



Research Article

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EFFICACY OF TRIPHALA GHRITA NETRATARPAN IN COMPUTER VISION SYNDROME

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ABSTRACT

In present era, the computerization in a country is necessary for the progress. It seems that the work at computer is very intensive and most tiring. Computer Vision Syndrome (CVS) is the complex condition of eye and vision problems that are related to near work which are experienced during or related to computer use. Traditional medicine has been practiced for many centuries in many parts of the world. The present study was undertaken to evaluate the effect of Triphala Ghritha Tarpan herbal compound preparation as per the classics in 30 patients suffering from CVS in trial group for 7 days in three consecutive months. The duration of Tarpana was 15-20 minutes. While the control group also included with 30 patients and were advised with certain eye exercise. The results in trial group were satisfactory and Tarpana was found to be effective in treating all the signs and symptoms of CVS which was supported by the statistical analysis ($P < 0.001$)

Key words: Computer vision syndrome, Triphala Ghritha, Netratarpan

INTRODUCTION

Eye is considered to be the most important and noblest sense organ of human body. In Ayurveda eye is one of the Dynanedriya which has dominance of Tej Mahabhut. In today's era of 21st century, the computerization of a country is necessary for the progress. Like "Stone Age" today's era can be defined as "Computer Age". It seems that the work at computer is very intensive and most tiring therefore countries like Germany has included computer operational work in the list of the 40 most harmful trades for the health and restricted work at the computer and it should not exceed 50% of the working time.¹ Other developing countries are also following the suit. In the developing countries like India where the remuneration for the work are far from satisfactory and the young generation is aspiring for more material gains which necessitate them to work over time or have part time jobs in addition to their legitimate work. This situation adds up to the works with the computer which badly affects their health.

Personal computers or desktop are visual display terminals in office, Laptop to them who are in marketing, watching TV, prolong use of mobiles are common in present life style. Hence such long term and repetitive exposure can damages eyes. This damage is called as **Computer Vision Syndrome** in modern terminology. These ophthalmic health problems have been extensively investigated by American optometric association of 32 thousand ophthalmologists and opticians which concluded that working at the computer is unnatural for human eyesight and 70-75% of all users who work with the computers have problems with the eyesight.² Lot of complaints received from the computer operators about sharp pain in the eyes, blurring of vision and problems about convergence as constant gazing at the monitor

leaves hardly any scope for blinking causing stress on eye.

While reading a text from a paper the human eye takes the reflected image on which the light falls, where as reading the text on the computer screen one has to look at the bright source of light. While operating computer, one has to do both activities simultaneously. This results into stress on eyes, as the eye has to adjust with light from paper and bright light of monitor simultaneously for thousand times a day. This has a negative influence on the eyesight. In addition to this brightness of illuminated monitor the light emitted by the monitor consists of X-rays, UV rays and IR rays along with the wide range of electromagnetic waves of different frequencies.³ In the presence of several computers in a small room, ion quantity may increase. Superfluous quantity of positive ions is considered unhealthy for human beings, as these ions affect the circulation of blood and have effect on practically every organ in the body especially vital organs like brain, heart, eyes, kidneys and gonads.⁴

The American Optometric Association defines Computer Vision Syndrome is caused by extensive use of computers which reduces the blinking rate of a person and due to this water flow across the eyes is reduced drastically and leads to dryness.⁵ People in the age group of 18 to 30 years are at the risk of being affected by this syndrome if they spend lot of time on computer. Computer Vision Syndrome (CVS) is the complex of eye and vision problems related to near work which are experienced during or related to computer use. CVS is characterized by visual symptoms which result from interaction with a computer display or its environment. In most cases, symptoms occur because the visual demands of the task exceed the visual abilities of the individual to comfortably perform the task. Vision problems occur frequently

among video display terminal (VDT) workers and VDT associated vision problems are more significant than the musculoskeletal disorders.⁶

Other causes of Computer Vision Syndrome:-

- Vitamin – A deficiency (Xerophthalmia), chemical burns
- Constant staring at a particular object such as T.V., Computer etc.
- Environment – dry, dusty, windy climate.
- Medication – antihistamines, birth control pills.
- Infection – systemic diseases such as lupus, rheumatoid arthritis
- Long-term use of contact lenses
- Hormonal changes

Signs and Symptoms of Computer Vision Syndrome -

Signs -

- Presence of excessive debris and mucus strands in the tear film.
- Reduced or absence of marginal tear strip.
- Lusterless ocular surface - xerosis.
- Lid – Dry and Rough touch.

Symptoms -

- Itching (Netrakandu)
- Burning sensation (Netradaha)
- Blurred vision (Drishtivaishmyata i.e. Dhusardrishtita)
- Dryness of eyes (Netrarukshata)
- Redness of eyes (Araktnetra)
- Pricking Pain (Netrashool)
- Foreign body Sensation (Abhighatate)
- Difficulty in opening and closing the lids (Krichhonmilan)

MATERIALS AND METHODS

For this study we have taken 30 patients in experimental and in controlled group respectively. Subjects suffering from computer vision syndrome were selected randomly visiting to OPD of Vasantdada Patil Ayurvedic Medical College and Hospital. For experimental group Triphala Ghrita Netratarpan was administered 15-20 minutes per day for 7 days, in three consecutive months for 30 patients and for controlled group eye exercises were given like palming, eye movements subjective to patient for 7 days in three consecutive months for 30 patients. Study was carried out as per the Ethical committee clearance report no; adamc/RP/2447-18/2012,date-27/03/2012

Criteria of Selection

30 patients in each experimental and control group irrespective of age, sex, marital status, educational status and nature of work.

Criteria of Rejection

Patients with local and systemic infective disorders of eye, cataracts, glaucoma, degenerative disorders, Diabetes Mellitus, Hypertension, cardiac and renal disorders were excluded.

Selection of Drug

Triphala Ghrita for Netratarpan is mentioned in Ashtanga Hridaya,⁷ B.R. 64/246-256. Netrarogadhikar,⁸ Sharangdhar samhita Madhyam khanda 9/65-69⁹ was selected for the trial. This Siddha Ghrita and instruments are autoclaved daily before procedure. This compound preparation is indicated with Sarva Netra Rogaghna properties. Due to these properties it may help to inhibit the sign and symptoms of computer vision syndrome by alleviating Vayu and it nourishes the eye and improves the vision.

RESULTS

Table 1: Age wise Distribution of 60 Patients of Computer Vision Syndrome

Age Group	No. of Patients			Percentage		
	EG	CG	Total	EG	CG	Total
Balya (1-16yrs)	5	3	8	16.67	10.00	13.33
Madhyam (17-60yrs)	22	27	49	73.33	90.00	81.67
Vridhdha above 60yrs	3	0	3	10.00	0.0	05.00

Table 2: Sex wise Distribution of 60 Patients of Computer Vision Syndrome

Sex	No. of Patients			Percentage		
	EG	CG	Total	EG	CG	Total
Male	23	14	37	76.67	46.67	61.67
Female	07	16	23	23.33	53.33	38.33

Table 3: Marital status of 60 Patients of Computer Vision Syndrome

Marital status	No. of patients			Percentage		
	EG	CG	Total	EG	CG	Total
Married	18	20	38	60.00	66.67	63.33
Unmarried	12	10	22	40.00	33.33	36.67
Widow	00	00	00	0.00	0.00	0.00
Widower	00	00	00	0.00	0.00	0.00

Table 4: Educational status of 60 Patients of Computer Vision Syndrome

Educational status	No. of Patients			Percentage		
	EG	CG	Total	EG	CG	Total
Uneducated	00	00	00	0.00	0.00	0.00
Educated						
a)Primary	02	00	02	06.66	0.00	03.33
b)High school	06	04	10	20.00	13.33	16.67
c)UG	14	24	38	46.67	80.00	63.33
d) PG	08	02	10	26.67	06.67	16.67

Table 5: Nature of Work of 60 Patients of Computer Vision Syndrome

Nature Of Work	No. of Patients			Percentage		
	EG	CG	Total	EG	CG	Total
Manual	02	00	02	06.66	00.00	03.33
Sedentary	24	27	51	80.00	90.00	85.00
Labor	00	00	00	00.00	00.00	00.00
Travelling	02	02	04	06.66	06.66	06.67
Standing	02	01	03	06.66	03.33	05.00

Table 6: Incidence of Symptoms in 60 Patients of Computer Vision Syndrome

Incidence of Symptoms	Experimental Group		Control Group		Total	
	No. of Patients	%	No. of Patients	%	No. of Patients	%
Netrarukshata	30	100.0	27	90.00	57	95.00
Krichhonmilan	28	93.33	27	90.00	55	91.66
Drishtivaishmyata	27	90.00	24	80.00	51	85.00
Netradaha	25	83.33	25	83.33	50	83.33
Netrashool	24	80.00	25	83.33	49	81.66
Netrakandu	25	83.33	26	86.66	51	85.00
Araktnetra	26	86.66	27	90.00	53	88.33
Abhigatate	23	76.66	24	80.00	47	78.33

Table 7: Effect of Therapy on Symptoms Score in 60 Patients of Computer Vision Syndrome

Symptoms of CVS	Symptoms Score of Experimental Group				Symptoms Score of Control Group			
	BT	AT	Diff	Relief%	BT	AT	Diff	Relief%
Netrarukshata	60	00	60	100.00	54	50	04	07.40
Krichhonmilan	56	02	54	96.42	54	46	08	14.81
Drishtivaishmyata	54	00	54	100.00	48	34	14	29.16
Netradaha	48	02	46	95.83	50	38	12	24.00
Netrashool	48	00	48	100.00	50	44	06	12.00
Netrakandu	50	00	50	100.00	52	40	10	19.23
Araktnetra	52	00	52	100.00	54	50	04	07.40
Abhigatate	46	00	46	100.00	48	30	18	37.50

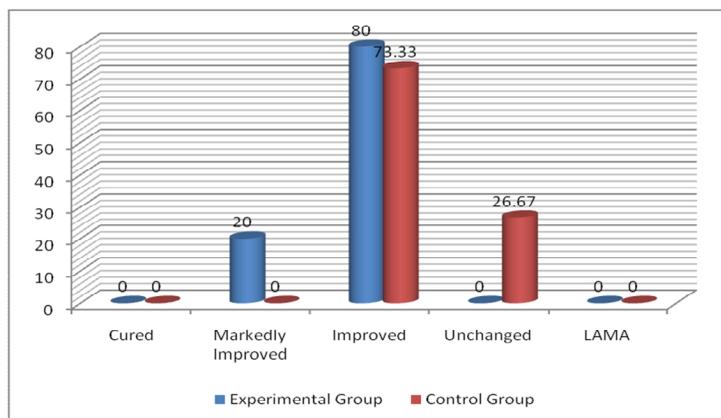
Table 8: Effect of Therapy on various Parameters by Paired t Test in Both Groups of Computer Vision Syndrome

Parameter	Group	Mean + Sd		Diff of Mean (BT-AT)	SED	Paired t	P
		BT	AT				
Netrarukshata	EG	2.867+0.346	0.333+0.479	2.533	0.115	22.037	P<0.001
	CG	2.633+0.490	1.333+0.547	1.300	0.128	10.126	P<0.001
Netradaha	EG	2.800+0.407	0.433+0.774	2.367	0.176	13.424	P<0.001
	CG	2.667+0.479	1.200+0.714	1.467	0.171	8.561	P<0.001
Netrashool	EG	2.867+0.346	0.267+0.450	2.600	0.103	25.250	P<0.001
	CG	2.700+0.596	0.900+0.803	1.800	0.162	11.104	P<0.001
Araktnetra	EG	2.933+0.254	0.167+0.379	2.767	0.079	35.179	P<0.001
	CG	2.767+0.504	0.833+0.747	2.100	0.154	13.596	P<0.001

BT: Before Treatment; AT: After Treatment

Table 9: Effect of Therapy in 60 Patients of Computer Vision Syndrome

Sr. No	Results	Experimental Group		Control Group	
		No. of Pts	Percentage	No. of Pts	Percentage
1	Cured	00	00.00	00	00.00
2	Markedly Improved	06	20.00	00	00.00
3	Improved	24	80.00	22	73.33
4	Unchanged	00	00.00	08	26.67
5	LAMA	00	00.00	00	00.00



Graph 1: Effect of Therapy in 60 Patients of Computer Vision Syndrome

Time of Tarpan

According to Sushrut (S.U.18/6-11)¹⁰ it is of two types, first one as per dominance of Dosha, and second as per Vyadhi in different layers of eyes. It comes near about 15-20 minutes. Thus we have done Tarpan for about 15-20 minutes 7 days in three consecutive months for patients in experimental group.

Clinical Study

30 patients were included randomly in Experimental Group (EG) and Control Group (CG) each.

Criteria for symptom score

The method of symptom score has been described by Malagi K.J (1985)¹¹ which was also followed by Parlikar G.R. (2005).¹² This method is described as follows.

- Two marks were given to each symptom present before the treatment.
- One mark was given to each symptom reduced remarkably after the treatment
- Zero mark was allotted to complete relief in the symptoms.
- Two marks were allotted to the symptoms which did not show any improvement after the completion of treatment.

By Shirmer's test¹³

- 0-wetting > 16 mm
- 1-wetting 12-16mm
- 2-wetting 06-12mm
- 3- Wetting < 6mm

1. Redness (Araktetra)-

- No Redness - 0
- Palpebral conjunctival congestion -1
- Bulbar conjunctival congestion - 2
- Both palpebral and bulbar conjunctival congestion - 3

2. Burning sensation (Netradaha)^{14, 15, 16}

- No burning sensation 0
- Burning sensation on exposure to sunlight 1
- Intermittent burning sensation 2
- Continuous burning sensation 3

DISCUSSION

Herbal medicine in developing countries is commonly used for the traditional treatment of health problems.¹⁷ In the present study, total number of 60 patients in two groups (30 in each) was registered and was given Triphala Ghrita Tarpana in group I and exercise in group II. Of 60 patients, all completed the trial satisfactorily. The diagnosis was done on the basis of signs and symptoms described in Ayurvedic and modern texts and then examined on clinical parameters.

Effect of Therapy on Symptoms Score

According to effect of therapy on symptoms score for before Netrarukshata treatment was 60, after treatment it was 0. The relief of percentage in experimental group was 100%. In the same manner before Krichhonmilan treatment it was 56, whereas after treatment it was 02. The percentage of relief in experimental group was 96.42%. Before treatment the score of Drishtivaishmyata was 54, after treatment it was 0. The percentage of relief in experimental group was 100%. Netradaha before treatment was 48 and after treatment it was 02. The percentage of relief in experimental group was 95.83%. Netrashool before treatment was 48 which were reduced after treatment to 0. The percentage of relief in experimental group was 100.00%. Netrakandu before treatment was 50, after treatment it was 0. The percentage of relief in experimental group was 100.00%. Before treatment Araktetra was 52, after treatment it was noted 0. The percentage of relief in experimental group was 100.00%. Abhighatate before treatment was 46, which was 0 after treatment. The percentage of relief in experimental group was 100.00 %.(Table 6)

In case of control group the relief of percentage in Abhighatate, Netradaha, Drishtivaishmyata was noted as 37.50%, 24.00% and 29.16% respectively. (Table 6)

Mode of Action of Triphala Ghrita in Tarpan

The trial drug, Triphala Ghrita by virtue of its Rasa, Guna, Veerya, and Vipaka appears to be predominantly Vata- Pitta shamaka followed by Kaphashamaka.⁸ Hence the general effect of the drug is Vata Pradhana Tridosha Shamaka and is responsible to disintegrate the pathology of CVS, which is also Vata- Pitta Pradhana Tridoshaja in its manifestation. The Ghrita has the quality of trespassing

into minute channels of the body. Hence, when applied in the eye, it enters deeper layers of Dhatus and cleanses every minute part of them. The lipophilic action of Ghrita facilitates the transportation of the drug to the target organ and finally reaching the cell.¹⁸ This lipophilic nature of Ghrita 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.

According to modern pharmacology various drugs used in the form of eye ointments enter the eyeball by passing through the cornea.¹⁹ This penetration depends upon the permeability of the various layers of cornea. The epithelium and endothelium is highly permissible for lipid content as compared to stromal layer. Thus fat soluble drugs readily penetrate these layers, however only water soluble drugs can penetrate the stromal layer. Thus for complete penetration of the drug, It should be lipophilic and hydrophilic.

Triphala Ghrita which is generally used for Tarpan is saturated with decoction of Triphala indigenous drugs and hence it contains both lipid and water soluble constituents of Triphala. Thus it has lipophilic as well as hydrophilic properties. Hence it has got very good penetration through various layers of the cornea.

Akshi-Tarpana is in the form of suspension containing unctuous nature and the particles do not leave the eye as quick as other water based solution. This increases the tissue contact time and bioavailability hence higher therapeutic concentration can be achieved by Akshi-Tarpana. 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 ultimately reducing the signs and symptoms of CVS.

CONCLUSION

Triphala Ghrita Netra Tarpana was found to be effective in experimental group as compared to treatment employed in the control group. Promising results were noted in the cardinal signs and symptoms like Netrarukshata, Krichhonmilan, Drishtivaishmyata, Netradaha, Netrashool, Netrakandu, Araktnetra and Abhighatate as compared to the results achieved in control group which is based on statistical analysis. It is necessary to carry out a bioassay guided fractionation of the extract in a bid to isolate and identify the compounds responsible for action. The procedure was devoid of any toxic effects. Procedure

can be further evaluated with better scoring criteria and other symptoms affecting eyes due to CVS.

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