Axial Length Measurement (A-scan Biometry): (Figure 1)

Right Eye: 25.03 mm (indicating significant elongation).

Left Eye: 22.91 mm (borderline axial length).



Summary of Findings

The findings indicated axial myopia characterized by increased axial length in the right eye and borderline elongation in the left eye. The symptoms correlated well with *Prathama Patalagata Timira*, as described in Ayurvedic literature.

Final Diagnosis

Based on clinical examination and diagnostic findings, the patient was diagnosed with axial myopia, corresponding to *Prathama Patalagata Timira*.

Treatment Protocol

The treatment plan was designed to restore *dosha* balance, improve visual acuity, reduce axial length, and alleviate symptoms. The protocol included internal medications, external therapies, ocular exercises, and dietary and lifestyle recommendations.

1. Internal Medications

- ***Saptamrita Loha*:**

Dosage: 1 tablet once daily for 1 month.

Ingredients: *Triphala, Yashtimadhu, Lauha Bhasma*.

2. External Therapies

- ***Netra Tarpana*:**

Duration: Daily for 7 days.

Procedure: A medicated *Ghrita* (*Masuradi Ghrita: Masura, Pippali, Kshaudra, Saindhava Lavana, Ghrita*) was warmed and poured around the eyes, forming a therapeutic pool.

3. Ocular Exercises

The patient performed a set of 10 ocular exercises daily for 28 days. These included:

1. Sunning
2. Swinging Exercise (Bar Exercise)
3. *Triphala* Eye Wash
4. Palming
5. Distance Chart Reading
6. Candle Light Concentration
7. Candle Light Reading
8. Ball Exercise
9. Steaming Exercise
10. Cold Pad

4. Dietary and Lifestyle Modifications

- **Recommended Foods:**

Gooseberry, green gram, honey, milk, and ghee.

Vegetables like drumstick leaves.

- **Foods to Avoid:**

Excessively sour, salty, and spicy foods.

Heavy-to-digest items like curd and Fish.

- **Lifestyle Changes:**^{11,12}

Limited screen time.

Regular outdoor activities to reduce near work strain.

Daily massage of the legs with sesame oil to improve blood circulation and maintain *dosha* balance.

Results

Post-Treatment Investigations (Figure 2)

Axial Length (A-scan):

Right Eye: Reduced from 25.03 mm to 24.77 mm.

Left Eye: Reduced from 22.91 mm to 22.50 mm.

Symptomatic Relief

The patient reported significant improvement in visual acuity for distant vision. (Table 4)

Headaches and eye strain resolved by the end of the 28-day treatment period.

Follow-Up Findings

At the 56-day follow-up, the patient continued to experience sustained improvement in vision with no recurrence of symptoms. (Table 5) The ocular examination confirmed that the improvements in axial length and visual function were maintained.

Mode of Action of Treatments

1. ***Netra Tarpana*:**

The lipid-soluble nature of *ghrita* enhances the delivery of therapeutic substances to deeper ocular tissues.

Vitamin A and E in *ghrita* protect against oxidative damage and support retinal health.

The hydration and nourishment provided by *Tarpana* improve accommodation and reduce strain.



2. *Saptamrita Loha*:

Triphala restores glutathione levels in the lens, reducing oxidative stress.

Yashtimadhu balances the doshas and strengthens ocular muscles.

Lauha Bhasma improves blood circulation, nourishing the retina and other ocular structures.

3. Ocular Exercises:

Improve sensory-motor coordination.

Enhance blood circulation and accommodative power.

Discussion

Netra Tarpana and eye exercises contribute to the reduction in axial length (AXL) of the eyeball through various physiological mechanisms, including alterations in intraocular pressure (IOP), ocular blood flow, and autonomic nervous system (ANS) modulation. These changes collectively influence the biomechanics of the eye and its accommodative functions, which may help in the management of myopia and other refractive errors.

1. Pressure Modulation and Reduction in IOP:

Netra Tarpana exerts a controlled extraocular pressure on the lens, leading to a transient increase in axial length. However, the oleation and hydration effects of the procedure improve the elasticity of ocular tissues, potentially enhancing accommodation and stabilizing the changes induced by pressure. Studies have shown that reductions in IOP, whether achieved through mechanical or pharmacological means, are associated with a short-term decrease in AXL. This suggests that controlled alterations in IOP can influence the mechanical expansion and contraction of the globe, ultimately leading to a reduction in AXL over time¹³⁻¹⁵.

2. Ocular Blood Flow Regulation:

Dynamic eye exercises have been found to enhance ocular blood flow, leading to choroidal expansion and subsequent reduction in AXL. The increased perfusion to ocular structures improves metabolic exchange and may facilitate the restoration of normal eye shape. A direct correlation exists between IOP reduction and changes in AXL, further supporting the role of ocular blood flow modulation in controlling myopia progression¹⁶⁻¹⁸.

3. Autonomic Nervous System (ANS) Influence:

An imbalance in the autonomic nervous system has been implicated in myopia development. Exercise-induced autonomic modulation influences ocular accommodation, potentially affecting refractive error progression. Dynamic exercises that stimulate parasympathetic activity can enhance accommodative responses, counteracting the excessive elongation of the eyeball associated with myopia. The regulation of ANS balance through specific yogic practices and *Netra Tarpana* may help maintain optimal ocular function and prevent progressive axial elongation¹⁹⁻²¹.

In summary, the combined effects of *Netra Tarpana* and eye exercises contribute to axial length reduction through mechanical, vascular, and neural pathways. By optimizing IOP, enhancing blood flow, and modulating autonomic function, these interventions support ocular homeostasis and may serve as effective strategies for myopia control and visual health maintenance.

Axial myopia poses a significant challenge due to its progressive nature and potential complications. While conventional treatments focus on symptom management, Ayurveda offers a holistic approach by addressing the root cause through *dosha* balance, tissue nourishment, and lifestyle changes. The results from this case demonstrate the potential efficacy of Ayurvedic treatments in managing axial myopia.

Conclusion

The Ayurvedic protocol, including *Netra Tarpana*, *Saptamrita Loha*, ocular exercises, and dietary modifications, provided significant improvements in axial length and visual function in a patient with axial myopia. These findings suggest that Ayurveda may serve as a complementary or alternative approach for managing refractive errors. Further studies are needed to validate these results on a larger scale.

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Figures and Tables

	Right Eye	Left Eye
Visual Acuity- Distant Vision	6/24	6/9
Pinhole	6/18	6/6
Near Vision	N6	N6
BCVA	6/12	6/6



Pupillary Reflex – Direct Consensual	Brisk Present	Brisk Present
Hirschberg Reflex	Central	Central

TABLE 1: Ocular Examination on Day 1

	Right Eye	Left Eye
Eye Lids	Normal	Normal
Eye Lashes	Normal	Normal
Conjunctiva	Normal	Normal
Cornea	Normal	Normal
Anterior Chamber	Normal in depth in both center and periphery	Normal in depth in both center and periphery
Iris	Normal in colour and pattern	Normal in colour and pattern

TABLE 2: Slit lamp examination on Day 1

	Right Eye	Left Eye
Media	Clear	Clear
Optic disc - Colour	Pink	Pink
Margin	Well Defined	Well Defined
Shape	Round	Round
CD Ratio	0.5	0.5
Background Fundus	Normal	Normal
Macula	Healthy, Foveal Reflex +	Healthy, Foveal Reflex +

TABLE 3: Fundal Examination on Day 1

	Right Eye	Left Eye
Visual Acuity- Distant Vision	6/18	6/6
Pinhole	6/9	6/6
Near Vision	N6	N6
BCVA	6/9p	6/6

TABLE 4: Visual Acuity on 29th day

	Right Eye	Left Eye
Visual Acuity- Distant Vision	6/18	6/6
Pinhole	6/9	6/6



Near Vision	N6	N6
BCVA	6/9p	6/6

TABLE 5: Visual Acuity on 56th day

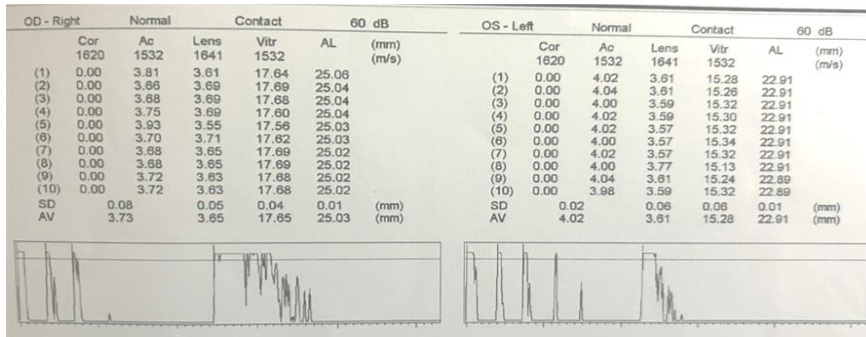


FIGURE 1: A scan BT

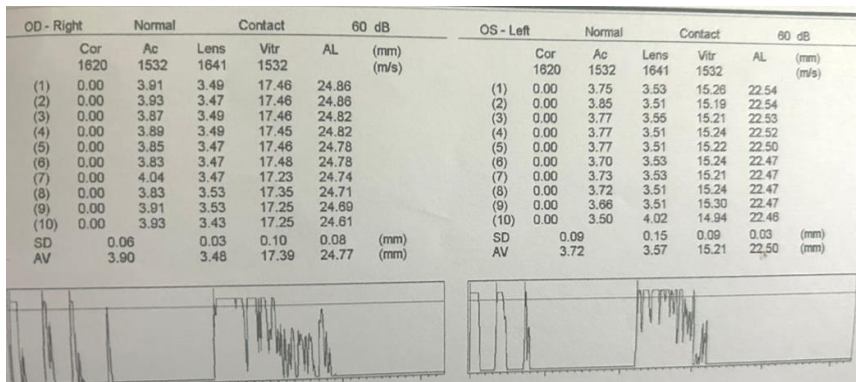


FIGURE 2: A scan AT