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A PILOT STUDY TO EVALUATE THE EFFICACY OF TRIPHALA MADHU SARPI IN COMPUTER VISION SYNDROME

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ABSTRACT

Computer vision syndrome is an endemic disease of 21st century and an evil consequence of use of computers in improper manner. Being a disease of modern era, it is difficult to get the nearest resembling disease in Ayurveda excellence. Ayurveda being the science of life, everything including ideal life style has been mentioned in it in the form of Dinachairya, Ritucharia, Ratrichariya etc. Computer vision syndrome (CVS) is a disease related to modus Vivendi and it is expected that relief can be obtained by following Dinacharya etc. Present study was planned with an aim and objectives, to compile and commemorate the references of computer vision syndrome and its related diseases in Ayurveda excellence, postulate the Samprapti Ghataka (Patho -physiology) of computer vision syndrome according to Ayurveda, hypothetically and rule out the effect of Triphala Madhu Sarpi in reliving the sign and symptoms of computer vision syndrome. Materials and methods of this pilot study were planned on 10 samples of CVS. Samples were administered with Triphala Madhu Sarpi in a dose of 3 g of Triphala powder along 5 ml of Madhu and 5 ml of Ghrita (Made from Dadhi of pure cow's milk) at night before meal. Effect of intervention was assessed once in 15 days interval. Results of the study revealed that Triphala Madhu Sarpi showed above 75 % relief for most of the subjective criteria's and objective criteria's like dry eye (by schirmer test), and p value were < 0.001 for itching and burning sensation of eye, fatigue and eye strain like conditions i.e. highly significant result after 2 month of therapy.

Keyword: Computer vision syndrome, Dinacharya, Rasayana, Triphal Madhu Sarpi.

INTRODUCTION

Use of technology is serviceable to survive in this competitive and technological world. People of modern society use technology for better quality of life, and accomplish much more work easily in short span of time. People rely upon computer, television, mobile phone etc not for only essential work, but also as a part of entertainment. Impact of technology on human life has both positive and negative effect, although magnitude of the impact depends upon the individual forbearance, acceptability and exposure to modern techniques. Computer vision syndrome (CVS) is such a disease, and associated mainly with improper and long standing use of computer. The American Optometric Association defines CVS as that 'complex of eye and vision problems related to near work which are experienced during use of computer. There is no evidence that it causes any casualty but eye being prime organ of visual execution becomes highly exhausted there by it decreases the "standard of living" or "Quality of life" by reducing the work efficiency. The numbers of computer, internet etc users are huge in number not only in developed country, but the number is increasing day by day in developing country also like India. India is world third internet user country with over 137 million as on June 2012. Much study had shown that approximate 50 % to 90 % of computer user became victim of computer vision syndrome in some point of their life. So there is an urgent need to understand the dynamics of this problem and prevent it from assuming epidemic proportions. The prime importance has been given to eye in ancient Ayurveda. Acharyas mentioned urdhanga chikitsa separately among Astanga Ayurveda for the treatment of the organ situated in urdha jatru (above clavical). Acharya charaka elaborated dinacharya starting with anjana karma[1]. Acharya Sharangadhara quotes that, day and night are one and the same for blind person, and value of life goes vain without eye[2]. So it is duty of every individual to accept and adopt all the measures which helps to protect our vision. Acharyas of Ayurveda has given advice for Dinachariya, Ritucharyas, Ratricharyas Sadvritta etc which are dealt under Swasthavritta, and all these are helpful in maintaining health and also to overcome disease condition. Astanga samgraha elaborates in detail regarding the permissible dietary regimen under the context of "Annapanavidh adhyaya. Here author explains about the daily intake of "Tripdala Madhu Sarpi"[3] at night as a Naimattika Rasayana which helps to prevent the diseases of eyes and promote the proper function of visual apparatus. Computer vision syndrome becoming the disease of 21st centuries there is no direct references of this disease in Ayurveda text. But it is possible to understand the disease through fundamental of Ayurveda and it is expected that effective results may obtain through Ayurveda regimen. The process of understanding a disease has been mentioned in astanga samgraha 22nd chapter named as rogabhediyo adhyaya and following this we can nominate CVS as "Vata Pitta Pradhan Tridoshaja vyadhi". So a pilot study over 10 samples has been conducted to evaluate the following aims and objective

Aims and objectives

- Postulate the samprapti ghataka (Patho -physiology) of computer vision syndrome according to Ayurveda, hypothetically.
- Rule out the effect of Triphala Madhu Sarpi in reliving the sign and symptoms of computer vision syndrome.

MATERIALS AND METHODS

A Single group pilot study over 10 samples of CVS was done with the trial drug Triphala madhu sarpi yoga.

Selection of samples

Patients were selected from IPD/OPD of National Institute of Ayurveda Hospital, Jaipur for present study.

Collection of trial drug

Triphala Churna, Madhu and Ghrita are the ingredients of the trial drug which was collected and prepared from the pharmacy of National Institute of Ayurveda, Jaipur.

Consent to participate in study

A detailed consent form was prepared with respect to the present study. Subjects were detailed about merits and demerits of research work, duration of trial drug, and route of administration of formulation before taking consent. During follow up regular records were further documented in the Proforma.

Inclusion criteria

- Adult person (irrespective of sex, religion) who spends more than 3 hours/day in front of screen
- Person showing any ocular and extra ocular sign and symptom of computer vision syndrome.
- Age between 18 years to 50 years.

The sign and symptoms of CVS are illustrated in Table 1.

Exclusion Criteria

- Age below 18 years and above 50 years.
- Any systemic disorder like Hypertension, Diabetes, Migraine.
- Pre-existing dry eyes or using lubricant or tear drop.
- Patient who undergone eye surgery.
- Patients on topical medicine for long time.

Discontinuation Criteria

- If any adverse effect of the therapy is seen.
- Any acute or severe illness.
- Patient not willing to continue the treatment.

Method of Study

It was a single group study. 10 samples were registered and all patients completed the trial.

Drug Schedule

Dose: 3 g of powder of triphala along with 1 tsf (5 ml) of Madhu and 1 tsf (5 ml) of Ghrita (Made from Dadhi of Pure Cow's Milk) at night before meal.

Duration

2 months for internal administration was advised.

Follow up

Follow up at 15 days interval to assess the improvement and untoward effect of therapy, if any.

Assessment

- Self gradation was given to symptoms of CVS
- Assessment done on the basis of pre and post observation found on this scale after completion of 2 months therapy.

OBSERVATIONS AND RESULTS

Demographical Data

Out of 10 samples, 8 samples i.e. 80 % belonged to 18-30 years of age and among them 70 % i.e. 7 samples were male, according to religion 8 samples (80 %) were Hindu, majority of them i.e. 8 samples were unmarried. Among 10 samples 6 samples i.e. 60 % were postgraduate professional students. All the samples belonged to middle socio-economical class and only 2 samples had family history of spectacle uses. According to dietary pattern 50 % samples use to take mix type of diet, 7 samples had normal sleep pattern. Out of 10 samples 6 samples i.e. 60 % uses laptop, 7 samples were using computer 3 to 4 h/day, and all of them (100 %) uses computer keeping a distance less than 20 inches from eye. In the present clinical trial 7 (70 %) samples were vata-pittaja sharirik prakriti and 50 % samples uses spectacle for refractory error.

Table 2 showed the numbers of sample complaints for specific signs and symptoms. Burning sensation of eye and fatigue eye symptoms were top of the list, complaint by 90 % samples, itching eye, eye strain, difficulty in focusing and neck/shoulder/back pain were complaint by 80 % of samples. 70 % of samples complain for red eye symptoms. Double vision and headache symptoms were complaint by 50 % samples. Double vision and dry eye by schirmer-I was at the bottom of list and complaint by only 1 sample. None of the sample participated in the trial complaining of the squint symptom.

DISCUSSION

Discussion on every point from the selection of the topic to the outcome of clinical trial was done to draw a proper conclusion. In India use of computers increasing rapidly day by day, and is the world third[4] internet user country with over 137 million as on June 2012. So there is an urgent need to understand the dynamics of this problem and prevent it from assuming epidemic proportions. Avoidance of use of VDT (Video Display Terminal) is the only way to get relief from this irritable condition, which is impossible in present technology dependent society. Aiming to give relief by an Ayurveda approach is the reasons behind selection of the topic as research work. The main causative factors behind the disease are[5]

- asatmaindriyartha samyoga
- pragyaparadh
- parinama.

There are three type of asatmyaindriyartha samyoga i.e. atiyoga, ayoyoga and mithayoga are responsible for producing disease. Facing the bright (glare of) screen for long duration is atiyoga of chakshurindriya. Work in low or improper lighting condition and seeing ill-defined object, we can consider as ayoyoga. Visualizing any object from very near or far distance, or seeing very small word is mithyayoga of chakshu indriya. Pragyaparadh also play a key role behind the pathogenesis. It is clear that symptoms are much more associated with duration spend before screen, wrong screen and sitting position. Doing work without proper knowledge or continuing work despite of knowing its ill effect is called as pragyaparadh. All these lead to dosha vaishamya and hence produce disease in eye. Vata, pitta and kapha, tridoshas are involves in this disease. Ocular symptoms like eye strain, double vision, squinting for better vision, eye fatigue and extraocular symptoms like neck, shoulder and back pain are due to vata doshas. Redness of eye is due to pitta dosha and itching eye is due to kapha dosha. The symptoms are mainly from either dristigata or sarvagata netraroga. Vata-pitta doshas play a key role to produce symptoms like burning eye and headache. So we can conclude CVS as vata-pitta pradhan tridoshaja vyadhi. Acarya caraka[6] emphasize that the kapha dosha is the main apprehensive subject related to eye as it is the place of teja. So kapha dosha annihilating procedure should be done for beneficial purpose of eye. Acarya vagbhatta[7] said that look at sun or solar eclipse for long duration, look at flame of fire or flash of lightning decrease eye sight. Sample should advice for santarpana therapy by snigdha (combined with gheeta or tail) and sheetal aahara. Astanga samgrahakar explains that daily intake of "Triphala Madhu Sarpi" at night as a naimattika rasayana helps to prevent the diseases of eyes and to promote the proper function of visual apparatus. According to acarya caraka, triphala with ghrita and madhu[8] is rasayan and helpful for disease prevention. CVS is vata-pitta pradhan tridoshaja vyadhi. Ghrita is vata-pitta nashaka and madhu is kapha-pitta nashak, further acarya sushruta mentioned madhu as tridosha samak. Acarya sushruta also mentioned triphala as kapha-pitta nashaka and beneficial for netra[9]. According to dhanwantari nighantu and bhavaprakash nighantu, haritaki is tridoshaghna and has chakshyuhita property. According to Bhavprakash and Raj nighantu vibhitak is Caksusya or has netrahita property. The therapeutic medicine contains triphala, madhu and sarpi. According to Ayurveda fundamental, CVS may consider as tridoshaja vyadhi. Amalakai pacifies vata due to the amla rasa, pitta due to madhura and sheeta and kapha by ruksa and kasayatwa. Haritaki, due to amla it pacifies vata, due to madhura and tikta rasa pitta and kapha by ruksa, kasaya. Vibhitaki is kapha-pitta hara and caksusya. Madhu is tridoshaghna according to acarya sushruta and due to sukshma guna, it gives tarpana to netra through microcirculation. Ghrita is beneficial for eye[10]. It has tridoshaghna property and it reduces burning sensation and dryness of eye due to sheeta virya and snigdha guna. Ghrita has samskarasyanuvarnat guna as well as beneficial effects on eye and madhu has sukshma guna. So netrahitakar effect of triphala, mixed with ghrita, give nourishment to eye through microcirculation and strengthen the eye. This study drug act as rasayana and give relief from headache, neck, shoulder and back pain. Ghrita contains vitamin A, D, E and K and beta carotene. Honey contain almost 18 amino acid, vitamin $B_1 B_2 B_6 C$ and many minerals although in very little amount. Amalaki is a rich source of vitamin C. The symptoms experienced in computer vision syndrome are caused by three potential mechanisms: (i) Extra ocular mechanism, (ii) accommodative mechanism, (iii) ocular surface mechanism.

Dry eye was defined by the National Eye Institute as a "disorder of the tear film due to tear deficiency or excessive evaporation, which causes damage to the inter-palpebral ocular surface and is associated with symptoms of discomfort. There are three layers to the normal tear film which keep the front surface of the eye comfortably lubricated and optically clear. The outermost is a lipid (oil) layer, secreted by the meibomian glands and prevents tears from evaporating. The innermost layer called mucin, which binds the tears to the surface of the eye by making the eye tissue moist. This is secreted directly from the conjunctival surface of eye by goblet cells. Evaporation type of dry eye is seen in CVS due to low blinking rate. Absence of protective tear layer exposes the surface to external environment and chronic inflammatory change may occur. This precipitates burning sensation, itching sensation and redness of eye. Furthermore the electrostatic charge in the vicinity of the screen surface computers can cause the attraction and accumulation of dust and other airborne particles on the face of the computer screen. This dust and other particle also cause irritation into uncovered eye surface and causes redness, burning and itching sensation of eye. Irritation in front surface of eye causes vasodilatation and redness. Study has shown that vitamin E and C causes significant improvement in tear stability and secretion[11]. Vitamin A helps to maintain conjunctival epithelium integrity and reduces eye redness; the medicine selected for this study is good source of vitamin A due to presence of ghrita. Vitamin A is also helpful to regenerate the conjunctival goblet cell[12], affected due to inflammatory changes, which help to maintain conjunctival surface moist. Ghrita is helpful to maintain normal activity of lipid layer, thus prevent tear evaporation and give relief from symptoms arise due to dryness. Vitamin C and E is potent eye antioxidant and supply proper nutrition and oxygen to intraocular structure. Study has shown that vitamin C and E therapy improves tear stability as well as secretion. Drug used in this study is rich source of vitamin C due to presence of Amalaki and vitamin E due to ghrita. Vitamin C and E maintain ocular health and protect from oxidative stress. According to the Ayurveda, Itching of eye is due to kapha dosha, burning of eye is due to vata pitta and red eye is due to pitta dosha. Ghrita is madhur rasa, snigdha guna, sheeta veerya and madhur veepak that's why it is vata-pittaghna and very good daha prashamak. Amalaki due to madhur rasa and sheeta veerya is pitta shamak and daha prashamak, kapha shamak due to katu vipak, and is vata shamak due to amla rasa; vibhitaki is kapha pittaghna and madhu is also kapha pitta shamak.

Table 1: Sign and symptoms

1.	Red Eyes	2.	Squinting (for better vision)
3.	Headache	4.	Neck/Shoulder pain / back pain
5.	Burning Eyes	6.	Itching (Eyes)
7.	Double vision	8.	Eyes Strain
9	Blurred near and distant vision	10.	Difficulty in focusing
11..	Fatigue		

Table 2: Signs and symptoms wise distribution

S. No	Signs and symptoms	No of sample	%
1	Red eye	7	70 %
2	Burning eye	9	90 %
3	Itching eye	8	80 %
4	Eye strain	8	80 %
5	Blurred vision	5	50 %
6	Difficulty in focusing	8	80 %
7	Double vision	1	10 %
8	Squinting for better vision	0	0 %
9	Headache	5	50 %
10	Neck/Shoulder/Back pain	8	80 %
11	Fatigue	9	90 %
12	Dry eye by Schirmer strip	01	10 %

Table 3: Effect of Triphal Madhu Sarpi on CVS samples

Signs and symptoms	Pt No.	Mean		Differ	Relief %	SD ±	SE ±	T	P	Result
		BT	AT							
Itching eye	8	1.3	0.2	1.1	84.61%	0.73	0.23	4.71	P < 0.001	H.S
Burning eye	9	1.7	0.0	1.7	100%	0.82	0.26	6.52	P < 0.001	H.S
Red eye	7	1.1	0.1	1	90.90%	1.05	0.33	03	P < 0.05	S
Fatigue eye	9	1.4	0.1	1.3	92.85%	0.67	0.21	6.09	P < 0.001	H.S
Eye strain	8	1.5	0.3	1.2	80%	0.78	0.24	4.81	P < 0.001	H.S
Focusing difficulty	8	1.2	0.3	0.9	75%	0.87	0.27	3.25	P < 0.01	S
Blurred vision	5	0.9	0.2	0.7	77.77%	0.94	0.3	2.33	P < 0.05	S
Double vision	1	0.2	0.0	0.2	100%	0.63	0.2	1	P > 0.1	N.S
N/S/Back pain	8	1.2	0.3	0.9	75%	0.73	0.23	3.85	P < 0.01	S
Headache	5	0.9	0.3	0.6	66.66%	0.69	0.22	2.7	P < 0.05	S

Table 4: Potential mechanisms along with symptoms

Potential Mechanism	Symptoms
Extra-ocular	Neck pain, Shoulder pain, Back pain, Headache
Ocular-surface	Itching eye, Burning eye, Red eye
Accommodative mechanism related	Blurring of vision, Double vision, Difficulty in focusing, Squinting for better vision, Eye strain, Fatigue

Triphala is best for eye disease. Over all study on selected drug showed excellent result in ocular symptoms of eye, relief from dry eye, from red eye and itching eye as well. Use of computer requires maintaining fixed focusing for long periods of time and the eye muscle become locked in this close range which put cilliary muscle on strain. This constant fixation on a computer screen causes difficulty in focusing, blurred vision, headaches, eye strain, and overall fatigue eye. The ability of the eye to change its focal power is called accommodation and varies with age. An image that is not focused accurately will appear blurred. In addition to a strain on the muscles that control eye movement and focusing, prolonged computer use can also cause a tightening of facial muscles around the cheeks, temples, and nose. This facial tightening leads to reduced blood circulation, compounding the effects of eye fatigue. Study shows that 1/3 of myopia patient got significant improvement by long standing calcium and vitamin D therapy[13]. Vitamin C, along with vitamin E and other antioxidant nourish sclera, cornea as well as intra ocular contents, especially uveal tract and lens. Proper blood supply, more oxygen increases muscular power of ciliary body and lens flexibility. Hence accommodation is maintained and reduces headache, eye strain, and fatigue, difficulty in focusing and other symptoms of accommodation deficit. According to Ayurveda all these symptoms arise due to vata dosha. Amalaki is vata shamak due to amla rasa, haritaki is also vata kapha shamak. Triphala is beneficial for eye and act as rasayana. Improper seating posture for long duration during computer work precipitate neck/shoulder and back pain. The selected drug has rasayana property and also vata shamak and showed beneficial effect for these symptoms.

CONCLUSION

Computer vision syndrome is vata-pitta pradhan tridoshaja vyadhi. Aasatmyaindriyarthasamyoga and pragyaparadh are two main causative factors behind the pathogenesis, according to Ayurveda. Low distance of screen from eye, improper room light and low blinking rate are the main causative factors; Fatigue eye, burning sensation of eye, strain, itching, focusing difficulty and

neck/shoulder/back pain were the main symptoms and complaint for majority of patient. The disease is not related with refractory error, but intensity of signs, symptoms increase for those persons with incorrect or under correct refractory error. Vata-pitta sharirik prakriti users are the main victim of this disease. Rajasika manasik prakriti person are more prone to the disease. Young (18 to 30) educated adults are the main victims of the disease. Study drug triphala madhu sarpi showed statistically highly significant and significant result for most of the signs and symptoms. The selected drug has tridoshaghna and cakshyusya property. It contain fair amount of vitamin C, A, E, B etc hence popularly known as eye anti-oxidant. No adverse effect of the trial drug was observed during trial period.

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