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Case Report

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An *Ayurvedic* Protocol to Manage Myopia in a 6-Year-Old Child: A Case Report

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ABSTRACT

Introduction: Myopia is a leading cause of visual impairment in children, especially schoolchildren. Prescription of spectacles is the sought-after modality of managing myopia. However, these neither correct nor prevent the progression of the refractive error. The cardinal symptom of myopia, the inability to see distant objects, may be compared with *Timira* (blurring of vision) in *Ayurveda*.

Case Report: A 6-year-old boy with the blurring of vision that was more in his right eye (OD) and who was previously diagnosed with myopia is presented here. He underwent a specially-tailored *Ayurvedic* treatment protocol comprising of oral medicines, *Netra Kriyakalpa* (local ocular therapeutics), and treatments for the head.

Results: Visual acuity improved to LogMAR 1.301 in the right eye OD at discharge and was maintained at a subsequent follow-up.

Conclusion: The main challenge was maintaining and improving vision. The results indicate the potential of Ayurvedic treatments to both manage myopia and to maintain, and improve in some cases, vision in children.

Key Words: Alternative methods, *Ayurveda*, Case Report, *Kriyakalpa*, Refractive error, *Timira*

INTRODUCTION

Uncorrected refractive errors are among the top causes of both visual impairment and blindness as per Vision 2020.[1] Among these, myopia is the leading cause of visual impairment in children, with a rapid increase in prevalence.[2] Myopia presents significant economic and societal impacts on individuals.[3] The Consortium for Refractive Error and Myopia (CREAM) study demonstrated that myopia's aetiology is multi-factorial rather than a single mechanism.[4] Conventional management options for myopia have either short-term benefits or significant side effects.[5] In light of the above, treatment options in contemporary and alternative medicine (CAM), including *Ayurveda*, may be sought.

The case of a 6-year-old male patient diagnosed with myopia and who underwent *Ayurvedic* treatments is presented in this report. The CARE guidelines were adhered to for ensuring transparency and effectiveness in reporting.[6] Written informed consent was obtained from the parents. Institutional ethics committee clearance was not required to prepare this report.

CASE REPORT

The patient presented with a blurring of vision that was more in his right eye (OD) since birth. He was inclined to watch television very closely and had difficulty in distant vision. He was diagnosed with myopia by an ophthalmologist and was advised of power spectacles, which he did not use. No significant illnesses were reported. His immediate family members do not complain of similar symptoms. The bowel was constipated and appetite, micturition, and sleep were normal. Review of systems and vital signs were within normal limits.

Unaided distant visual acuity was LogMAR 1.477 OD and LogMAR 0.301 in his left eye (OS). A -11.00 diopter (D)

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lens with a -1.50D cylinder and 50° axis corrected his vision OD to LogMAR 0.778, and a -1.25D lens with a -1.5D cylinder and 150° axis corrected his vision OS to LogMAR 0.176. Near visual acuity was N6 in both eyes (OU). His anterior segment showed a normal sclera and cornea, deep anterior chamber, and normal lens OU. Direct and consensual pupillary reflexes were sluggish OD and normal OS. Posterior segment examination by ophthalmoscopy showed normal media in both eyes (OU), optic disc with normal cup-to-disc ratio and absence of temporal crescent OU, healthy blood vessels with normal calibre OU, normal background with the absence of tessellations and retinal thinning OS, and lattice degeneration OD.

The patient was diagnosed with myopia and was prescribed a 13-day course of inpatient *Ayurvedic* treatment, which comprised oral medicines **(Table 1)**, *Netra Kriyakalpa,* and treatments for the head **(Table 2).** *Panchakarma*(bio-purification) therapies were not attempted on this patient as he was underage. He has advised foods rich in vitamins A, C, and E, coloured fruits, and green leafy vegetables.

RESULTS

Unaided DVA improved to LogMAR 1.301 OD and other readings were maintained. A follow-up consultation demonstrated the same readings in unaided DVA.

All medicines were manufactured by SreedhareeyamFarmherbs India, Pvt. Ltd., the hospital's GMP-certified drug manufacturing unit.

A timeline of events is provided **(Table 3).**

DISCUSSION

The condition of *DvitiyaPatalagataDosha* (humours invading the second layer of the eye) was explored based on the symptoms of this patient. The *Lakshana* (feature) of *"DurantikasthamRupamca*(unable to perceive distant objects)"[7] matched the patient's symptoms. *Tamira* is named when the *Doshas*invade the third *Patala* as per *Susruta*and the second *Patala*as per *Vagbhata.*

Medicines employed were not *Tikshna* (sharp) by nature due to the *Saukumaryata* (tender and delicate body structure), *Alpakayata* (under-developed organs), *Vividha Anna Anupasevana* (unfit GIT to receive all types of food), *AparipakvaDhatu* (tissues under the progression of transformation), *AkleshaSahatva* (stress intolerance), and *AsampurnaBala* (poor immunity).

The oral medicines were *Cakshushya* (good for eyes), *Brmhana* (nourishing), and *Vata Hara* (pacify *Vata*). The external therapies promoted vision and strengthened the eyes and the nerves. *Snigdha*(unctuous) medicines were for both *Pushti*(nourishment) as well as relieving *Timira,* a *NanatmajaVikara* of *Vata* according to *CarakaSamhita*.

Wisetone, prepared from *Asparagus racemosus*Linn.,*Zingiberofficinale*Rosc., *Piper longum*Linn., *Piper nigrum*Linn., *Holostemmaadakodien*R.Br., and *Glycyrrhyzaglabra*Linn., enhances the activity of the neurons. *KasyapaGhrta*and *KasyapaKvatha*areprepared from *Terminalia chebula*Retz., *Terminalia bellerica*Linn., *Emblicaofficinalis*Gaertn., *Adathodavasica*Nees., and *Berberisaristata*DC, and are indicated in *Drishti Rogas.* Eye Plus is prepared from *Terminalia chebula*Retz.,*Terminalia bellerica* Linn., *Emblicaofficinalis*Gaertn., and *Picorrhizakurroa*Royle ex. Benth, and is *Ropana*by nature and indicated for all eye conditions. Sunetra Junior is prepared from *Nelumbonucifera*Gaertn., *Ocimum sanctum* Linn., *Cinnamomumcamphora*(L.) Presl., and is indicated in eye conditions of patients under 16 years of age. *JatavedhaGhrta* is prepared from *Terminalia chebula*Retz.,*Terminalia bellerica*Linn, *Emblicaofficinalis*Gaertn., and *Holostemmaadakodien*R.Br., and is used for *Tarpana* in *Drishti Rogas. Vinayakanjana* is prepared from *Nelumbonucifera*Gaertn., and distilled water, and is indicated in all eye diseases.

Netra Dhara, a variety of classical *Seka*[8] practised in Sreedhareeyam, was done to cleanse the eyes and to prevent the increase of *Kapha* due to the application of *Sneha. Anjana,* done in the manner of classical *Ascyotana*[9], promoted vision. *Drishti Prasadana*and *Tarpana* was done to strengthen the nerves and to promote vision. The *Sneha*used for both procedures was *Vata Hara. Anna Lepa* was done for further pacification of *Vata.*

CONCLUSION

The main challenge, in this case, was an improvement of vision. However, improvement was observed due to healthy *Dhatus*being formed by the treatments, and the ability of the patient's body to acclimatize to the medicines. Usage of medicines that were *Brmhana, Samana, Mrdu,* and *Madhura,* as well as external therapies that employed application of *Ghrta* and *Taila* facilitated the formation of a healthy physique as well as strengthened the nerves. The results may be validated with large-scale sample trials and studies.

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Abbreviations:

DVA: distant visual acuity

NVA: near visual acuity

LogMAR: logarithm of the minimal angle of resolution

OD: oculus dexter

OS: oculus sinister

OU: oculus uterque

Author's Contributions

- **Dr. Sreekanth N. P.** conceptualized the article, collected and interpreted the data, and wrote the article.
- **Dr. RatnaPrava Mishra** reviewed the article and interpreted the data.
- **Dr. Jaya Shankar Mund** reviewed the article and interpreted the data.

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Table 1: Oral Inpatient and Discharge Medicines

Medicine	Dose	Anupama (post-prandial drink)	Duration
SaptamrtaLauha	1 tablet	*SukhoshnaJala*	14 days
JivantiCurna	1 tablespoon	Honey	14 days
KasyapaGhrta*	1 tablespoon	-	14 days
			2 months as discharge prescription
Wisetone*	1 tablespoon	-	14 days
			2 months as discharge prescription

Table 2: External Inpatient and Discharge Therapies

Treatment	Medicine	Duration	Procedure of Therapy
Netra Dhara	*KasyapamKvatha**	7 days	➢ The patient lay supine and was asked to blink as the decoction was poured in a thin stream from a height of 2 inches over the eyes.
Ascyotana	*JatavedhaGhrta**	6 days	➢ The patient lay supine and one drop of the medicine was instilled into the sub-conjunctival sac. The patient was asked to slowly rotate the eyes after installation with the eyes closed.
Anjana	Eye Plus*	7 days	
	*Sunetra Junior**	2 months	
Bandhana	Flowers of *Malati*	6 days	➢ *MalatiPushpa* was applied to the eyes and bandaging was done for one hour.
Drishti Prasadana^	*Vinayakanjana**	7 days	➢ The lukewarm medicine was taken and massaged first over the forehead, and then over the upper and lower eyelids from the inner canthus to the outer canthus. ➢ The massage was done over the inner aspects of the maxilla, outer canthus, inner canthus, supra-orbital margins, and eyebrows using the thumb and index fingers for 2-3 minutes each. Adequate pressure was applied to each of the points.

Table 2: *(Continued)*

Treatment	Medicine	Duration	Procedure of Therapy
Eye Massage	*Kshirabala*21 *Avartana*	2 months	➢ 2 drops of lukewarm oil were applied to the eyelids and massaged.
Tarpana	*JatavedhaGhrta**	7 days	➢ A circular fence was constructed around the orbits using *Masha* flour and water. The medicine, made lukewarm, was poured into the cavities. The patient was asked to blink frequently.
Siroveshtana	Powder of *Bala*and-*Vidari*mixed with *KacchuradiCurna*and*BalasvagandhadiTaila*	5 days	A semisolid paste prepared by mixing 45g of all ingredients with the desired liquid medium was smeared over a Cora cloth and applied to the head (area with the paste facing inwards) in the following manner: ➢ One end of the cloth was anchored above the right ear. ➢ The cloth was wrapped over the forehead above the eyebrows and towards the left ear. ➢ From the left ear, the cloth was wrapped around the back of the head and brought upwards around the head while the vertex is avoided. ➢ The other end of the cloth was applied to the top of the head. Any leftover paste was applied to the uncovered portion of the head.
Sirodhara	*BalasvagandhadiTaila*and*SasankaTaila*	4 days	➢ The patient lay supine on the treatment table. A thin cloth band was tied around the forehead. A pot with an 8mm hole in the centre of the bottom was suspended above the patient's head with ropes and a cotton wick was placed in the hole. The lukewarm was poured into the pot and was allowed to drain through the hole onto the patient's head. The pot was moved from side to side.

Table 3: Timeline of Events

Date	Events
2013	➢ The patient's mother gives birth to him without complications. ➢ The blurring of vision OD is detected.
2013-2020	➢ Diagnosed with myopia by an ophthalmologist and advised of power spectacles.
09/05/2020	➢ Consults Sreedhareeyam. A health questionnaire and screening for COVID-19 is conducted.
10/05/2020	➢ Advised inpatient management
11/05/2020	➢ **Unaided DVA:** LogMAR 1.477 OD, LogMAR 0.301 OS ➢ **Refraction:** ➢ LogMAR 0.778 OD with a -11.00D lens with -1.5D cylinder and 50° axis ➢ LogMAR 0.176 OS with a -125D lens with -1.5D cylinder and 150° axis ➢ **NVA:** N6 OU ➢ Anterior Segment: normal sclera and cornea OU, deep anterior chamber OU, normal lens OU ➢ Pupillary Examination: Sluggish reflexes OD, normal reflexes OS ➢ Posterior Segment Examination: Normal media and background OU, lattice degeneration OD ➢ Oral medicines are started ➢ Anjana and Netra Dharaare started. ➢ Drishti PrasadanamandSiroveshtanamare started.
15/05/2020	➢ Ascyotanais started.
16/05/2020	➢ Sirodharais started. ➢ Netra Dhara, Ascyotana, and Anjana are stopped.
18/05/2020	➢ Tarpana is startedl.

Table 3: ***(Continued)***

Date	Events
21/05/2020 14/07/2020	➢ All treatments and oral medicines are stopped. ➢ **Unaided DVA:** LogMAR 1.301 OD, LogMAR 0.301 OS ➢ **Refraction:** ➢ LogMAR 0.778 OD with a -11.00D lens with -1.5D cylinder and 50° axis ➢ LogMAR 0.176 OS with a -125D lens with -1.5D cylinder and 150° axis ➢ **NVA:** N6 OU ➢ **Unaided DVA:** LogMAR 1.301 OD, LogMAR 0.301 OS ➢ **Refraction:** ➢ LogMAR 0.778 OD with a -11.00D lens with -1.5D cylinder and 50° axis ➢ LogMAR 0.176 OS with a -125D lens with -1.5D cylinder and 150° axis ➢ **NVA:** N6 OU