

Clinical Research

Comparative study on the effect of *Saptamrita Lauha* and Yoga therapy in myopia

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Abstract

Background: Myopia is very common ophthalmic disease especially in children and adolescence. In Ayurvedic texts, only by the main feature impairment of distant vision myopia can be correlated with *Drishtigata Rogas* (2nd *Patalgata Timira*). **Aim:** To compare the effect of *Saptamruta Lauha* and Yoga therapy in myopia. **Materials and Methods:** In present study, a total 60 patients with age group between 8 to 30 years were selected randomly from the out-patient Department of *Swasthavritta* and *Shalakyatantra* Department of Government Ayurveda College, Trivandrum, and were divided in two groups. In Group A, *Saptamrita Lauha* 250 mg twice daily with unequal quantity of honey and *Ghrita* was administered while in Group B, patients subjected to Yoga therapy (*Jala Neti, Nadi Shodhana, Shitali Pranayama* and point *Tratak*) for 3 months duration with 1 month follow-up. **Results and Conclusion:** The result obtained from the study reveals that there is no significant reduction in the visual acuity and clinical refraction, but associated changes were observed as reduced in group B when compared to group A. However, relief from headache was found to be equally effective in both the groups.

Key words: Jala Neti, Nadi Shodhana, point Tratak, Sapthamrita Lauha, Shitali Pranayama

Introduction

Visual disturbance is represented as one of the most complex problem in the field of ophthalmology and has been of great interest ever since the dawn of human life. Now a day, myopia especially in children and adolescence is quite common ophthalmic disease and seldom exceeds 5-6 D. Myopia is that dioptric condition of the eye in which parallel rays of light from infinity come to a focus in front of the retina when accommodation is at rest. Glasses neutralize the effect of such conditions but do not relieve the cause of the trouble, so in many cases, despite using glasses the disease continues to progress.

Primary symptom of myopia is the blurred vision for distance and it is associated with some other symptoms such as headache, pain in the eye, watering of the eye, eye strain, heaviness of the eye.

Ophthalmology was recognized as a branch of *Shalakya Tantra* in Indian Medicine. *Acharya* Sushrata (a pioneer of ancient Surgery)

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had mentioned 76 diseases in the eye. These diseases are more or less comparable with present trends of modern ophthalmology.

However, in Ayurvedic texts there is no independent disease which perfectly correlates with myopia. By the main feature impairment of distant vision myopia can be correlated with *Drishtigata Rogas* (2nd *Patalgata Timira*).^[1]

The prevention of good eye sight is almost impossible without proper eye education and mental relaxation. By the education of the mind and the eyes through some exercises, the muscles of the eye can be trained to bring the blurred image to a focus. [2] Some Yoga procedures like *Pranayama*, *Trataka* and *Jala Neti* (one of the procedure in *Shatkarma*) are recommended with high emphasis. Similarly few Ayurvedic drugs like *Saptamritha Lauha* is also claimed to have beneficial effects. [3] Keeping these views into consideration present clinical study was planned.

Materials and Methods

A total 60 patients of the age group 8 to 30 years were selected randomly from the outpatient Department of *Swasthavritta* and Department of *Shalakyatantra*, Government Ayurveda College, Trivandrum, within inclusion criteria and were treated in two groups. The 30 patients of Group A were treated with *Saptamritha Lauha* and patients of B Group in similar number were subjected to Yoga therapy.

Inclusion criteria

- I. Chief complaints
 - 1. Blurring (dimness) of distant vision
 - Difficulty in changing the focus from one distance to another.
- II. Associated symptoms
 - 1. Head ache
 - 2. Pain in the eye
 - 3. Watering of the eye
 - 4. Eye strain
 - Heaviness of the eye.
- III. Patient having myopia with refractive index up to 6D.

Criteria for diagnosis

The patients were interrogated and examined in accordance with performa. Personal history and family history, general, routine and systemic examination was carried out to rule out other associated diseases.

- Examination of Visual Acuity (V.A.) (testing with pin hole aperture in cases having reduction in V.A.)
- Retinoscopy
- Post-mydriatic test or subjective verification of refraction for confirming diagnosis
- The symptoms mentioned in the text books of ophthalmology were considered
- Routine examination of blood, urine and stool.

Exclusion criteria

- Patients having systemic disease e.g. diabetes mellitus or any endocrine diseases, hypertension, rheumatoid arthritis or other arthritic conditions, rheumatic heart disease
- Patients below 8 years and above 30 years
- Patients suffering from infectious diseases e.g. tubercular infection, viral; bacterial or fungal conjunctivitis, trachoma and blepharitis
- Congenital myopia and pathological myopia
- Patients having refractive index more than 6D
- Myopia associated with other ocular diseases such as cataract, glaucoma, etc., and other refractive errors such as hypermatropia.

Parameters for assessment

Patients fulfilling the diagnostic criteria were admitted to analysis by opting following assessment criteria:

- For assessment of blurring of distant vision the visual acuity and diopteric power were tested. For assessment of V.A. was done as adopted by Kaith et al. and the dioptric power of the patients were given score for categorizing as below:
 - Diopteric power grading

Normal : 0D
 Mild : 0-2D
 Moderate : 2-4D
 Severe : 4-6D

- 2. The following symptoms were given score as below:
 - a. Headache
 - No headache 0
 - Occasional dull aching pain (Mild) 1
 - Off and on headache that interferes with routine work; but bearable (Moderate) - 2

- Severe headache experienced often and requires analgesics (Severe) 3.
- b. Watering of the eye
 - No watering of eye 0
 - Slight watering of eye; on strain (Mild) -1
 - Off and on watering of eye even without any strain needs hanker chief at the interval of 3 or more h (Moderate) - 2
 - Excess irritable watering of eye require frequent use of handkerchief (Severe) - 3.
- c. Heaviness in eye
 - No heaviness in eyes 0
 - Patient complaints of heaviness in eyes on reading/writing more than 3 h and subsides after rest to eyes or sleep (Mild) - 1
 - Patient complaints of heaviness in eyes on reading/writing less than 3 h but more than 1 h and subsides an rest to eyes or after sleep (Moderate) - 2
 - Heaviness even in reading less than 1 h and interfering with routine work (Severe) 3.
- d. Eye strain
 - No eye strain 0
 - Occasional eye strain on reading (Mild) 1
 - Off and on eye strain on reading (Moderate) 2
 - Eye strain continuous even without reading (Severe) 3.
- e. Pain in the eye
 - No pain in the eye at all 0
 - Occasional pain on reading/writing sustains more than 1 h (Mild) - 1
 - Pain in the eye on reading/writing sustains less than 1 h (Moderate) 2
 - Continuous pain in the eye even without reading/writing (Severe) 3.
- 3. Overall effect of therapy on clinical symptoms was assessed by grading the symptoms as below:

Observation	Grade
Absence of any symptom	0
Mild grade	1
Moderate	2
Severe	3

The graded values were later totally and individually scored and assessed statistically to find out the rate of effect of the treatment. The age, sex, occupation, dietary habits, socio economic status, *Prakriti* of the patient, reading habit, sleep pattern, recreational history were also recorded and assessed statistically.

The effect of the treatment in each group was assessed separately by analyzing the pre-treatment and post-treatment data, scores and values. The effect for Yoga therapy on myopia was assessed and analyzed statistically by comparing the result of the two groups by applying Chi-square test.

Ingredients of drug

Ingredients of Saptamrita Lauha (taken in equal parts)

1. Amalaki: Emblica officinalis Gaertn

- 2. Haritaki: Terminala chebula Retz
- 3. Vibhitaki: Terminala bellirica Gaertn
- 4. Yashti Madhu: Glycyrrhiza glabra Linn
- 5. Lauha Bhasma.

Dose

A dose of 250 mg Saptamrita Lauha with 6 g honey and 12 g Ghrita twice daily for 3 months.

Yoga procedures

Yoga is an ancient science. Hathayoga, is concerned with the harmonization of forces within the body and the mind through various methods of physical and mental cleaning. The techniques of Hathayoga work on cleansing and purifying all the organs of action. Hathayoga includes only 6 Shatkarmas or groups of cleansing techniques.

- 1. Jala Neti (saline nasal irrigation) is an important part of Shatkarma because it removes the mucus blocking from nasal passage which is important before practicing Pranayama. [4] The tear ducts, which connect from the eyes into the nasal passage, get the same drawing out effect as the sinuses, resulting in a brighter, clearer sense of vision. It was done with proper procedure daily in the morning.
- 2. Pranayama
 - a. Nadi Shodhana Pranayama
 - Stage I: Without Kumbhaka
 - Stage II: With Kumbhaka.

When the patient is acquainted with I Stage then advised to do the II Stage for 10-15 min daily.

- b. *Shitali Pranayam*The time taken was 5-8 min daily.
- 3. Trataka

Point Trataka was performed in 2 stages for 1-10 min daily.

Observations

A majority of patients (36.77%) were reported in the age group of 18-22 years followed by 26.66% in the age group of 23-27 years and 20% in the age group of 13-17 years. Data shows that it is a disease of the males (71.66%). And majority of the patients (85%) were Hindu, this may be due to Trivandrum City is dominated by Hindu population; with regard to socio-economic status majority of cases were from middle class having moderate nutritional status (78.33%). Regarding *Prakriti*, *Vata-Kaphaja Prakriti* individuals were found to be more prone (90%).

Nearly 100% subjects were found to have faulty reading habits, (86.67%) were doing increased near work under low

illumination, (78%) were habitual to spent their free time in near work hobbies i.e. chess, T.V. etc., (71.67%) had habits of Divaswapna and Ratrijagrana. Students (78.33%) were more likely to develop myopia. A positive family history was found in (71.67%) of the patients. In 28.33% of the patients, myopia detected in between 12 and 14 years of age. Chronicity study reveals that most of the cases were in the initial stage of the disease (1-3 year). In study among the 60 patients, 61.67% had positive history of spectacle wear. Majority (61.67%) of the cases had their first spectacle wear between the ages 15 and 17 years (29.7%). It shows that despite the early detection, there was a delay in the use of spectacles. Among the chief complaints, all the patients (100%) had Durastha Avyakta Darshana, whereas 34% patients had Vihwala Darshana. In the associate symptoms (93.33%) patients had headache, (91.67%) patients had pain in the eye, watering of the eye and eye strain and (88.33%) had heaviness of the eye. Among the maximum 51% of the patients were reported to have a V.A. of 6/60 or less (68.33%) of patients had dioptric power of up to 2D and (20%) had dioptric power between 2 and 4D. only (11.66%) patients had dioptric power between 4D and 6D.

Results

Analysis of the result on 60 patients of myopia showed that, in none of the group, statistically significant reduction in the V.A. and dioptric power was recorded in either of eyes. However, associated changes were seen to be reduced.

In Headache Saptamrata Lauha therapy (Group A) and Jala Neti, Pranayama and Trataka therapy (Group B) were equally effective (P < 0.005) [Table 1]. However in the other symptoms like pain in the eye, watering in the eye, eye strain and in heaviness of the eye Group B (Jala Neti, Pranayama and Trataka therapy) was more effective (P < 0.005) [Tables 2-5].

Discussion

Just as Sun is the most important celestial object, so also eyes are the most important sensory organs. All out efforts should be made by man to protect the eye, throughout the period of life. This study was selected in order to trace out an effective treatment line for myopia. As myopia is considered as a more or less developmental anomaly the treatment for the same should be given in the developmental period itself. Hence, that maximum result is possible. Due to the above reason, the patient in the age group of 8 to 30 years were selected in the present study.

Myopia is considered as a *Tridoshaja Vyadhi* but, clinical study reveals that persons who are having a *Vata Kaphaja Prakriti* (90%) are more prone for myopia. This finding points

Table 1: Comparative effect of therapies on headache of 30 patients of myopia

Headache grading	No. of patients BT	Group A (% of patients)		(% of		(% of		(% of		No. of patients	χ^2	<i>P</i> value	No. of patients BT	(%	up B of ents)	No. of patients	χ^2	P value	df
		ВТ	AT					ВТ	AT										
Absent	2	6.67	66.67	20	19.98	< 0.005	2	6.67	70.00	21	21.12	<0.005	3						
Mild	12	40.00	10.00	3			15	50.00	20.00	6									
Moderate	13	43.33	16.67	5			8	26.67	6.67	2									
Severe	3	10.00	6.67	2			5	16.67	3.33	1									

Table 2: Comparative effects of therapies on pain in the eye of 30 patients of myopia

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Pain in the eye grading	No. of patients BT	patients (% of		No. of patients	χ^2	<i>P</i> value	No. of patients BT	(%	up B of ents)	No. of patients	χ^2	<i>P</i> value	df
		ВТ	AT					ВТ	AT				
Absent	3	10.00	16.67	5	2.527	>0.5	2	6.67	66.67	20	19.68	<0.005	3
Mild	11	36.67	56.67	17			12	40.00	10.00	3			
Moderate	10	33.34	16.67	5			12	40.00	16.67	5			
Severe	6	20.00	10.00	3			4	13.33	6.67	2			

Table 3: Comparative effects of therapies on watering of the eye of 30 patients of myopia

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No. of patients BT	(%	of	No. of patients	χ^2	<i>P</i> value	No. of patients BT	(%	of	No. of patients	χ^2	<i>P</i> value	df		
				ВТ	AT					ВТ	AT			
3	10.00	16.67	5	3.278	>0.5	2	6.67	66.67	20	19.6	<0.005	3		
10	33.34	50.00	15			15	50.00	20.00	6					
12	40.00	20.00	6			9	30.00	6.67	2					
5	16.67	13.33	4			4	13.33	6.67	2					
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Table 4: Comparative effects of therapies on eye strain of 30 patients of myopia

No. of patients	(%	of	No. of patients	χ^2	<i>P</i> value	No. of patients BT	(%	of	No. of patients	χ^2	<i>P</i> value	df
	ВТ	ΑT					ВТ	ΑT				
3	10.00	16.67	5	2.528	>0.5	2	6.67	80.00	24	28.76	<0.005	3
11	36.67	56.67	17			14	46.67	6.67	2			
11	36.67	20.00	6			10	33.34	6.67	2			
5	16.67	6.67	2			4	13.33	6.67	2			
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Table 5: Comparative effects of therapies on heaviness of eye of 30 patients of myopia

Heaviness of eye grading	No. of patients	(%	up A of ents)	No. of patients	χ^2	<i>P</i> value	No. of patients BT	(%	up B of ents)	No. of patients	χ^2	<i>P</i> value	df
			ВТ	AT					ВТ	AT			
Absent	4	13.33	20.00	6	2.17	>0.5	3	10.00	73.33	22	21.09	<0.005	3
Mild	12	40.00	53.33	16			15	50.00	16.67	5			
Moderate	13	43.33	23.33	7			10	33.34	6.67	2			
Severe	1	3.33	3.33	1			2	6.67	3.33	1			

to the Kashtasadhyatwa of the disease in general. Maximum numbers of patients were students belonging to middle socio-economic status and due to increased competition for their successful future they are spending most of their time in study beyond their threshold levels. Due to this over use (Atiyoga) of the eyes Sookshma Nireekshana, constant tension (Chinta), Ratrijagaran (80%) vitiation of Vata Dosha takes place. Vitiated Vata Dosha leads to the condition in which impairment of vision occurs by any means (Sarvendriyani Upahanti). Majority of the patients were in the habits of Divaswapan (71.67%) and Ratrijagaran (71.67%), which are the probable cause for the vitiation of Kapha and Vata respectively. The familial incidence of myopia was detected in 71.67% of cases. This observation supports the genetic theory, which states that genes

are responsible for the development and progression of myopia. Similar observation has been made in Ayurvedic classics, where ocular structure i.e. black part (cornea) and white part (sclera) are said to be inherited from mother and father, respectively.^[5]

Overall effect of therapies

Overall effect of the therapies on 60 patients of myopia in this study shows that, there was no significant reduction in the clinical refraction and V.A. in any of the groups. The result obtained from the study reveals that the Yoga therapy comprising of *Jala Neti*, *Nadi Shodhana*, *Shitali Pranayama* and point *Trataka* exerted much better improvement in associated changes (P < 0.005) when compare to the *Sapthamrita Lauha* alone (P > 0.5). According to *Atharava Veda* the functioning office of the *Vata*

is brain and it facilitates the all organ for their proper function.^[6] Acharya Charaka states that, Vayustantrayantradhara; i.e. Vata in its normal states of functioning sustains all the organs of the body and prompts all types of actions. It restrains and impels the mental activities (Niyanta Praneta Cha Manasa), it coordinates all the sense faculties and helps in enjoyment of their objects (Sarvedriyanam Udyojakaha). [7] All senses controlled by Mana (mind) and the Mana (mind) controlled by Vata.[8] Thus, for the proper functioning of the senses, the functional equilibrium between Vata and Mana (mind) is needed. Vitiated Vata Dosha perturbs the mind and leads to the condition in which impairment of vision occurs (Sarvendriyani Uphanti).[9] Eye being the sense organ closely associated to the mind[10] which might have influenced for better outcome in Yoga treated group as the concentration and the relaxation probably mitigate the provocated Vata and Kapha by channelizing Vata in its normal path and Kapha by Sroto Shodhana effect. Yoga has the ultimate target to make the mind stable through Vayu Nigraha.[11] Nadi Shodhana Pranayama established the equilibrium between positive and negative currents and due to deep penetration of Prana, the blood receives a larger supply of oxygen. Pranayam is considered to have capacity to alter autonomic activity. In a study by Udupa et al. concluded that Pranayama training produces a decrease in basal sympathetic tone, [12] Raghuraj et al. have reported that Nadi Shodhana Pranayama increases parasympathetic activity^[13] and Slow and deep breathing itself has a calming effect on the mind and helps an individual to de-stress. This calming effect may also exert profound physiological effect on mental functions of the brain. [14] As myopia is mentioned a Tridoshaja Vyadhi, Shitali Pranayama soothes the eyes and cures the Kapha Pitta Vikaras. [15] Neti destroys all diseases which manifest above the throat (Urdhvajatrugata), reduces Kapha Dosha, has a relaxing and irrigating effect on eyes and gives divine sight.[16] Yogi Swatmarma states that, Neti affects the psychic center known as Ajna Chakra which helps in awakening higher states of meditation.^[17] The two main nerves in the nose are the olfactory and the fifth cranial (facial sense perception), these are stimulated by the passage of water during Neti and send nerve impulses direct to the brain. This leads to the stimulation of other nerve connections in the brain. Eventually motor and autonomic nerve fibers are fired at the end of the nerve pathways and different parts of the brain are stimulated. The health and optimal function of the body and mind is enhanced through the powerful autonomic nervous influence of Nadi Shodhana Pranayama and Neti Kriya. These practices release daily accumulated psychic and nervous stress, which imbalances the autonomic nervous system and blocks Pranic energy flow.[2] At the same time Trataka like Kriya provide a complete rest to the brain; strengthen the eye muscle and mental status and brain functioning. [18] Hathayoga states that Trataka cures eye diseases [19] and according to Gheranda Samhita, Trataka gives divine eyes. [20] In addition to above these Yogic activities, probably facilitates comparatively better supply of blood and this offers the large oxygen carrying capacity and further probably releases the obstruction.

Conclusion

Thus it is inferred that, these cumulative therapeutic effects provided substantial improvement in visual sense. However, the results of the above study and the conclusion drawn there upon need to be further verified by conducting a large scale placebo controlled clinical trial.

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हिन्दी सारांश

सप्तामृतलौह एवं योगचिकित्सा का मायोपिया (तिमिर) मे तुलनात्मक अध्ययन

चारू बनसल

मायोपिया बच्चों व युवाओ में बहुतायत से मिलने वाला रोग है। मायोपिया के मुख्य लक्षण दूर की वस्तु साफ न दिखाई देना व अन्य सहायक लक्षण शिरःशूल, नेत्रसाव, नेत्रशूल एवं गुरूता के आधार पर इस का आयुर्वेद संहिता में मिलने वाले द्वितीय पटलगत तिमिर से समान्जस्य कर सकते है। इस नेदानिक अध्ययन में ६० रुग्णों को दो समूह में बाँटा गया। समूह 'अ' को सप्तामृत लोह २५० मि.ग्रा. एवं समूह 'ब'को योग चिकित्सा (जलनेति, नाड़ीशोधन, शीतलीप्राणायाम व बिन्दुत्राटक) ३ माह तक कराया गया। अध्ययन में रुग्णों के पंजीकरण के पश्चात सामान्य मायोपिया के मुख्य लक्षणों, जैसे-दृष्टिक्षमता, क्लिनिकल रिफ्रेक्शन का चिकित्सा पूर्व एवं चिकित्सा पश्चात अध्ययन किया गया। समूह 'ब' के रुग्णों में अंकशास्त्रीय दृष्टिकोण से अधिक लाभ पाया गया।