

A SINGLE CASE STUDY ON EFFECT OF TARPANA IN MYOPIC ASTIGMATISM

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ABSTRACT

Astigmatism impairs the focusing ability of eyes at far and near distances. This causes distortion, blurred vision, eye strain and headache which results in difficult visual tasks such as reading, driving (especially at night), focusing on the black board and computer screen. Myopic astigmatism is a type of astigmatism. It happens when astigmatism is combined with near-sightedness, where the two curves are focused in front of the retina. Children with undiagnosed astigmatism may struggle in school, where teachers or parents can wrongly interpret it as a sign of a learning disability. It is important for all children to have a regular eye checkup. Myopia has become the leading cause of blindness. The increasing prevalence of school myopia in the past few decades may be a result of gene interaction. However, preschool myopia was accompanied with faster myopic progression and had greater risk of high myopia in later life. Some of the clinical features of myopia can be correlated with *Timira*. A single case study was undertaken to evaluate the role of *Tarpana* in myopic astigmatism. Visual acuity and auto refraction was evaluated before and after the treatment. There was a significant improvement in visual acuity of both eyes along with auto refraction. Thus, it can be concluded that *Ayurvedic* management is beneficial in myopic astigmatism.

Keywords: Astigmatism, Myopia, *Tarpana*, *Timira*.

INTRODUCTION

The eye is optically equivalent to the usual photographic camera. The human eye has a lens system, a variable aperture (the pupil) and a retina that corresponds to the film. Visual perception is the physiologic function of human eye¹. Refractive errors are categorized as spherical or cylindrical. There are three basic types of refractive errors: astigmatism, hypermetropia and myopia. The cornea is one of the components of ocular refraction. The cornea is clear front

window of the eye. A normal cornea is round and smooth, like a basketball. In astigmatism, the cornea curves more in one direction than in the other, like a football².

Myopia, commonly referred to as shortsightedness, is a common cause of visual disability throughout the world. The World Health Organization has grouped myopia and uncorrected refractive error along with cataract, macular degeneration, infectious disease and

vitamin A deficiency among the leading causes of blindness and vision impairment in the world.³ People with myopia can be classified in two groups, those with low to modest degrees of myopia (referred to as “simple” or “school” myopia, 0 to -6 dioptres) and those with high or pathological myopia (greater than -6 dioptres). Simple myopia can be corrected with spectacles or contact lenses, whereas “high” (pathological) myopia is often associated with potentially blinding conditions such as retinal detachment, macular degeneration, and glaucoma.

Astigmatism is one of the most common childhood vision problems. About 10% of preschool children have astigmatism, according to a study funded by the National Eye Institute (NEI), which is part of the National Institutes of Health (NIH).

The prevalence of myopia is increasing worldwide, and myopia is becoming a major epidemiological problem. In 2000, according to the latest studies, 1406 million people (i.e., 22.9% of the world’s population) suffered from myopia, and 163 million people (i.e., 2.7% of the world’s population) suffered from high myopia. In 2050, a total of 4758 million people worldwide (49.8% of the world’s population) are expected to be myopic, and 938 million people (9.8% of the world’s population) are expected to suffer from high myopia.⁴ The prevalence of this refractive error varies according to age, ethnicity, and geographical locality.⁵ Myopia is increased more during the winter and least during the summer months.^{6,7} It is unknown, if this might be because of increased school work, decreased sunlight or decreased time outside.

High myopia is associated with co morbidities that increase the risk of severe and irreversible loss of vision, such as dense cataract, retinal detachment, sub-retinal neovascularization, and glaucoma.^{8,9,10} Growth in the prevalence of myopia leads to the growth of socioeconomic stress in society.

Due to the significance of myopia as a global public health concern, it was chosen as a priority for Vision 2020, World Health Organization's global initiative for the elimination of avoidable blindness by year 2020.¹¹

Though the modern counterpart has made tremendous and remarkable progress in the field of ophthalmology

still satisfactory and universally accepted treatment for myopia is not available. Myopia progression is irreversible and there is no cure. Methods for the correction of myopia are not without complications, including corneal infections due to contact lens wear and corneal scarring and persistent corneal haze from refractive surgery.¹² Refractive surgeries for treatment of myopia are both costly and unsuitable for children's eyes and do not change axial elongation, which is the commonest source of myopia.¹³ Hence, the *Ayurvedic* science can be explored to find a better alternative to manage this condition.

Myopia closely resembles with *Timira* involving first and second *Patala*, in terms of symptoms, anatomical structures involved, and the pathogenesis of the disease. Though various drugs and local therapeutic procedures like *Nasya*, *Anjana*, *Akshi Tarpana*, etc., have been mentioned in *Ayurvedic* texts for the management of *Timira*, but *Akshi-Tarpana* is the foremost on account of its sound literary and practical evidences.

In *Timira* (myopia), *Chakshushya*, *Rasayana*, and *Tridosha* mitigating action might be helpful. *Ghrita* is one among the best *Rasayana* drugs and *Jeevanti* is one among the best *Chakshushya* drugs, and most of the contents of *Jeevantiyadi Ghrita*¹⁴ have *Tridosha* pacifying action. So *Jeevantiyadi Ghrita* having all the properties was selected for the study.

A case study

A 8 yrs male patient, residing in Bengaluru, Karnataka, came to the *Shalakya* OPD, Government Ayurvedic Medical College, Bengaluru, Karnataka, with complaints of diminution of distant vision in both eyes since 2yrs.

OPD NO-14217

Date of OPD visit-28/4/19

Chief complaints - Diminution of vision in both eyes since 2yrs.

History of present illness

Patient was apparently asymptomatic before 2yr, later he developed gradual painless diminution of distant vision in both eyes. After consulting an ophthalmologist at private hospital he was diagnosed with myopic astigmatism in both eyes and was advised for spectacles. But he didn't get much relief even after using

spectacles. So his parents brought him to *Shalaky* OPD for further management on 28/4/2019. The very

next day *Ayurvedic* treatment was started after detail assessment of his visual acuity and history.

Past history

Nothing significant.

Table 1: Autorefraction

Right eye			Left eye		
SPH	CYL	AXIS	SPH	CYL	AXIS
-9.0D	-2.5D	15°	-9.0D	-1.5D	175°

Table 2: Visual acuity –before treatment

	Distant vision		Near vision	
	Without glass	With glass	Without glass	With glass
OD	6/24	6/12	N ₁₂	N ₆
OS	6/24	6/12	N ₁₀	N ₆

Table 3: Treatment given

Date	Procedure	Duration
29/4/2019 to 5/5/2019 (1 st sitting)	<i>Tarpana with Jeevantyadi Grutha</i>	7days
6/4/2019 to 7/5/2019 (1 st sitting)	<i>Snehana Putapaka</i>	2days
7/6/2019 to 14/5/2019 (2 nd sitting)	<i>Tarpana with Jeevantyadi Grutha</i>	7 days
15/5/2019 to 16/5/2019	<i>Snehana Putapaka</i>	2days

Table 4: After treatment visual acuity

1 st sitting	Distant vision		Near vision	
	Without glass	With glass	Without glass	With glass
OD	6/36	6/9(P)	N ₁₀	N ₆
OS	6/24(p)	6/9(P)	N ₁₀	N ₆
2 nd sitting	Distant vision		Near vision	
	Without glass	With glass	Without glass	With glass
OD	6/24	6/9	N ₆	N ₆
OS	6/18	6/9	N ₆	N ₆

Table 5: Autorefraction after treatment

1 st sitting	Right eye			Left eye		
	SPH	CYL	AXIS	SPH	CYL	AXIS
	-7.0D	-2.5D	15°	-8.0D	-1.5D	175°
2 nd sitting	-6.5D	-2.5D	10°	-7.0D	-2.5D	170°

Result

There was significant improvement in visual acuity and auto refraction of both eyes.

DISCUSSION

In *Ayurveda*, the clinical features related to visual disturbances are seen only in *Drishtigata Rogas*. Hence, all cases of visual disturbances can be correlated under the broad heading of the *Timira – Kacha – Linganasha* complex. A part of the clinical features

of *Timira* (first and second *Patala*) can be correlated with the most important refractive error, myopia. In Ayurvedic classics, we find the concept of *Chakshushya* and many food items, drugs, therapeutic procedures explained which are said to improve or enhance visual acuity as well as improve the health of the eye.

Tarpana - Considering the *Doshakarma*, the trial drug appears to be predominantly *Vatashamaka* followed by *Pittashamaka* and *Kaphashamaka* (by virtue of its *Rasa*, *Guna*, *Veerya*, and *Vipaka*). Thus, the overall effect of the compound drug is *Vata Pradhana Tridosha Shamaka* and hence it disintegrates the pathology of *Timira*, which is also *Vata Pradhana Tridoshaja* in its manifestation.

The lipophilic action of *Ghritha* facilitates the transportation of the drug to the target organ and finally reaching the cell, because the cell membrane also contains lipid. This lipophilic nature of *Ghritha* facilitates the entry of drug into the eyeball through the corneal surface since the corneal epithelium is permeable to lipid-soluble substances and lipid-soluble substances cross the corneal epithelium irrespective of their molecular size. This facilitates the action of drug by two ways – first by allowing more absorption of the drug by the corneal surface and secondly by exerting direct pressure upon the cornea. There may be changes in the refractive index of the cornea causing less convergence of light rays.

Putapaka-Putapaka procedure is very necessary in the *netra rogas* because it is meant to facilitate the absorption and assimilation of *Grutha* after *Tarpana*, it empowers the eyes and helps to improve the vision⁽¹⁵⁾ as in *Timira* (refractive error) *Kacha* etc...it improves the strength of eyes.

CONCLUSION

In the reduction of the dioptric power, *Jeevantiyadi Ghritha* has shown better results. The duration of the treatment is short; hence, for reaching any definite conclusion, further long-duration studies are needed. Since the study has shown interesting results, it is recommended that the study should be carried out on a large number of patients with longer duration to evaluate and analyze the results.

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