



Review Article

AN AYURVEDIC PERSPECTIVE ON COMPUTER VISION SYNDROME

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ABSTRACT


Eye sight is the God’s best present to mankind, the blessing that permits us to peer our environment and sense the exquisite beauty of God’s creation. According to John Ruskin, an English Author, poet and artist, “The best element a human soul does in this globe is to peer something, and inform what is noticed in a simple way. To see vividly is poetry, prophecy and religion- all in one.” Computers have become a crucial part of day-to-day life. Everyone, in one or other condition, gets the essentiality to use computer, seeing that the usage of games, several computer programmes etc., the usage of computer system is multiplied to such an extent that several jobs are now based completely on the usage of computers. Nowadays the person’s profession demands more than 8 hours of computer work in a day. Since the computer is involved with vision and eyes, it has some impact on the eye and surrounding muscles. Most of these symptoms are due to dryness of eyes which is produced by monitor light and reduced blinking. A high degree of success (Sheedy and Parsons, 1990) has been attained in resolving the signs and symptoms of Computer Vision Syndrome via way of applying the following two- fine approaches: 1. Careful diagnosis and treatment of visual conditions that lead to CVS signs & symptoms. 2. In- workplace diagnosis and management of workstation ergonomic deficiencies. But no remedial measures for therapy of this syndrome succeed in the area of modern science. It is out of query to affirm the existence of similar syndrome in historic documents, as the disorder is the result of modern invention. But there is room to recognize the ailment via Ayurvedic spectacles and to systematically follow the Ayurvedic remedies for the modern ailment. In Ayurveda, Computer Vision Syndrome could be correlated to *Shushkakshipaka* of *Sarvagata Netraroga*.

INTRODUCTION

Computer Vision Syndrome (CVS) has not been mentioned anywhere in Ayurvedic classics; however, it could be correlated to *Shushkakshipaka* of *Sarvagata Netraroga*. CVS emerged in the last two decades of the 20th century certainly needs its footing and expertise

on Ayurvedic principles before considering its line of management. An Ayurvedic approach can be taken on the idea of basics and fundamentals of Ayurveda. *Nidana* and *Samprapti* may be understood by *Trividha Hetus* (*Asatmyaindriyarthasamyoga*, *Pragyapradha* and *Parinama*) associated with *Chakshurendriya* (eye). The signs & symptoms of *Shushkakshipaka* (CVS) are related to *Vata- Pitta Pradhan Tridosha* vitiation at *Chakshurendriya* (eye) leading to the *Sthaansamshreya* (lodging) of *Doshas* in *Netra* (eyes). American Optometric Association (AOA) defines Computer Vision Syndrome as “A complex of eye and vision problems related to near work which are experienced during or related to computer use”. The chief source of

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the hassle lies in it being a Repetitive Stress Injury (RSI) to the visual system which means, rectifying the source of strain is unnoticed and the negligence ought to cost one's profession and upset the health. Computer vision deals with particular problem sets that rely on images and videos. It attempts to decipher the data in the form of images or videos in order to make significant decisions. Just like human beings parse an image or a series of images positioned sequentially and make decisions about them, CV allows machines interpret and recognize visible data. This includes object detection, photograph classification, image restoration, scene-to-textual content generation, super-resolution, video analysis, and photograph tracking. Each of those troubles is critical in its own way. Studying vision-related problems has gained a lot of attention after the strength of equivalent computing came into play. [1]

Computer Vision Syndrome (CVS) is taking place in 90% experts characterized by complicated eye and vision problems related to near work which are experienced during working with computer systems involving both ocular and non-ocular: dry eyes, tired or sore eyes, eye pressure, redness, itching of eye/eyes, burning of eyes, headache, blurred vision, neck and/or lower back ache with associated shoulder ache. It is not only affecting the computer professionals but even kids & young people are affected from CVS because of excess use of computer games, portable video games, mobile phones for videos and games. The CVS is known as Asthenopia. These signs and symptoms can be further aggravated by wrong lighting fixtures and different ergonomic troubles. With progressive uses of computer systems, the term RSI (Repeated Stress Injury) is often found in literature. Though new ailments are introducing in human life, Ayurveda still remain unmodified. The true *Vaidya* not nominate the ailment sometimes however because of this he/she should not get discouraged, because all the ailments may not have name. *Vaidya* should treat the ailment in a proper manner and not to nominate it. Characters on a computer display screen, however, don't have this contrast, or well-defined edges. These characters are brightest at their centers and low in intensity towards their periphery. Our eyes constantly move to the resting point of accommodation (RPA), and then strain to regain awareness on the computer screen. This continuous flexing of the eyes focusing muscle groups create restlessness and the burning sensation related to feeling of tiredness in eyes. *Acharya Vagbhatta* [4] has indicated cooling and rejuvenating treatment for eyes affected by mild light, high voltage electric spark & heat exposure. A systemic method as regards to etiology (*Doshas*), site (*Dushya/Adhishthana*) and clinical features (*Lingam*) will lead a

physician to the everlasting treatment of the ailment. CVS is a *Vata* dominating *Pittaja* ocular in addition to a systemic hassle and it could be named as "*Sanganaka Atiyogajanya Netra Samlakshana*". According to *Acharya Charaka* if a physician is not able to name a particular disease, he should not feel ashamed for this as it is not always possible to name all type of diseases in specific terms. When one and the identical *Doshas* are aggravated, that may cause numerous ailments relying upon the various etiological factors and the sites of manifestation. So, a physician should try to find the nature of the disease (*Doshas* involved), the sites of its manifestation and etiological factors after which have to begin the treatment.

Ayurvedic and Modern Review

Computer Vision Syndrome has no direct reference in Ayurvedic texts; it could be correlated to the signs and symptoms of *Shushkakshipaka* of *Sarvakshiroga*. An ayurvedic approach can be given on the idea of basics of *Ayurveda*. *Nidana* and *Samprapti* can be understood by *Trividha Hetus* (*Asatmyaindriyarthasamyoga*, *Prajnapradha*, *Parinama*) associated to *Chakshurendriya* (eye). The signs and symptoms of CVS are associated with *Vata - Pitta pradhana Tridosha* vitiation at *Chakshurendriya* leading to *Shushkakshipaka* which is an ailment of the eye characterized by difficulty while closing the lids due to *Daruna Rooksha Vartma Yat Kunitam* [3] (hardness and roughness of the eye lid), *Avila Darshana* [3] (patient cannot see the objects clearly), *Sudarunam Yat Pratibodhanam* [3] (difficulty in opening/closing the eye).

According to *Acharya Vagbhatta* [4] is characterized by *Gharshna* (foreign body sensation), *Toda* (pricking pain), *Upadeha* (loss of clear vision due to waste deposition), *Rooksha Daruna Vartma* (hardness and roughness of the eye lids), *Krichra Unmeela Nimeela* (difficulty in closing and opening of lids), *Shushkata* (dryness), *Shoola* (pain).

Causes of Computer Vision Syndrome

1. Distance and angle from computer screen
2. Less lightening in room
3. Glare at the display screen
4. Reduced blink rate
5. Increased tear evaporation

Symptoms of Computer Vision Syndrome

These arise because the visual needs of the task exceed the visual ability of the individual to comfortably do that task. At greater risk for developing computer vision syndrome are those people who spent eight or more hours daily at computer. Common symptoms include: Eyestrain, headaches, blurred vision, difficulty in changing focuses between far and

near, dryness of eyes, irritated eyes, tired eyes, redness, contact lens discomfort.

Management

The goals of Ayurveda remedy for Dry eyes consists of minimising the vitiation of *Vata dosha* in body and in the eyes also relieving the signs and symptoms of CVS and correcting the digestive fire and encourage lubrication in the body. The main concept of treatment of *Netra roga* is *Nidana Parivarjana* and *Vatadi Doshanashaka*. *Nidana Parivarjana* (avoiding use of computer) is the first and foremost *Chikitsa* (management) in CVS.

➤ **Nasya:** It is the most popular procedure for the management of *Urdhavajatrugata Vikaras*. Instillation of drops of medicated oil or ghee in the nostrils is known as *Nasya*. *Abhijeet Taila Pratimarsha Nasya* has shown effective results in a clinical trial on CVS. (23)

Jeevneeya Ghrita Nasya or *Anu Taila Nasya* is advised in *Shushkakshipaka* (CVS) by *Acharya Sushruta*. (5)

➤ **Eye wash (Prakshalana):** Eyewashes are very good for eye irritation and burning eyes. Just fill your mouth with cool water (without swallowing it) and splash cool water over your open eyes. This is a very effective method and it has a double cooling impact, both from outside and from the oral cavity that will make your eyes sense fresh, glad and cheerful. In one glass of water; add tsp. of *Triphala* powder and keep it overnight. Next day strain the water and wash your eyes with this *Triphala* water at least 2-3 times in a day. *Triphala* is very good drug for eyes and this approach of eye wash can give better results. Washing the eyes with medicated decoctions like *Lodhra* or *Amalaki Swarasa* after getting up from bed in the morning is a superb remedy for eyes.

➤ **Yoga:** *Yogic* practices help to lessen eyestrain and additionally build up the stamina of eye muscles. Mainly *Shatkriyas* like *Trataka* and *Netikriyas* (*Jalneti*, *Sutraneti*, *Rubberneti*, *Ksheer-neti* etc) helps in enhancing and stabilizing the vision & hence maintain the ocular health. (11)

➤ **Seka:** *Seka* is one of the procedures which is done in several eye disorders that is mentioned under *Netra Kriyakalpa* in *Shalakyatantra*. It is also called as *Parisheka*. *Sharangadhara* has given the procedure description that the *Seka* should be done on closed eyes. The medicated drugs *Kwatha* (decoction) or *Sneha* (Cowghee) in liquid state should be put over the closed eyelids from the height of 4 *Angulas*. (11) *Saindhava Lavana* is mentioned as *Chakshushya*, *Tridoshaghna*, *Madhura* by *Acharya Charaka*. (12) *Acharya Sushruta* has mentioned qualities of

Saindhava as *Chakshushya*, *Snigdha*, *Madhura*, *Sheeta*, *Uttama Doshaghna*. (13)

➤ **Netra Tarpana:** It is a specialized ayurvedic remedy for eyes, that helps relieve tiredness of eyes and additionally improves eyesight. It acts as both preventive and healing therapy for maintaining normal healthy condition of eyes. *Netra Tarpana* is a method where the lukewarm medicated ghee is made to stay stagnant in the eyes for a speculated time in a particular formed frame. *Ghrita* which is *Madhura-Sheeta* so; it is best for *Vatapitta* vitiated diseases. The *Ghrita* with decoction of drugs has the quality of invading into minute channels of the body, hence when used in the eyes; it enters deeper layers of *Dhatus* and cleans each minute part. Tissue contact time and bioavailability is greater and thus therapeutic concentration is achieved by *Netra Tarpana*. *Jeevanyadi Ghrita Tarpana* is considered beneficial in the treatment of CVS.

➤ **Anjana:** *Lekhananjana* can be used due to its *Teekshna* property. It eliminates the vitiated *doshas* from the *Siras* pertaining to *Varthma* and eye.

➤ **Ghritapana:** *Triphala Ghritapana* is considered beneficial in CVS. *Triphala* is mentioned as *Chakshushya* in *Bhavaprakasha* (14) and *Dhanwantri Nighantu*. (15) *Amlaki*, *Haritaki*, *Vibhitaki*; these three drugs in combination acts as *Netrarogahara*. *Haritaki* is mentioned as *Tridoshahara* because of its *Prabhava*. (16,17) *Ghrita* possesses *Snigdha Guna*, *Vata-Pittashamaka* and *Chakshushya* properties. (18,19) *Godugdha* is also *Vata-Pittashamaka* (20), so it is used as *Anupana* for *Triphala Ghritapana*. *Saindhavadi Ghrita* is also beneficial in CVS. (20) Hence, daily *Abhyantara Snehana* by *Ghritapana* is useful and effective to minimize the signs & symptoms of CVS.

➤ **Abhyanga:** It suppress the *Vata dosha* confined to eye. Local *Abhyanga* over the eyes gives cooling impact & additionally relaxes the eyes from strain and also strengthens the muscle groups of the eyes. *Shiroabhyanga* allows the oil to reach up to the brain. The optic nerve which ends in the retina is the direct extension of the brain stem. So daily application of oil which is chosen according to the *Prakriti* of the person helps in protecting the eye from diseases and additionally nourishes all sense organs and further helps in *Drishtiprasadana* (perception of light becomes effective).

➤ **Aschyotana:** Instillation of drops of medicated ghee or herbal medicines to the open eye from a height of two *Angulas* is known as *Aschyotana*. After instillation of drops into the eye, it comes in contact with tear and due to blinking of eyelids the drugs get mixed with tear. After mixing with tear the

drugs come in contact with conjunctiva and due to hydrophilic nature of conjunctiva the drugs get directly absorbed through conjunctival sac by the trans-cellular pathway and correcting the abnormalities caused due to inadequate formation of tear film on pre-corneal surface. *Shatavari Ghrita Aschyotana* is proved effective in the treatment of CVS. ⁽²²⁾ *Jeevantiyadi Ghrita Aschyotana* and *Patoladi Ghrita Aschyotana* is also considered effective in the treatment of CVS.

- **Oral Tablets:** *Haritaki Modaka* tablets orally are proved beneficial in the management of CVS. ⁽²³⁾
- **Rest breaks:** To prevent eyestrain, try to rest the eyes while using the computer for long time. Rest your eyes for 15 minutes after two hours of continuous computer use. Also, every 20 minutes of computer use, look into the distance for 20 seconds to allow your eyes a chance to refocus (20-20-20 RULE- For every 20 minutes once, one should look at something kept 20 ft away for 20 seconds).
- **Blinking:** To limit your probabilities of developing dry eye while using a computer, take an effort to blink frequently. Blinking keeps the front surface of your eye moist. Thus, regular eye examinations and proper visualising habits can help to prevent or limit the development of the signs & symptoms associated with CVS.

MATERIAL AND METHODS ⁽²⁴⁾

In a case study on CVS, 25-year-old male patient in OPD of Shalakyatantra, selected on the basis of symptoms of CVS with prior informed consent. There was no H/O any major medical/surgical illness/addiction/known drug allergies. The patient is using spectacles regularly since last 4 years for distant vision. The patient was Myopic with spectacle power SPH -1.50D to both eyes. The screening time of patient was daily 8 to 9 hours since past 1 year. Chief complaints were sensation, dryness, difficulty in focusing, burning sensation in both eyes, eye fatigue since last 1 month. The classical texts from *Charaka Samhita*, *Sushruta Samhita*, *Sharangadhara Samhita* was used to get information about treatment modalities which can be applied in case of CVS (*Shushkakshipaka*).

Treatment Planned ⁽²⁴⁾

Saindhava Jala Seka and *Triphala Ghratapana* was advised and also required alterations in posture and related ergonomics are advised.

Treatment Protocol ⁽²⁴⁾

The patient was diagnosed on the basis of symptoms of CVS. The treatment was explained thoroughly and required clinical tests done in OPD with prior written consent for the local procedure.

Table 1: Treatment Schedule

Procedure	Time	Duration
<i>Saindhava Jala Seka</i>	Morning	7 to 10 minutes to each eye for 7 days
<i>Triphala Ghratapana</i> + <i>Godughdha</i> (10 ml in 200 ml of Cow's milk)	At Night	For 7 days

Administration Details for Seka: *Seka* was done daily once, during day time only, from the height of 4 *Angulas* over the closed eyes of patient; which is approximately equal to 4 inches. For *Seka*, 15gm of *Saindhava* is dissolved in 240ml of water. The procedure of *Seka* was done upto 10 minutes to each eye.

Clinical Tests

- ✓ Slit lamp examination was done.
- ✓ Autorefractor Readings (AR) of the patient was noted.
- ✓ Schirmer's Test: For the assessment of severity of Dry Eye.
- ✓ Intraocular Pressure: For the assessment of Asthenopia Symptoms.
- ✓ Tear Film Break-up Time (TFBT) noted. ⁽²⁴⁾

Table 2: Observation ⁽²⁴⁾

Clinical Test	Day 1	Day 3	Day 8
Schirmer's Test	6 mm wetting of paper after 5 minutes	6 mm wetting of paper after 5 minutes	5 mm wetting of paper after 5 minutes
Intraocular Pressure	17.3 mm of Hg	17.3 mm of Hg	14.6 mm of Hg
Tear Film Break- up Time (TFBT)	RE- 15 sec/LE- 10 sec	RE- 15 sec/ LE- 15 sec	RE- 25 sec/ LE- 20 sec

DISCUSSION

Computer vision syndrome name is not defined in Ayurvedic texts however Ayurveda *Siddhantas* are implemented by centuries through observing, understanding diseases and by well testing. By above discussion it could be concluded that *Ayurveda Siddhantas* are everlasting and could be implemented in understanding recently developed diseases like Computer Vision syndrome in their *Poorvaroopawastha* itself so that it doesn't worsen the condition of eyes. Dry eyes result because of decreased production of fluids from tear glands, which prevent tears from performing their functions and affect vision. When eyes become dry, they may lead to irritation. The *Nidana* mentioned under the CVS i.e., duration of Computer work is directly proportional to the severity of the signs & symptoms in CVS. So, *Nidana Parivarjana* which is first and foremost *Chikitsa* can be well established here. By above treatment modalities it could be stated that CVS can be well managed with Ayurvedic treatment.

CONCLUSION

CVS in Ayurvedic view is concluded to be a *Vata Pitta* aggravated and *Kapha* excerpted ocular hassle on the basis of logical and practical of Ayurvedic basics and tools suggested by *Acharya Charaka* and can be named as

- *Parikalak Aivekshanjanya Samlakshanam*
- *Sanganak Atiprayogajanita Netra Roga*

The development of recent technologies, occupational challenges, surroundings etc. has led to the manifestation of recent ailments like Computer vision syndrome. Ayurveda is the powerful modality of treatment to treat several eye disorders, such as cataract, glaucoma, dry eye syndrome and macular deteriorations. Regular eye examinations and right visualizing habits can help to prevent or reduce the development of the signs and symptoms associated with CVS. So, Ayurveda is one of the powerful conventional systems which are beneficial to keep your eyes healthy.

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